

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **p11**

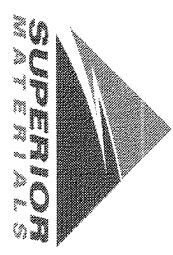
Sample Date: **4/22/24**

Dates Test Represents: **4/23/2024** through **4/29/2024**

Concrete Grade: **S2M, 3500HP**

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
6AA	71-47	Presque Isle	1600	9.79	2.62	52.5	
26A	71-47	Presque Isle	220	1.35	2.62	7.2	
2NS	95-013	Smelter Bay	1230	7.44	2.65	40.3	
Total Wt						3050	100.0

Sieve	% Retained	Cumulative % Retained
2"	0.0	0.0
1.5"	0.0	0.0
1"	1.3	1.3
3/4"	8.8	10.1
1/2"	20.1	30.2
3/8"	8.6	38.8
#4	17.4	56.2
#8	7.8	64.0
#16	6.3	70.4
#30	8.0	78.4
#50	10.8	89.1
#100	6.7	95.8
LBW	2.4	98.2

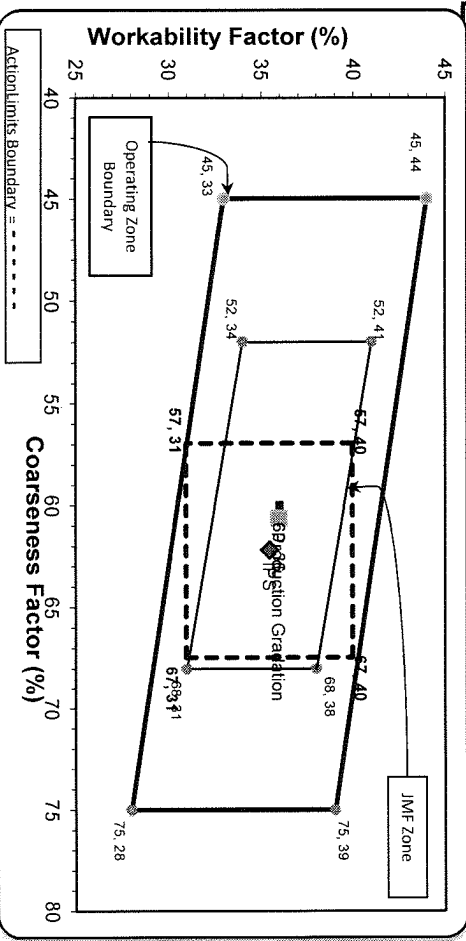
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 *norm. max., #100 and #200 sieves.
 **% Retained must be at least 4% for each sieve except max.
 *norm. max., #100 and #200 sieves.
 ***% Retained must be at least 4% for the 3/4" sieve when a 1.5"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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Initial Production Sample (IPS)

Coarseness Factor: **61** Workability Factor: **36**

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: _____



Product Quality Summary Report

Period 04/21/2024 - 04/27/2024

Plant	S11	S11	S11	S11	S11
	On. Jefferson	On. Jefferson	On. Jefferson	On. Jefferson	On. Jefferson
Product	1022 2NS GR	1054 6AA LS PI	1067 26A Mod LS	7919 COARSE AGG P1M LS	7920 INTERMED AGG P1M LS
Specification	2NS GR Spec	6AA LS	26A Mod LS Spec	Coarse Agg P1M LS Target	Intermed Agg P1M LS Target
2" (50mm)		100.0	100.0	100.0	100.0
1 1/2" (37.5mm)		100.0	100.0	98.5	100.0
1" (25mm)		97.6	100.0	37.4	100.0
3/4" (19mm)		80.8	100.0	11.4	96.9
1/2" (12.5mm)		43.1	95.2	3.7	71.0
3/8" (9.5mm)	100.0	28.1	84.6	3.0	46.3
#4 (4.75mm)	96.5	6.5	20.4	2.8	11.1
#8 (2.36mm)	83.9	3.3	5.4	2.7	4.9
#16 (1.18mm)	69.3	2.8	3.2	2.6	3.7
#30 (.6mm)	49.6	2.7	2.7	2.5	3.4
#50 (.3mm)	23.1	2.6	2.4	2.4	3.2
#100 (.15mm)	6.8	2.4	2.3	2.2	3.0
#200 (75µm)	1.7	2.21	2.1	2.0	2.7
Pan	0.0	0.00	0.0	0.0	0.0
FM	2.71				
Wash Loss (#200/75um)	1.4	2.0	2.1	1.8	2.6
Total Moisture	4.40	2.37	2.35	1.21	2.81

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **12**

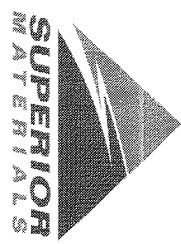
Sample Date: **4/22/24**

Dates Test Represents: **4/23/2024** through **4/29/2024**

Concrete Grade: **S2M, 3500HP**

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
 30701 W. 10 Mile Rd.
 Suite 500
 Farmington Hills, MI 48336

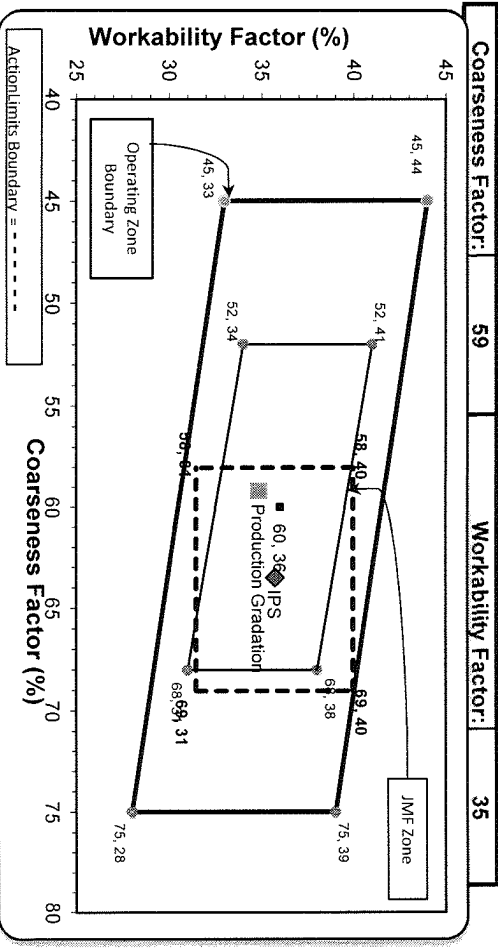
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	71-47	Presque Isle	1620	9.91	2.62	53.1
26A	71-47	Presque Isle	200	1.22	2.62	6.6
2NS	63-115	Ray Rd	1230	7.44	2.65	40.3
Total Wt						3050
						100.0

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"	99.4	100.0	100.0	99.7	0.3	0.3
3/4"	86.4	100.0	100.0	92.8	6.9	7.2
1/2"	50.3	94.6	100.0	73.2	19.5	26.8
3/8"	29.3	84.7	100.0	61.4	11.8	38.6
#4	5.5	18.2	96.8	43.2	18.3	56.8
#8	2.9	3.6	82.0	34.8	8.3	65.2
#16	2.6	1.9	65.3	27.8	7.0	72.2
#30	2.5	1.6	48.6	21.0	6.8	79.0
#50	2.4	1.5	23.5	10.9	10.2	89.1
#100	2.3	1.5	3.3	2.7	8.2	97.3
LBW	2.0	1.3	0.5	1.3	1.3	98.7

*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

Initial Production Sample (IPS)



Sieve	Coarseness Factor:	Workability Factor:	Cumulative % Passing	% Retained	Cumulative % Retained
2"	59	35	100.0	0.0	0.0
1.5"	59	35	100.0	0.0	0.0
1"	59	35	99.2	0.8	0.8
3/4"	59	35	90.9	8.3	9.1
1/2"	59	35	71.3	19.6	28.7
3/8"	59	35	59.2	12.1	40.8
#4	59	35	41.5	17.7	58.5
#8	59	35	35.7	5.8	64.3
#16	59	35	27.9	7.9	72.1
#30	59	35	18.3	9.5	81.7
#50	59	35	7.3	11.0	92.7
#100	59	35	2.0	5.3	98.0
LBW	59	35	0.9	1.1	99.1

PREPARED BY:
 SM, LLC Technical Service

Approved By: _____



Product Quality Summary Report

Period	04/21/2024 - 04/27/2024				
Plant	S12 Onsite Southifeld	S12 Onsite Southifeld	S12 Onsite Southifeld	S12 Onsite Southifeld	S12 Onsite Southifeld
Product	1022 2NS GR	1051 6AA LS	1067 26A Mod LS	7919 COARSE AGG P1M LS	7920 INTERMED AGG P1M LS
Specification	2NS GR Spec	6AA LS	26A Mod LS Spec	Coarse Agg P1M LS Target	Intermed Agg P1M LS Target
2" (50mm)		100.0	100.0	100.0	100.0
1 1/2" (37.5mm)		100.0	100.0	96.9	100.0
1" (25mm)		97.0	100.0	33.0	100.0
3/4" (19mm)		81.0	100.0	9.5	97.3
1/2" (12.5mm)		38.9	93.6	3.1	75.5
3/8" (9.5mm)	100.0	22.4	81.8	2.5	50.8
#4 (4.75mm)	95.8	4.4	17.3	2.4	9.3
#8 (2.36mm)	80.2	2.6	4.4	2.3	3.0
#16 (1.18mm)	64.8	2.3	2.9	2.3	2.3
#30 (.6mm)	48.3	2.2	2.4	2.2	2.1
#50 (.3mm)	24.3	2.1	2.2	2.1	2.0
#100 (.15mm)	5.3	2.0	1.9	1.9	2.0
#200 (75µm)	1.0	1.82	1.8	1.6	1.8
Pan	0.0	0.00	0.0	0.0	0.0
FM	2.81				
Wash Loss (#200/75um)	1.0	1.7	1.8	1.4	1.7
Total Moisture	3.49	2.58	2.52	0.79	1.78

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-102**

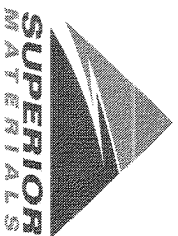
Sample Date: **4/22/24**

Dates Test Represents: **4/23/2024** through **4/29/2024**

Concrete Grade: **S2M, 3500HP**

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

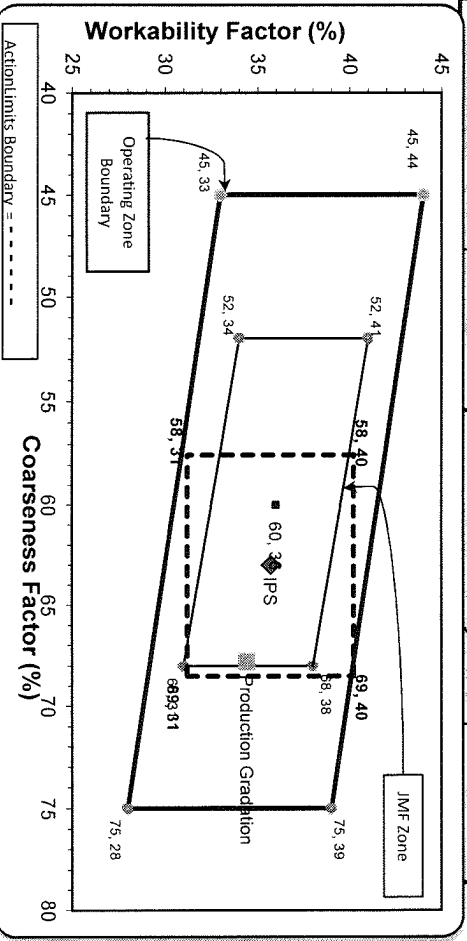
Agg. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %	
GAA	58-003	Stonoco	1500	8.94	2.69	48.4	
26A	58-003	Stonoco	400	2.38	2.69	12.9	
2NS	63-114	Highland	1200	7.26	2.65	38.7	
Total Wt						3100	100.0

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"	82.4	100.0	100.0	91.5	8.5	8.5
1/2"	35.6	97.0	100.0	68.5	23.0	31.5
3/8"	12.7	82.9	100.0	55.6	12.9	44.4
#4	2.5	20.2	99.2	42.2	13.3	57.8
#8	1.4	7.2	84.8	34.4	7.8	65.6
#16	1.2	4.4	66.1	26.7	7.7	73.3
#30	1.1	3.6	46.5	19.0	7.7	81.0
#50	1.0	3.3	19.3	8.4	10.6	91.6
#100	1.0	3.1	4.5	2.6	5.8	97.4
LBW	0.9	2.9	1.5	1.4	1.2	98.6

*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: **68** Workability Factor: **34**



Initial Production Sample (IPS)

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

Coarseness Factor: **63** Workability Factor: **36**

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Product Quality Summary Report

Period 04/21/2024 - 04/27/2024

Plant	S102 Superior Novi	S102 Superior Novi	S102 Superior Novi	S102 Superior Novi	S102 Superior Novi
Product	1022 2NS GR	1051 6AA LS	1067 26A Mod LS	7919 COARSE AGG P1M LS	7920 INTERMED AGG P1M LS
Specification	2NS GR Spec	6AA LS	26A Mod LS Spec	Coarse Agg P1M LS Target	Intermed Agg P1M LS Target
2" (50mm)		100.0	100.0	100.0	100.0
1 1/2" (37.5mm)		100.0	100.0	100.0	100.0
1" (25mm)		100.0	100.0	60.5	100.0
3/4" (19mm)		82.4	100.0	32.0	100.0
1/2" (12.5mm)		35.6	97.0	19.1	94.8
3/8" (9.5mm)	100.0	12.7	82.9	13.5	80.0
#4 (4.75mm)	99.2	2.5	20.2	3.6	18.8
#8 (2.36mm)	84.8	1.4	7.2	2.6	4.7
#16 (1.18mm)	66.1	1.2	4.4	2.4	2.7
#30 (.6mm)	46.5	1.1	3.6	2.2	2.2
#50 (.3mm)	19.3	1.0	3.3	2.1	2.0
#100 (.15mm)	4.5	1.0	3.1	1.9	1.9
#200 (75µm)	1.7	0.92	3.0	1.6	1.8
Pan	0.0	0.00	0.0	0.0	0.0
FM	2.80				
Wash Loss (#200/75µm)	1.5	0.9	2.9	1.5	1.8
Total Moisture	3.61	2.96	4.84	1.41	3.32

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-103**

Sample Date: **4/22/24**

Dates Test Represents: **4/23/2024** through **4/29/2024**

Concrete Grade: **S2M, 3500HP**

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

Aggr. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
6AA	58-003	Stoneco	1500	8.94	2.69	48.4
26A	58-003	Stoneco	400	2.38	2.69	12.9
2NS	63-114	Highland	1200	7.26	2.65	38.7
		Total Wt.	3100	18.58		100.0

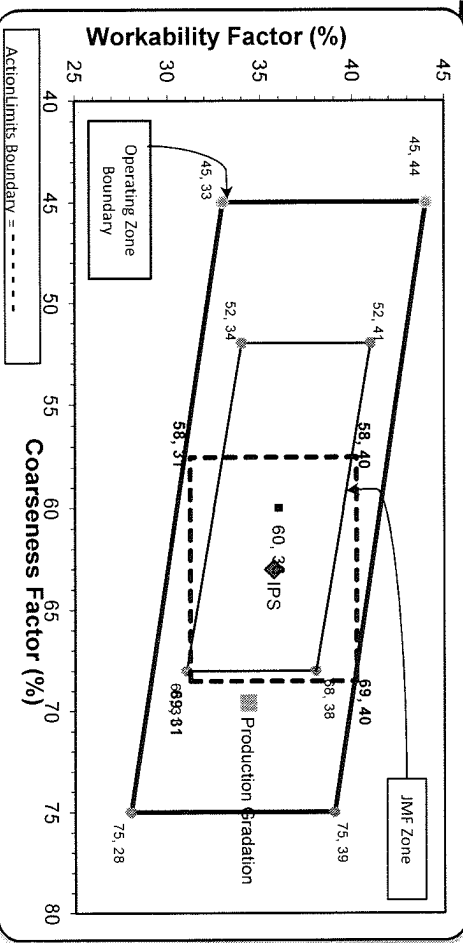
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.0	100.0	100.0	99.5	0.5	0.5
3/4"	74.4	100.0	100.0	87.6	11.9	12.4
1/2"	31.7	99.1	100.0	66.8	20.8	33.2
3/8"	8.8	87.8	100.0	54.3	12.5	45.7
#4	2.3	9.5	99.1	40.7	13.6	59.3
#8	1.9	3.0	85.3	34.3	6.4	65.7
#16	1.6	2.1	67.3	27.1	7.2	72.9
#30	1.4	1.9	48.0	19.5	7.6	80.5
#50	1.3	1.8	20.4	8.8	10.7	91.2
#100	1.2	1.7	4.8	2.7	6.1	97.3
LBW	1.0	1.7	1.6	1.3	1.3	98.7

Verify this number is 100%

*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: **70** Workability Factor: **34**



Initial 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: _____



Product Quality Summary Report

Period 04/21/2024 - 04/27/2024

	Plant	S103 Superior Brighton	S103 Superior Brighton	S103 Superior Brighton
	Product	1022 2NS GR	1051 6AA LS	1067 26A Mod LS
	Specification	2NS GR Spec	6AA LS	26A Mod LS Spec
2" (50mm)			100.0	100.0
1 1/2" (37.5mm)			100.0	100.0
1" (25mm)			99.0	100.0
3/4" (19mm)			74.4	100.0
1/2" (12.5mm)			31.7	99.1
3/8" (9.5mm)	100.0	8.8	87.8	
#4 (4.75mm)	99.1	2.3	9.5	
#8 (2.36mm)	85.3	1.9	3.0	
#16 (1.18mm)	67.3	1.6	2.1	
#30 (.6mm)	48.0	1.4	1.9	
#50 (.3mm)	20.4	1.3	1.8	
#100 (.15mm)	4.8	1.2	1.7	
#200 (75µm)	1.6	1.09	1.7	
Pan	0.0	0.00	0.0	
FM	2.75			
Wash Loss (#200/75um)	1.6	1.0	1.7	
Total Moisture	4.44	2.06	1.69	

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-02**

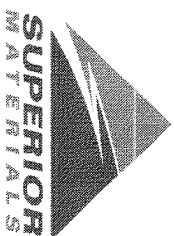
Sample Date: **4/22/24**

Dates Test Represents: **4/23/2024** through **4/29/2024**

Concrete Grade: **S2M, 3500HP**

Contractor: _____

MDOT No.: _____



Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmington Hills, MI 48336

Aggr. Class	Pit #	Source	Weight (SSD)	ft ³	Specific Gravity	Contribution %
GAA	71-47	Presque Isle	1620	9.91	2.62	53.1
26A	71-47	Presque Isle	200	1.22	2.62	6.6
ZNS	63-115	Ray Rd	1230	7.44	2.65	40.3
			Total Wt	3050		100.0

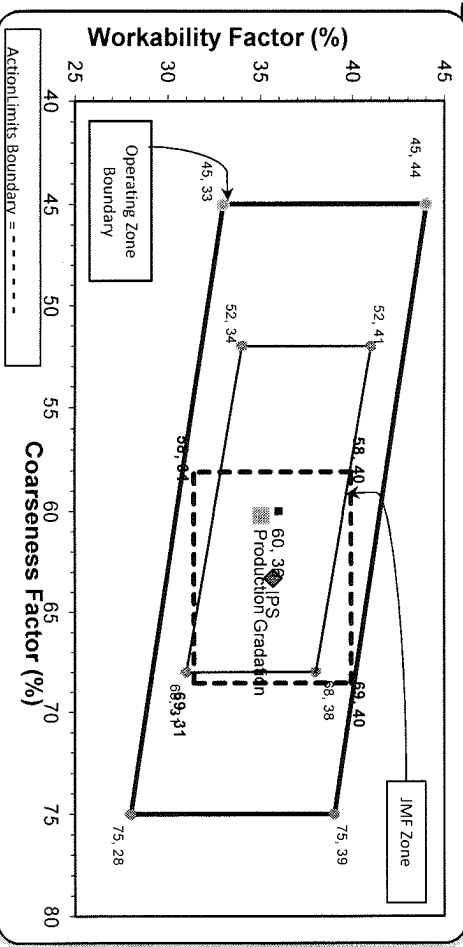
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	99.4	100.0	100.0	99.7	0.3	0.3
3/4"	84.2	100.0	100.0	91.6	8.1	8.4
1/2"	43.9	95.4	100.0	69.9	21.7	30.1
3/8"	28.4	83.6	100.0	60.9	9.0	39.1
#4	6.1	20.8	97.8	44.0	16.8	56.0
#8	3.1	5.1	82.0	35.0	9.0	65.0
#16	2.7	2.9	66.2	28.3	6.7	71.7
#30	2.5	2.4	49.5	21.4	6.9	78.6
#50	2.4	2.2	24.0	11.1	10.3	88.9
#100	2.3	2.1	4.2	3.1	8.0	96.9
LBW	1.8	1.8	0.5	1.3	1.8	98.7

Verify this number is 100%

*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: **60** Workability Factor: **35**



Initial Production Sample (IPS)

Sieve	Coarseness Factor:	Workability Factor:	% Cumulative Passing	% Retained	% Cumulative Retained
2"	63	36	100.0	0.0	0.0
1.5"			100.0	0.0	0.0
1"			100.0	0.0	0.0
3/4"			95.6	4.4	4.4
1/2"			73.1	22.6	26.9
3/8"			59.3	13.8	40.7
#4			42.8	16.5	57.2
#8			35.7	7.1	64.3
#16			28.9	6.8	71.1
#30			20.7	8.2	79.3
#50			9.9	10.8	90.1
#100			2.1	7.8	97.9
LBW			0.9	1.2	99.1

PREPARED BY:
SM, LLC Technical Service

Approved By: _____



Product Quality Summary Report

Period 04/21/2024 - 04/27/2024

	Plant	S02 Hoover	S02 Hoover	S02 Hoover
	Product	1022 2NS GR	1051 6AA LS	1067 26A Mod LS
	Specification	2NS GR Spec	6AA LS	26A Mod LS Spec
2" (50mm)			100.0	100.0
1 1/2" (37.5mm)			100.0	100.0
1" (25mm)			99.4	100.0
3/4" (19mm)			84.2	100.0
1/2" (12.5mm)			43.9	95.4
3/8" (9.5mm)		100.0	28.4	83.6
#4 (4.75mm)		97.8	6.1	20.8
#8 (2.36mm)		82.0	3.1	5.1
#16 (1.18mm)		66.2	2.7	2.9
#30 (.6mm)		49.5	2.5	2.4
#50 (.3mm)		24.0	2.4	2.2
#100 (.15mm)		4.2	2.3	2.1
#200 (75µm)		0.5	1.98	1.9
Pan		0.0	0.00	0.0
FM		2.76		
Wash Loss (#200/75um)		0.5	1.8	1.8
Total Moisture		4.73	3.49	2.72