Aggregate Optimization Chart

Production Gradation Report

PLANT #: p11

Sample Date: 3/25/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 3/26/2024 through 4/1/2024

Contractor: _____

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1670	10.21	2.62	54.8
26A	71-47	Presque Isle	150	0.92	2.62	4.9
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3
		Total Wt	**3050**	**18.57**		100.0

<----- Verify this number is 100%

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	96.9	100.0	100.0	98.3	1.7	1.7
3/4"	81.7	100.0	100.0	90.0	8.3	10.0
1/2"	46.8	93.8	100.0	70.6	19.4	29.4
3/8"	30.3	81.8	100.0	60.9	9.6	39.1
#4	5.0	21.6	96.2	42.6	18.3	57.4
#8	2.7	7.2	84.8	36.0	6.6	64.0
#16	2.3	4.7	70.2	29.8	6.2	70.2
#30	2.1	4.1	50.0	21.5	8.3	78.5
#50	1.9	3.6	23.5	10.7	10.8	89.3
#100	1.7	3.3	6.9	3.9	6.8	96.1
LBW	1.5	3.0	1.2	1.5	2.4	98.5

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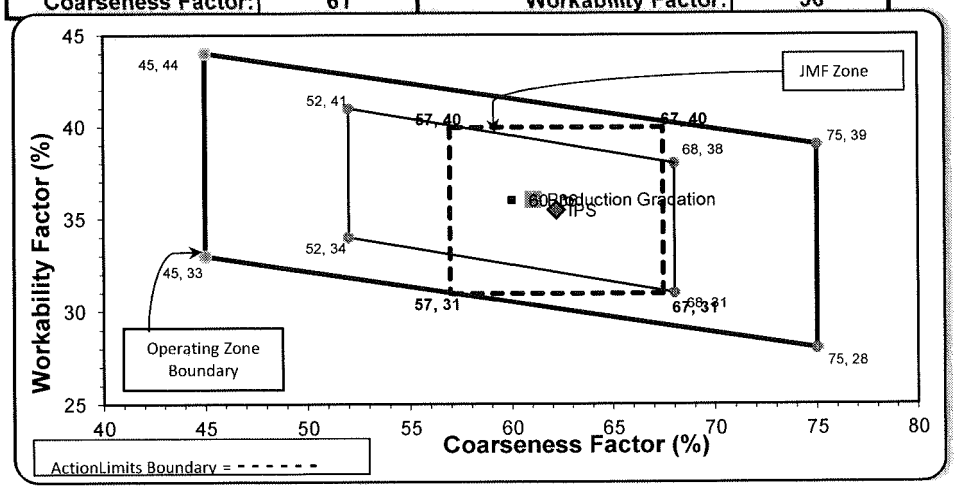
Farmington Hills, MI 48336

*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	61	Workability Factor:	36



Intial Production Sample (IPS)

Coarseness Factor:	62
Workability Factor:	35

Sieve	Cumulative % Passing	% Retained	Cumulative % 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"	94.0	6.0	6.0
1/2"	70.2	23.7	29.8
3/8"	59.9	10.4	40.1
#4	42.7	17.2	57.3
#8	35.5	7.2	64.5
#16	28.4	7.0	71.6
#30	19.2	9.2	80.8
#50	8.9	10.3	91.1
#100	3.1	5.9	96.9
LBW	1.4	1.7	98.6

PREPARED BY:
SM, LLC Technical Service

Approved By:

SUPERIOR MATERIALS

Plant S11-Onsite Jefferson

Product 1051-6AA LS

Period: 03/24/2024 - 03/30/2024

Name/Title Doug Storey / QC Technician

Report Date 03/29/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	96.9	%	95-100
	3/4" (19mm)	81.7	%	
	1/2" (12.5mm)	46.8	%	30-60
	3/8" (9.5mm)	30.3	%	
	#4 (4.75mm)	5.0	%	0-8
	#8 (2.36mm)	2.7	%	
	#16 (1.18mm)	2.3	%	
	#30 (.6mm)	2.1	%	
	#50 (.3mm)	1.9	%	
	#100 (.15mm)	1.7	%	
	#200 (75µm)	1.60	%	
	Wash Loss (#200/75um)	1.5	%	0-2
	Total Moisture	2.15	%	

SUPERIOR MATERIALS

Plant S11-Onsite Jefferson

Product 1067-26A Mod LS

Period: 03/24/2024 - 03/30/2024

Name/Title Doug Storey / QC Technician

Report Date 03/29/2024

Procedure	Sieve/Test	Result	Unit	26A Mod LS Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	100-100
	1/2" (12.5mm)	93.8	%	95-100
	3/8" (9.5mm)	81.8	%	60-95
	#4 (4.75mm)	21.6	%	5-30
	#8 (2.36mm)	7.2	%	0-12
	#16 (1.18mm)	4.7	%	
	#30 (.6mm)	4.1	%	
	#50 (.3mm)	3.6	%	
	#100 (.15mm)	3.3	%	
	#200 (75µm)	3.1	%	
	Wash Loss (#200/75um)	3.0	%	0-3
	Total Moisture	2.88	%	

Plant S11-Onsite Jefferson

Product 1022-2NS GR

Period: 03/24/2024 - 03/30/2024

Name/Title Doug Storey / QC Technician

Report Date 03/29/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.2	%	95-100
	#8 (2.36mm)	84.8	%	65-95
	#16 (1.18mm)	70.2	%	35-75
	#30 (.6mm)	50.0	%	20-55
	#50 (.3mm)	23.5	%	10-30
	#100 (.15mm)	6.9	%	0-10
	#200 (75µm)	1.5	%	
	FM	2.68		2.6-3
	Wash Loss (#200/75um)	1.2	%	0-3
	Total Moisture	5.19	%	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-102

Contractor: _____

Sample Date: 3/25/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 3/26/2024 through 4/1/2024

MDOT No.: _____

Agg. Class	Pit #	Source	Weight (SSD)	ft³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1550	9.23	2.69	50.0
26A	58-003	Stoneco	350	2.09	2.69	11.3
2NS	63-114	Highland	1200	7.26	2.65	38.7
		Total Wt	**3100**	**18.58**		100.0

<----- Verify this number is 100%

Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	100.0	100.0	100.0	100.0	0.0	0.0
3/4"	84.9	100.0	100.0	92.5	7.6	7.6
1/2"	42.2	98.7	100.0	71.0	21.5	29.0
3/8"	20.1	89.0	100.0	58.8	12.1	41.2
#4	4.0	17.5	96.1	41.2	17.6	58.8
#8	1.7	6.0	78.2	31.8	9.4	68.2
#16	1.4	3.8	62.2	25.2	6.6	74.8
#30	1.3	3.2	47.3	19.3	5.9	80.7
#50	1.2	2.9	24.2	10.3	9.0	89.7
#100	1.1	2.8	5.2	2.9	7.4	97.1
LBW	1.0	2.7	0.7	1.1	1.8	98.9

*Maximum % Retained must be above the 3/8" sieve.
*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.
*% Retained must be at least 4% for the 3/4" sieve when a 1.5" max. size (nom. Max. 1.0") aggregate is used.

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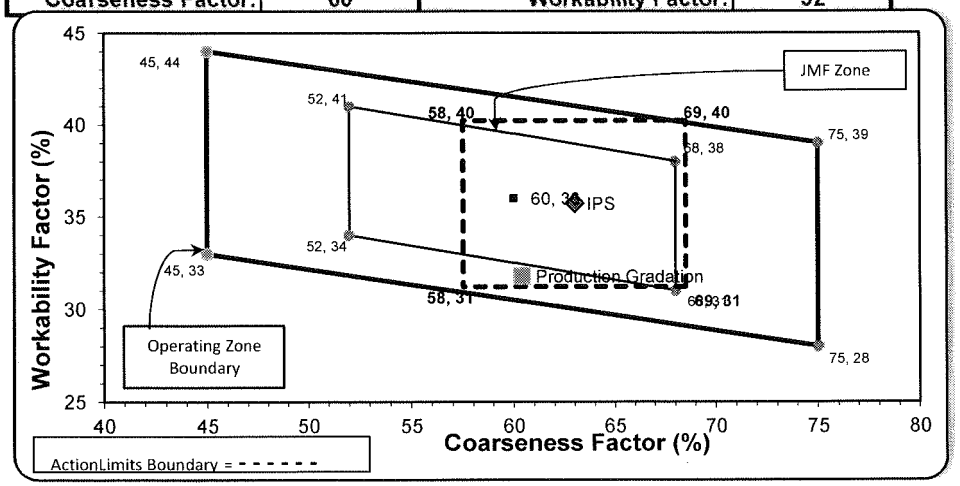
Production Gradation ◉ Batch Plant Gradations ○ Aggregate Supplier Gradations

Coarseness Factor:	60	Workability Factor:	32



Intial Production Sample (IPS)

Coarseness Factor:	63
Workability Factor:	36

Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.2	0.8	0.8
3/4"	90.9	8.3	9.1
1/2"	71.3	19.6	28.7
3/8"	59.5	11.8	40.5
#4	43.8	15.7	56.2
#8	35.7	8.1	64.3
#16	27.0	8.7	73.0
#30	18.6	8.4	81.4
#50	6.8	11.8	93.2
#100	1.4	5.4	98.6
LBW	0.6	0.8	99.4

PREPARED BY:
SM, LLC Technical Service

Approved By:

Plant S102-Superior Novi

Product 1051-6AA LS

Period: 03/24/2024 - 03/30/2024

Name/Title Doug Storey / QC Technician

Report Date 03/29/2024

Procedure	Sieve/Test	Result	Unit	6AA LS
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	100-100
	1" (25mm)	100.0	%	95-100
	3/4" (19mm)	84.9	%	
	1/2" (12.5mm)	42.2	%	30-60
	3/8" (9.5mm)	20.1	%	
	#4 (4.75mm)	4.0	%	0-8
	#8 (2.36mm)	1.7	%	
	#16 (1.18mm)	1.4	%	
	#30 (.6mm)	1.3	%	
	#50 (.3mm)	1.2	%	
	#100 (.15mm)	1.1	%	
	#200 (75µm)	1.07	%	
	Wash Loss (#200/75um)	1.0	%	0-2
	Total Moisture	3.39	%	

Plant S102-Superior Novi

Product 1067-26A Mod LS

Period: 03/24/2024 - 03/30/2024

Name/Title Doug Storey / QC Technician

Report Date 03/29/2024

Procedure	Sieve/Test	Result	Unit	26A Mod LS Spec
	2" (50mm)	100.0	%	
	1 1/2" (37.5mm)	100.0	%	
	1" (25mm)	100.0	%	
	3/4" (19mm)	100.0	%	100-100
	1/2" (12.5mm)	98.7	%	95-100
	3/8" (9.5mm)	89.0	%	60-95
	#4 (4.75mm)	17.5	%	5-30
	#8 (2.36mm)	6.0	%	0-12
	#16 (1.18mm)	3.8	%	
	#30 (.6mm)	3.2	%	
	#50 (.3mm)	2.9	%	
	#100 (.15mm)	2.8	%	
	#200 (75µm)	2.7	%	
	Wash Loss (#200/75um)	2.7	%	0-3
	Total Moisture	4.95	%	

SUPERIOR MATERIALS

Plant S102-Superior Novi

Product 1022-2NS GR

Period: 03/24/2024 - 03/30/2024

Name/Title Doug Storey / QC Technician

Report Date 03/29/2024

Procedure	Sieve/Test	Result	Unit	2NS GR Spec
	3/8" (9.5mm)	100.0	%	100-100
	#4 (4.75mm)	96.1	%	95-100
	#8 (2.36mm)	78.2	%	65-95
	#16 (1.18mm)	62.2	%	35-75
	#30 (.6mm)	47.3	%	20-55
	#50 (.3mm)	24.2	%	10-30
	#100 (.15mm)	5.2	%	0-10
	#200 (75µm)	0.9	%	
	FM	2.87		2.6-3
	Wash Loss (#200/75um)	0.7	%	0-3
	Total Moisture	4.66	%	