PLANT #: P-101

Sample Date:

4/18/22 Concrete Grade: **P1M**, **3500HP** 

Dates Test Represents:		4/19/2022	through	4/25/2022		
Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	71-47	Presque Isle	1070	6.54	2.62	34.9
IA	71-47	Presque Isle	800	4.89	2.62	26.1
2NS	75-051	Mid Michigan	1200	7.23	2.66	39.1

Contractor:

MDOT No.:



Superior Materials, LLC

30701 W. 10 Mile Rd. Suite 500

Farmington Hills, MI 48336

	Total Wt	3070 18.67		100.0	< Verify this n	umber is 100%
Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.2	100.0	100.0	99.4	0.6	0.6
1"	45.7	100.0	100.0	81.1	18.3	18.9
3/4"	13.8	98.7	100.0	69.6	11.5	30.4
1/2"	4.4	82.1	100.0	62.0	7.6	38.0
3/8"	3.3	60.7	100.0	56.1	6.0	43.9
#4	2.6	11.8	98.5	42.5	13.6	57.5
#8	2.2	3.8	83.3	34.3	8.2	65.7 r
#16	2.1	2.4	68.3	28.1	6.3	71.9
#30	1.9	2.1	53.3	22.0	6.0	78.0 r
#50	1.8	2.0	29.2	12.6	9.5	87.4
#100	1.7	1.8	7.3	3.9	8.6	96.1 a
LBW	1.5	1.6	0.6	1.2	2.7	98.8

\*Maximum % Retained must be above the 3/8" sieve.

\*Any two adjacent sieves must equal 10% except max.,

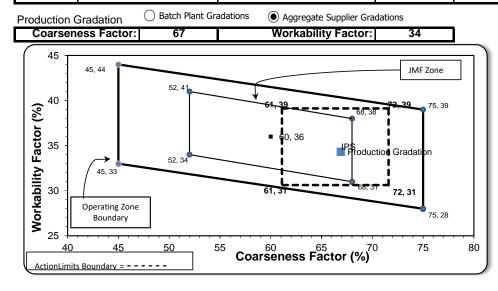
nom. max., #100 and #200 sieves.

 $\ensuremath{^{*}\%}$  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.



Initial Production Sample (IPS)

Coarseness Factor:		66	
Work	Workability Factor:		
Sieve	Cumulative	%	Cumulative
Sieve	% Passing	Retained	% Retained
2"	100.0	0.0	0.0
1.5"	99.6	0.4	0.4
1"	84.3	15.3	15.7
3/4"	74.8	9.6	25.2
1/2"	64.3	10.4	35.7
3/8"	56.8	7.5	43.2
#4	43.0	13.8	57.0
#8	34.9	8.1	65.1
#16	26.4	8.5	73.6
#30	19.9	6.5	80.1
#50	10.4	9.5	89.6
#100	3.4	7.0	96.6
LBW	1.2	2.2	98.8

PREPARED BY: SM, LLC Technical Service

**Total Wt** 

PLANT #: P-102

Sample Date:

4/18/22 Concrete Grade: **P1M**, **3500HP** 

18.69

Dates Test F	Represents:	4/19/2022	tnrougn	4/25/2022		
Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	58-003	Stoneco	1450	8.64	2.69	46.5
IA	58-003	Stoneco	520	3.10	2.69	16.7
2NS	81-019	Pleasant Lake	1150	6.95	2.65	36.9

3120

Contractor:

MDOT No.:

<---- Verify this number is 100%

SUPERIOR MATERIALS	

Superior Materials, LLC 30701 W. 10 Mile Rd. Suite 500

Farmington Hills, MI 48336

Sieve	CA	IA	2NS	% Passing	% Retained	% Retained	
2"	100.0	100.0	100.0	100.0	0.0	0.0	ı
1.5"	100.0	100.0	100.0	100.0	0.0	0.0	ı
1"	66.1	100.0	100.0	84.2	15.8	15.8	ı
3/4"	39.4	100.0	100.0	71.8	12.4	28.2	ı
1/2"	12.2	92.2	100.0	57.9	13.9	42.1	ı
3/8"	5.2	85.0	100.0	53.4	4.5	46.6	ı
#4	2.4	25.8	99.4	42.1	11.4	57.9	ı
#8	2.0	7.0	85.5	33.6	8.4	66.4	n
#16	2.0	3.3	67.7	26.4	7.2	73.6	ı
#30	1.9	2.3	48.8	19.3	7.2	80.7	n
#50	1.8	2.1	23.8	10.0	9.3	90.0	ı
#100	1.8	2.0	6.5	3.6	6.4	96.4	а

\*Maximum % Retained must be above the 3/8" sieve.

\*Any two adjacent sieves must equal 10% except max.,

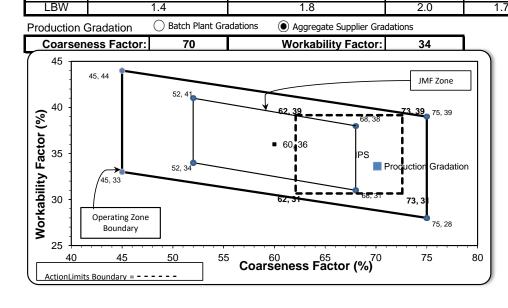
nom. max., #100 and #200 sieves.

\*% 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.



Intial Production Sample (IPS)

Coarseness Factor:		67	
Work	ability Factor:	35	
Sieve	Cumulative	%	Cumulative
Sieve	% Passing	Retained	% Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	85.5	14.5	14.5
3/4"	73.4	12.1	26.6
1/2"	61.0	12.4	39.0
3/8"	56.2	4.8	43.8
#4	43.1	13.1	56.9
#8	34.9	8.2	65.1
#16	29.4	5.5	70.6
#30	21.6	7.8	78.4
#50	8.1	13.4	91.9
#100	2.2	5.9	97.8
LBW	1.4	0.8	98.6

PREPARED BY: SM, LLC Technical Service

PLANT #: P-12

Sample Date:

4/18/22 Concrete Grade: **P1M, 3500HP** 

Dates Test Represents:		4/19/2022	through	4/25/2022		
Agg. Class	Pit#	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	71-47	Presque Isle	1020	6.24	2.62	33.2
IA	71-47	Presque Isle	800	4.89	2.62	26.1
2N/S	63-115	Ray Rd	1250	7 56	2 65	<i>4</i> 0 7

Contractor:

MDOT No.:

SUPERIOR

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

Total Wt		3070	18.69		100.0	< Verify this n	umber is 100%
Sieve	CA	I.	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	10	0.0	100.0	100.0	0.0	0.0
1.5"	98.4	10	0.0	100.0	99.5	0.5	0.5
1"	40.6	10	0.0	100.0	80.3	19.2	19.7
3/4"	6.5	98	3.4	100.0	68.5	11.7	31.5
1/2"	1.4	72	2.1	100.0	60.0	8.5	40.0
3/8"	1.3	46	6.2	100.0	53.2	6.8	46.8
#4	1.3	9	.2	96.3	42.0	11.1	58.0
#8	1.3	4	.5	78.4	33.5	8.5	66.5
#16	1.2	3	.3	61.8	26.4	7.1	73.6
#30	1.2	2	.8	45.6	19.7	6.7	80.3
#50	1.2	2.5		24.6	11.1	8.6	88.9
#100	1.1	2.2		4.2	2.6	8.4	97.4
LBW	0.8	1	.3	0.7	0.9	1.8	99.1

\*Maximum % Retained must be above the 3/8" sieve.

\*Any two adjacent sieves must equal 10% except max.,

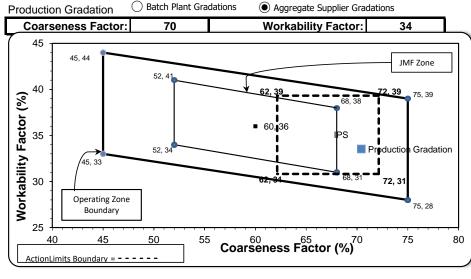
nom. max., #100 and #200 sieves.

 $\ensuremath{^{*}\%}$  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.



Intial Production Sample (IPS)

Coarseness Factor:		67	
Work	ability Factor:	35	
Sieve	Cumulative	%	Cumulative
Sieve	% Passing	Retained	% Retained
2"	100.0	0.0	0.0
1.5"	99.6	0.4	0.4
1"	83.9	15.7	16.1
3/4"	74.0	9.8	26.0
1/2"	63.7	10.3	36.3
3/8"	56.4	7.3	43.6
#4	43.0	13.4	57.0
#8	35.1	7.9	64.9
#16	29.0	6.1	71.0
#30	20.9	8.0	79.1
#50	8.1	12.8	91.9
#100	1.6	6.5	98.4
LBW	0.9	0.8	99.1

PREPARED BY: SM, LLC Technical Service

Total Wt

PLANT #: P-32

Sample Date:

4/18/22 Concrete Grade: P1M, 3500HP

18.69

Jates Test F	Represents:	4/19/2022	4/19/2022 through			
Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	71-47	Presque Isle	920	5.63	2.62	30.0
IA	71-47	Presque Isle	900	5.50	2.62	29.3
2NS	95-013	Smelter Bay	1250	7.56	2.65	40.7

3070

Contractor:

MDOT No.:

<---- Verify this number is 100%

Superior Materials, LLC
30701 W. 10 Mile Rd.
Suite 500
Farmain at an Hills MI 4022C

Farmington Hills, MI 48336

Sieve	CA	IA	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	98.4	100.0	100.0	99.5	0.5	0.5
1"	40.6	100.0	100.0	82.2	17.3	17.8
3/4"	6.5	98.4	100.0	71.5	10.7	28.5
1/2"	1.4	72.1	100.0	62.3	9.2	37.7
3/8"	1.3	46.2	100.0	54.7	7.6	45.3
#4	1.3	9.2	95.7	42.1	12.6	57.9
#8	1.3	4.5	82.1	35.1	6.9	64.9
#16	1.2	3.3	67.9	29.0	6.2	71.0
#30	1.2	2.8	50.0	21.5	7.4	78.5
#50	1.2	2.5	25.0	11.3	10.3	88.7
#100	1.1	2.2	7.9	4.2	7.1	95.8

\*Maximum % Retained must be above the 3/8" sieve.

\*Any two adjacent sieves must equal 10% except max.,

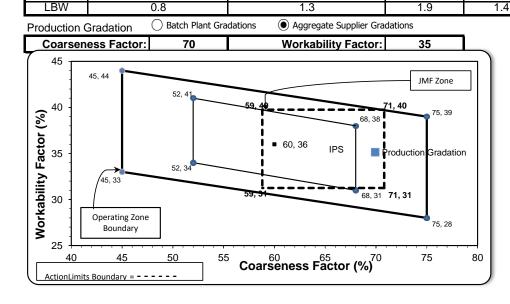
nom. max., #100 and #200 sieves.

\*% 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.



Intial Production Sample (IPS)

98.6

Coars	eness Factor:	65	
Work	ability Factor:	36	
Sieve	Cumulative	%	Cumulative
Sieve	% Passing	Retained	% Retained
2"	100.0	0.0	0.0
1.5"	99.0	0.6	0.6
1"	84.0	15.3	16.0
3/4"	73.5	10.5	26.5
1/2"	65.2	8.2	34.8
3/8"	58.2	7.1	41.8
#4	44.1	14.1	55.9
#8	35.5	8.6	64.5
#16	29.1	6.4	70.9
#30	21.9	7.3	78.1
#50	9.6	12.2	90.4
#100	2.6	7.1	97.4
LBW	1.0	1.6	99.0

PREPARED BY: SM, LLC Technical Service 4/18/22

Stoneco

Stoneco

Pleasant Lake

CA

100.0

100.0

66.1

39.4

12.2

5.2

2.4

2.0

2.0

1.9

1.8

1.8

Total Wt

PLANT #: P-35

Sample Date:

CA

IΑ

2NS

Sieve

2"

1.5"

3/4"

1/2'

3/8'

#4

#8

#16

#30

#50

#100

LBW

Concrete Grade: P1M, 3500HP

Specific

Gravity

2.69

2.69

2.65

2NS

100.0

100.0

100.0

100.0

100.0

100.0

99.4

85.5

67.7

48.8

23.8

6.5

**Dates Test Represents:** 4/19/2022 Pit# Agg. Class Source

58-003

58-003

81-019

4/25/2022 through

IΑ

100.0

100.0

100.0

100.0

92.2

85.0

25.8

7.0

3.3

2.3

2.1

2.0

1.8

Weight (SSD)

1450

520

1150

3120

ft<sup>3</sup>

8.64

3.10

6.95

18.69

	IV
%	
Contribution	
46.5	
16.7	

36.9

100.0

Cumulative

% Passing

100.0

100.0

84.2

71.8

57.9

53.4

42.1

33.6

26.4

19.3

10.0

3.6

MDOT No.:

Contractor:

0.0

0.0

15.8

12.4

13.9

4.5

11.4

8.4

7.2

7.2

9.3

6.4



Farmington Hills, MI 48336

----- Verify this number is 100%

0.0

15.8

28.2

42.1

46.6

57.9

66.4

73.6

80.7

90.0

96.4

% Retained	Cumulative % Retained	
0.0	0.0	Suite 500

\*Maximum % Retained must be above the 3/8" sieve.

\*Any two adjacent sieves must equal 10% except max.,

nom. max., #100 and #200 sieves.

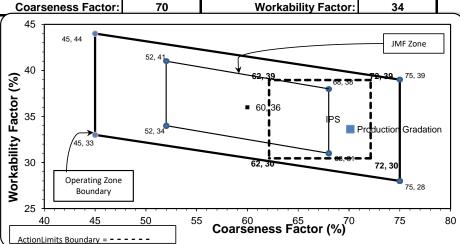
\*% Retained must be at least 4% for each sieve except max.,

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

 Aggregate Supplier Gradations Batch Plant Gradations **Production Gradation** Coarseness Factor: 70



Intial Production Sample (IPS)

Coarseness Factor:		67	
Work	ability Factor:	35	
Sieve	Cumulative	%	Cumulative
Sieve	% Passing	Retained	% Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	86.9	13.1	13.1
3/4"	76.1	10.8	23.9
1/2"	63.7	12.4	36.3
3/8"	56.2	7.5	43.8
#4	43.2	13.0	56.8
#8	34.7	8.5	65.3
#16	27.5	7.2	72.5
#30	20.6	7.0	79.4
#50	9.0	11.6	91.0
#100	2.1	6.9	97.9
LBW	1.0	1.1	99.0

PREPARED BY: SM, LLC Technical Service

PLANT #: P-36

#100

Concrete Grade: P1M, 3500HP

Sample Date: 4/18/22 Dates Test Represents: 4/19/2022 4/25/2022 through

	M
%	
Contribution	
30.0	

2.3

Contractor:

MDOT No.:

	_					
Agg. Class	Pit#	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	71-47	Presque Isle	920	5.63	2.62	30.0
IA	71-47	Presque Isle	950	5.81	2.62	30.9
2NS	63-92	Grange Hall	1200	7.26	2.65	39.1
		Total Wt	3070	18.70		100.0

---- Verify this number is 100%

SUPERIOR MATERIALS

**Superior Materials, LLC** 30701 W. 10 Mile Rd. Suite 500

Farmington Hills, MI 48336

Sieve	CA	IA	2NS	% Passing	% Retained	% Retained	
2"	100.0	100.0	100.0	100.0	0.0	0.0	ĺ
1.5"	98.4	100.0	100.0	99.5	0.5	0.5	ı
1"	40.6	100.0	100.0	82.2	17.3	17.8	ı
3/4"	6.5	98.4	100.0	71.5	10.7	28.5	l
1/2"	1.4	72.1	100.0	61.8	9.7	38.2	l
3/8"	1.3	46.2	100.0	53.8	8.0	46.2	l
#4	1.3	9.2	97.8	41.5	12.3	58.5	l
#8	1.3	4.5	84.5	34.8	6.7	65.2	n
#16	1.2	3.3	68.2	28.0	6.8	72.0	l
#30	1.2	2.8	49.0	20.4	7.7	79.6	n
#50	1.2	2.5	21.2	9.4	11.0	90.6	ĺ

3.4

2.2

\*Maximum % Retained must be above the 3/8" sieve.

\*Any two adjacent sieves must equal 10% except max.,

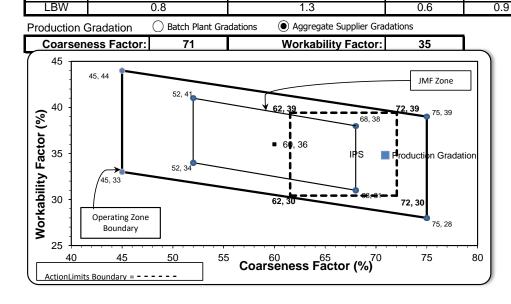
nom. max., #100 and #200 sieves.

\*% 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.



Intial Production Sample (IPS)

97.7

99.1

7.1

Coarseness Factor:		67	
Work	ability Factor:	35	
Sieve	Cumulative	%	Cumulative
Sieve	% Passing	Retained	% Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	85.0	15.0	15.0
3/4"	72.1	12.9	27.9
1/2"	64.5	7.6	35.5
3/8"	56.5	8.0	43.5
#4	42.7	13.8	57.3
#8	34.9	7.8	65.1
#16	29.0	5.9	71.0
#30	21.0	8.0	79.0
#50	8.2	12.8	91.8
#100	1.6	6.5	98.4
LBW	0.7	0.9	99.3

PREPARED BY: SM, LLC Technical Service

1.1

PLANT #: P-39

Sample Date:

Concrete Grade: P1M, 3500HP 4/18/22

Dates Test Represents:		4/19/2022	through	4/25/2022			
	Agg. Class	Pit#	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
	CA	71-47	Presque Isle	1020	6.24	2.62	33.2
	IA	71-47	Presque Isle	800	4.89	2.62	26.1
	2NS	44-051	Krake Willis Rd	1250	7.56	2.65	40.7

Contractor:

MDOT No.:



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

	Total Wt	3070	18.69		100.0	< Verify this n	umber is 100%
Sieve	CA	1,	4	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	10	0.0	100.0	100.0	0.0	0.0
1.5"	98.2	10	0.0	100.0	99.4	0.6	0.6
1"	45.7	10	0.0	100.0	82.0	17.4	18.0
3/4"	13.8	98	3.7	100.0	71.0	10.9	29.0
1/2"	4.4	82	2.1	100.0	63.6	7.4	36.4
3/8"	3.3	60	).7	100.0	57.6	5.9	42.4
#4	2.6	11	.8	96.0	43.0	14.6	57.0
#8	2.2	3	.8	78.4	33.6	9.4	66.4
#16	2.1	2	.4	62.8	26.9	6.7	73.1
#30	1.9	2	.1	46.8	20.2	6.7	79.8
#50	1.8	2	.0	26.2	11.8	8.4	88.2
#100	1.7	1.	.8	8.4	4.5	7.3	95.5
LBW	1.5	1.	.6	1.0	1.3	3.1	98.7

Aggregate SupplierGradations

Coarseness Factor (%) $^{70}$ 

75, 28

80

75

\*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 Coarseness Factor:** 64 **Workability Factor:** 34 JMF Zone Workability Factor (%) 52, 34 Production Gradation

Batch Plant Gradations

Intial Production Sample (IPS)

Coars	eness Factor:	65	
Work	ability Factor:	35	
Sieve	Cumulative	%	Cumulative
Sieve	% Passing	Retained	% Retained
2"	100.0	0.0	0.0
1.5"	99.6	0.4	0.4
1"	83.9	15.7	16.1
3/4"	74.1	9.8	25.9
1/2"	64.3	9.7	35.7
3/8"	57.5	6.8	42.5
#4	44.5	13.1	55.5
#8	35.1	9.4	64.9
#16	27.9	7.2	72.1
#30	21.7	6.2	78.3
#50	12.6	9.1	87.4
#100	3.5	9.1	96.5
LBW	1.2	2.4	98.8

PREPARED BY: SM, LLC Technical Service

50

Operating Zone

Boundary

45

ActionLimits Boundary = - - - - -

PLANT #: P-O2

Sample Date:

4/18/22 Concrete Grade: **P1M, 3500HP** 

Dates Test Represents:		4/19/2022	through	4/25/2022		
Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
CA	71-47	Presque Isle	970	5.93	2.62	31.6
IA	71-47	Presque Isle	850	5.20	2.62	27.7
2NS	63-115	Ray Rd	1250	7.56	2.65	40.7
		Total Wt	3070	18.69		100.0

Contractor:

MDOT No.:



<---- Verify this number is 100%

Cumulative % Retained	
0.0	Suite 500
0.5	Farmington Hills, MI 48336

						. ,	
Sieve	CA	1/	A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	10	0.0	100.0	100.0	0.0	0.0
1.5"	98.4	10	0.0	100.0	99.5	0.5	0.5
1"	40.6	10	0.0	100.0	81.2	18.3	18.8
3/4"	6.5	98	3.4	100.0	70.0	11.2	30.0
1/2"	1.4	72	2.1	100.0	61.1	8.9	38.9
3/8"	1.3	46	5.2	100.0	53.9	7.2	46.1
#4	1.3	9	2	96.3	42.2	11.8	57.8
#8	1.3	4.	5	78.4	33.6	8.6	66.4
#16	1.2	3	3	61.8	26.5	7.1	73.5
#30	1.2	2	.8	45.6	19.7	6.7	80.3
#50	1.2	2	.5	24.6	11.1	8.6	88.9
#100	1.1	2	2	4.2	2.7	8.4	97.3
LBW	0.8	1.	.3	0.7	0.9	1.8	99.1

\*Maximum % Retained must be above the 3/8" sieve.

\*Any two adjacent sieves must equal 10% except max.,

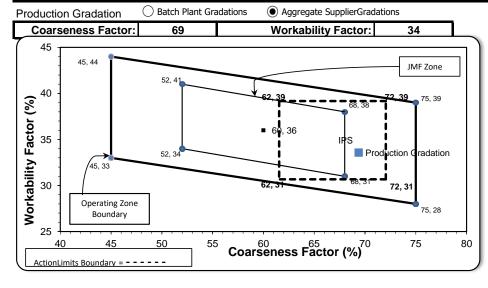
nom. max., #100 and #200 sieves.

\*% 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.



Intial Production Sample (IPS)

Coars	eness Factor:	67	
Work	ability Factor:	35	
Sieve	Cumulative	%	Cumulative
Sieve	% Passing	Retained	% Retained
2"	100.0	0.0	0.0
1.5"	100.0	0.0	0.0
1"	85.0	15.0	15.0
3/4"	72.3	12.7	27.7
1/2"	64.5	7.8	35.5
3/8"	56.5	8.0	43.5
#4	42.7	13.8	57.3
#8	34.9	7.8	65.1
#16	29.0	5.9	71.0
#30	21.0	8.0	79.0
#50	8.2	12.8	91.8
#100	1.6	6.5	98.4
LBW	0.7	0.9	99.3

PREPARED BY: SM, LLC Technical Service