Aggregate Optimization Chart

Production Gradation Report

PLANT #: P-101 Contractor:

Sample Date: 9/13/21 DM Concrete Grade: Dates Test Represents: 9/14/2021 9/20/2021 through

Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1560	9.54	2.62	53.6
26A	71-47	Presque Isle	200	1.22	2.62	6.9
2NS	75-051	Mid-Michigan	1150	6.93	2.66	39.5
		Total Wt	2910	17.69		100.0

MDOT No.:

Coarseness Factor:

Workability Factor:

SUPERIOR MATERIALS

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

62

*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 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

	Total Wt	2910	17.69		100.0	< Verify this n	umber is 100%
Sieve	6AA	26	6 A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	10	0.0	100.0	100.0	0.0	0.0
1.5"	100.0	10	0.0	100.0	100.0	0.0	0.0
1"	98.4	10	0.0	100.0	99.1	0.9	0.9
3/4"	84.2	10	0.0	100.0	91.5	7.6	8.5
1/2"	43.1	97	7.8	100.0	69.3	22.2	30.7
3/8"	23.5	89	9.3	100.0	58.3	11.1	41.7
#4	3.5	16	6.8	99.1	42.2	16.1	57.8
#8	2.0	4	.6	82.4	34.0	8.2	66.0
#16	1.6	2	.9	66.1	27.2	6.8	72.8
#30	1.6	2	.5	50.7	21.1	6.1	78.9
#50	1.5	2.2		27.1	11.7	9.4	88.3
#100	1.4	2	.0	7.2	3.7	7.9	96.3
LBW	1.3	1	.8	1.0	1.2	2.5	98.8

75, 28

80

75

 Batch Plant Gradations Aggregate Supplier Gradations **Production Gradation** Adjusted WF Initial Production Sample (IPS) **Coarseness Factor: Workability Factor:** 34 36.5 63 45 JMF Zone 45, 44 Workability Factor (%) ■ 60, 3 Production Gradation 52, 34 45, 33

Coarseness Factor (%)⁷⁰

ability i actori	•	
Cumulative	%	Cumulative
% Passing	Retained	% Retained
100.0	0.0	0.0
100.0	0.0	0.0
100.0	0.0	0.0
95.0	5.0	5.0
70.5	24.5	29.5
60.0	10.5	40.0
44.4	15.6	55.6
35.5	9.0	64.5
28.5	7.0	71.5
21.5	7.0	78.5
10.2	11.3	89.8
3.1	7.1	96.9
1.3	1.8	98.7
	Cumulative % Passing 100.0 100.0 100.0 95.0 70.5 60.0 44.4 35.5 28.5 21.5 10.2 3.1	Cumulative % % Passing Retained 100.0 0.0 100.0 0.0 100.0 0.0 95.0 5.0 70.5 24.5 60.0 10.5 44.4 15.6 35.5 9.0 28.5 7.0 21.5 7.0 10.2 11.3 3.1 7.1

PREPARED BY: SM, LLC Technical Service

50

Operating Zone

Boundary

ActionLimits Boundary = - - - - -

Approved By:

PLANT #: P-102

Sample Date:

9/13/21 DM Concrete Grade:

36.4

Coarseness Factor:

Contractor:

Dates Test F	Represents:	9/14/2021	through	9/20/2021		
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	255	1.52	2.69	8.6
2NS	63-114	Highland	1150	6.95	2.65	38.9
		Total Wt	2955	17.71		100.0

MDOT No.:

--- Verify this number is 100%

SUPER	RIOR

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

					•	
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"	85.9	100.0	100.0	92.6	7.4	7.4
1/2"	43.8	99.5	100.0	70.5	22.1	29.5
3/8"	21.6	83.9	100.0	57.5	13.0	42.5
#4	3.9	13.3	98.4	41.5	16.0	58.5
#8	1.3	4.1	84.4	33.9	7.6	66.1
#16	1.1	2.8	68.4	27.4	6.4	72.6
#30	1.0	2.3	48.6	19.6	7.8	80.4
#50	0.8	2.0	17.7	7.5	12.2	92.5
#100	0.8	1.9	3.4	1.9	5.6	98.1
LBW	0.6	1.7	0.7	0.7	1.2	99.3
Production Gradation	Batch Plant Gradations	Aggregate Supplier Gra	adations	Adjusted WF	Intial Production	on Sample (IPS

*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 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

Coarseness Factor:	64	Workability Factor:	34	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 34	68, 38 60 28 Production Grad	JMF Zone 75, 39	
N 25 Houndary	50 5	5 60 65 70 Coarseness Factor (%)	75, 28 75	80
ActionLimits Boundary =				

Work	ability Factor:	36	
Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.3	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

61

PLANT #: P-20 Contractor:

Sample Date: 9/13/21 DM Concrete Grade: Dates Test Represents: 9/14/2021 9/20/2021 through

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	63-92	Grange Hall	1100	6.65	2.65	37.9
		Total Wt	2905	17.69		100.0

MDOT No.:

---- Verify this number is 100%

SUPER	IOR

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

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"	89.7	100.0	100.0	94.3	5.4	5.7
1/2"	52.9	96.9	100.0	73.8	20.5	26.2
3/8"	30.8	84.3	100.0	60.7	13.1	39.3
#4	6.2	16.0	97.9	41.6	19.1	58.4
#8	2.4	4.9	84.4	33.6	8.0	66.4
#16	1.7	2.7	69.2	27.3	6.3	72.7
#30	1.6	2.2	49.5	19.8	7.5	80.2
#50	1.5	2.0	21.5	9.1	10.7	90.9
#100	1.5	1.9	3.3	2.2	6.9	97.8
LBW	1.4	1.7	0.5	1.1	1.1	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 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation	O Batch Plant Gra	dations	ns	Adjusted WF	Intial Producti	on Sample (IPS)
Coarseness Factor:	59	Workability Factor:	bility Factor: 34 36.1 Coarseness Fac		eness Factor:	
45 —					Work	ability Factor:
45, 44			JMF Zone	7] 	Sieve	Cumulative
1 3,44			31111 20110	-	Sieve	% Passing
	52, 41	57, 40 68, 40		- 11	2"	100.0
(a) 40]			75, 39	- 11	1.5"	100.0
		68, 38	Ĭ	- 11	1"	100.0
Factor 35		■ Pr ød u gt eppeGradation			3/4"	89.2
5 35		= 199490/P/S-1444101		- 11	1/2"	68.4
	52, 34	i			3/8"	59.9
45, 33				- 11	#4	43.0
Atj. 33 Operating Zone Boundary		57, 32 68, 32			#8	35.9
Operating Zone				- 11	#16	29.0
Boundary			75, 28	- 11	#30	21.3
					#50	9.9
25 1					#100	2.4
40 45	50 55	Coarseness Factor (%)	75	80	LBW	1.2
ActionLimits Boundary =						

Work	ability Factor:	36	
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"	89.2	10.8	10.8
1/2"	68.4	20.8	31.6
3/8"	59.9	8.6	40.1
#4	43.0	16.9	57.0
#8	35.9	7.1	64.1
#16	29.0	6.8	71.0
#30	21.3	7.7	78.7
#50	9.9	11.4	90.1
#100	2.4	7.5	97.6
LBW	1.2	1.2	98.8

63

Aggregate Optimization Chart

9/13/21

9/14/2021

PLANT #: P-32

Sample Date:

Dates Test Represents:

DM Concrete Grade:

Contractor:

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

37.0

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	95-013	Smelter Bay	1150	6.95	2.65	39.6
		Total Wt	2905	17.69		100.0

through

%	
tribution	
55.1	
5.3	
39.6	

<---- Verify this number is 100%</p>

SUPERIOR MATERIALS	

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

	TOtal Wi	2905 17.09		100.0	< verily this if	uniber 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"	97.2	100.0	100.0	98.5	1.5	1.5
3/4"	86.3	100.0	100.0	92.5	6.0	7.5
1/2"	49.1	97.9	100.0	71.9	20.6	28.1
3/8"	28.2	91.0	100.0	60.0	11.9	40.0
#4	5.7	28.6	95.2	42.4	17.6	57.6
#8	3.2	7.5	81.6	34.5	7.9	65.5
#16	2.4	3.3	66.1	27.7	6.8	72.3
#30	2.3	2.5	48.2	20.5	7.2	79.5
#50	2.2	2.3	24.2	10.9	9.6	89.1
#100	1.9	2.1	7.8	4.2	6.7	95.8
LBW	1.5	1.8	1.4	1.5	2.8	98.5
Production Grad	lation O Batch Plant Grada	tions	adations	Adjusted WF	Intial Production	on Sample (IPS)

9/20/2021

*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.

62

*% Retained must be at least 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

Coarseness Factor:	61	Workability Factor:	34	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 34	56, 40 67, 40 68, 38 Production Gradation 60, 38S 68, 31	75, 39	
25 + 40 45 ActionLimits Boundary =	50	Coarseness Factor (%)	75	80

Work	ability Factor:	36	
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"	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

PLANT #: P-35

9/13/21

Sample Date:

Production Gradation

DM Concrete Grade:

MDOT No.:

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

Contractor:

Dates Test F	Represents:	9/14/2021	through	9/20/2021		
Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1555	9.26	2.69	52.6
26A	58-003	Stoneco	300	1.79	2.69	10.2
2NS	81-093	Burmeister	1100	6.65	2.65	37.2
		Total Wt	2955	17.70		100.0



Superior Materials, LL	<u>C</u>
30701 W. 10 Mile Rd.	
Suite 500	
Farmington Hills, MI 483	36

	i Otai VVI	2933 17.70		< Verily this number is 100%		umber 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"	85.9	100.0	100.0	92.6	7.4	7.4
1/2"	43.8	99.5	100.0	70.4	22.2	29.6
3/8"	21.6	83.9	100.0	57.1	13.3	42.9
#4	3.9	13.3	98.8	40.2	16.9	59.8
#8	1.3	4.1	84.7	32.6	7.6	67.4
#16	1.1	2.8	66.9	25.8	6.9	74.2
#30	1.0	2.3	46.0	17.9	7.9	82.1
#50	0.8	2.0	14.2	5.9	12.0	94.1
#100	0.8	1.9	1.9	1.3	4.6	98.7
LBW	0.6	1.7	0.6	0.7	0.6	99.3

Aggregate Supplier Gradations

*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 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

Coarseness Factor:	Coarseness Factor: 64 Workability Factor:		33	35.1
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 41 56, 52, 34	● 60 ₁ β€ Production Gradation	75, 28	
40 45 ActionLimits Boundary =	50 55	Coarseness Factor (%)	75	80

Batch Plant Gradations

Work	ability Factor:	36	
Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.3	0.7	0.7
3/4"	89.1	10.2	10.9
1/2"	70.5	18.6	29.5
3/8"	60.5	10.0	39.5
#4	44.1	16.4	55.9
#8	35.6	8.5	64.4
#16	27.7	7.9	72.3
#30	20.6	7.1	79.4
#50	8.7	11.8	91.3
#100	1.6	7.1	98.4
LBW	1.1	0.6	98.9

Aggregate Optimization Chart

9/13/21

9/14/2021

PLANT #: P-36

Sample Date:

Dates Test Represents:

DM Concrete Grade:

Contractor:

Agg. Class	Pit#	Source	Weight (SSD)	ft ³	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1405	8.59	2.62	48.4
26A	71-47	Presque Isle	400	2.45	2.62	13.8
2NS	63-92	Grange Hall	1100	6.65	2.65	37.9
		Total Wt	2905	17.69		100.0

through

MDOT No.:

Verify this number is 100%

Coarseness Factor:

SUPER	IOR

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.,

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 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

	i otai vvt	2905 17.69		100.0	< Verify this n	umber 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"	96.5	100.0	100.0	98.3	1.7	1.7
3/4"	69.2	100.0	100.0	85.1	13.2	14.9
1/2"	30.4	97.9	100.0	66.0	19.1	34.0
3/8"	12.9	91.0	100.0	56.6	9.4	43.4
#4	3.1	28.6	97.9	42.5	14.1	57.5
#8	2.1	7.5	84.4	34.0	8.5	66.0
#16	1.7	3.3	69.2	27.5	6.5	72.5
#30	1.4	2.5	49.5	19.8	7.7	80.2
#50	1.4	2.3	21.5	9.1	10.6	90.9
#100	1.3	2.1	3.3	2.2	7.0	97.8
LBW	1.0	1.8	0.5	0.9	1.2	99.1
Production Grad	dation O Batch Plant Grada	tions Aggregate Supplier	Gradations	Adjusted WF	Intial Production	on Sample (IPS

9/20/2021

Production Gradation Adjusted WF Intial Production Sample (IPS) **Coarseness Factor: Workability Factor:** 34 36.5 66 45 JMF Zone 45, 44 Workability Factor (%) Production Gradation 52, 34 45, 33 Operating Zone

Coarseness Factor (%) 70

75

80

Work	ability Factor:	35	
Sieve	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	99.1	0.9	0.9
3/4"	90.3	8.8	9.7
1/2"	69.2	21.1	30.8
3/8"	59.1	10.1	40.9
#4	41.8	17.3	58.2
#8	35.1	6.6	64.9
#16	28.5	6.6	71.5
#30	21.2	7.3	78.8
#50	8.7	12.5	91.3
#100	1.8	7.0	98.2
LBW	0.7	1.0	99.3

63

PREPARED BY: SM, LLC Technical Service

50

55

Boundary

45

ActionLimits Boundary = - - - - -

25

PLANT #: P-39 Contractor:

Sample Date: 9/13/21 DM Concrete Grade: Dates Test Represents: 9/14/2021 9/20/2021 through

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	1100	6.65	2.65	37.9
		Total Wt	2905	17.69		100.0

MDOT No.:

---- Verify this number is 100%

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

SUPERIOR	
MATERIALS	

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

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"	98.4	100.0	100.0	99.1	0.9	0.9
3/4"	84.2	100.0	100.0	91.3	7.8	8.7
1/2"	43.1	97.8	100.0	68.4	22.9	31.6
3/8"	23.5	89.3	100.0	57.0	11.4	43.0
#4	3.5	16.8	97.6	40.0	17.0	60.0
#8	2.0	4.6	79.8	31.6	8.4	68.4
#16	1.6	2.9	63.2	25.0	6.6	75.0
#30	1.6	2.5	47.7	19.1	5.9	80.9
#50	1.5	2.2	26.2	10.9	8.2	89.1
#100	1.4	2.0	8.9	4.3	6.6	95.7
LBW	1.3	1.8	1.2	1.3	3.0	98.7

Aggregate Supplier Gradations

*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.

63

*% Retained must be at least 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

Coarseness Factor:	63	Workability Factor:	32	34.1
45 45, 44 40 45, 44 45, 33 45, 33 Operating Zone Boundary	52, 41	58, 40 68, 38 68, 38 Production Gradation 58, 32	75, 39 75, 28	
40 45 ActionLimits Boundary =	50 55	Coarseness Factor (%) ⁷⁰	75	80

Batch Plant Gradations

Production Gradation

Work	ability Factor:	36	
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"	89.7	10.3	10.3
1/2"	70.3	19.4	29.7
3/8"	59.1	11.2	40.9
#4	42.8	16.3	57.2
#8	35.5	7.3	64.5
#16	29.0	6.5	71.0
#30	21.2	7.7	78.8
#50	9.8	11.5	90.2
#100	3.7	6.1	96.3
LBW	1.2	2.5	98.8

PLANT #: P-02 Contractor: Sample Date: 9/13/21 DM Concrete Grade:

2.65

37.9

34.0

Adjusted WF Intial Production Sample (IPS)

Coarseness Factor:

Dates Test Represents: 9/14/2021 9/20/2021 through Specific % ft³ Agg. Class Pit# Weight (SSD) Source Gravity Contribution 6AA 71-47 Presque Isle 1505 9.21 51.8 2.62 26A 71-47 Presque Isle 300 1.83 2.62 10.3

1100

MDOT No.:



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

	Ťotal W	/t 2905	17.69		100.0 < Verify this number is 100		umber is 100%
Sieve	6AA	26	6 A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	10	0.0	100.0	100.0	0.0	0.0
1.5"	100.0	10	0.0	100.0	100.0	0.0	0.0
1"	96.5	10	100.0		98.2	1.8	1.8
3/4"	69.2	10	100.0		84.0	14.1	16.0
1/2"	30.4	97	97.9		63.7	20.3	36.3
3/8"	12.9	9′	1.0	100.0	53.9	9.8	46.1
#4	3.1	28	3.6	95.1	40.6	13.4	59.4
#8	2.1	7	.5	78.2	31.5	9.1	68.5 r
#16	1.7	3	3.3		25.0	6.4	75.0
#30	1.4	2	2.5		19.1	5.9	80.9 r
#50	1.4	2	2.3		11.2	7.9	88.8
#100	1.3	2	2.1		3.5	7.6	96.5
LBW	1.0	1	.8	1.0	1.1	2.5	98.9

Aggregate SupplierGradations

6.65

*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.

63

*% Retained must be at least 8% for the 1" sieve when

a 2" max. size (nom. Max. 1.5") aggregate is used.

Coarseness Factor:	67	Workability Factor:	31	
45 45, 44 45, 44 45, 33 Operating Zone Boundary	52, 41	58, 39 68, 39 68, 38 Product 58, 31 68, 38	JMF Zone 75, 39 ion Gradation 75, 28	
25 40 45 ActionLimits Boundary =	50 55	Coarseness Factor (%)	75	80

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"	95.1	4.9	4.9
1/2"	74.6	20.5	25.4
3/8"	59.3	15.3	40.7
#4	42.1	17.2	57.9
#8	35.1	7.1	64.9
#16	29.2	5.9	70.8
#30	21.9	7.3	78.1
#50	9.6	12.4	90.4
#100	2.4	7.2	97.6
LBW	0.9	1.5	99.1

PREPARED BY: SM, LLC Technical Service

2NS

Production Gradation

63-115

Ray Rd

Batch Plant Gradations