

# Aggregate Optimization Chart

# Production Gradation Report

**PLANT #:** **P-102**

Sample Date: 4/8/24

Concrete Grade: DM, 4500HP

Contractor: \_\_\_\_\_

Dates Test Represents: 4/9/2024 through 4/15/2024

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	58-003	Stoneco	1350	8.04	2.69	45.8
26A	58-003	Stoneco	450	2.68	2.69	15.3
2NS	63-114	Highland	1150	6.95	2.65	39.0
<b>Total Wt</b>			<b>2950</b>	<b>17.68</b>		<b>100.0</b>

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



**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"	86.3	100.0	100.0	93.7	6.3	6.3
1/2"	41.7	97.4	100.0	72.9	20.8	27.1
3/8"	16.8	84.8	100.0	59.6	13.3	40.4
#4	2.5	16.2	99.1	42.2	17.4	57.8
#8	1.3	5.3	85.5	34.7	7.5	65.3
#16	1.1	3.4	66.4	26.9	7.8	73.1
#30	1.0	2.8	46.7	19.1	7.8	80.9
#50	0.9	2.5	19.3	8.3	10.8	91.7
#100	0.9	2.4	3.4	2.1	6.2	97.9
LBW	0.7	2.2	0.6	0.9	1.2	99.1

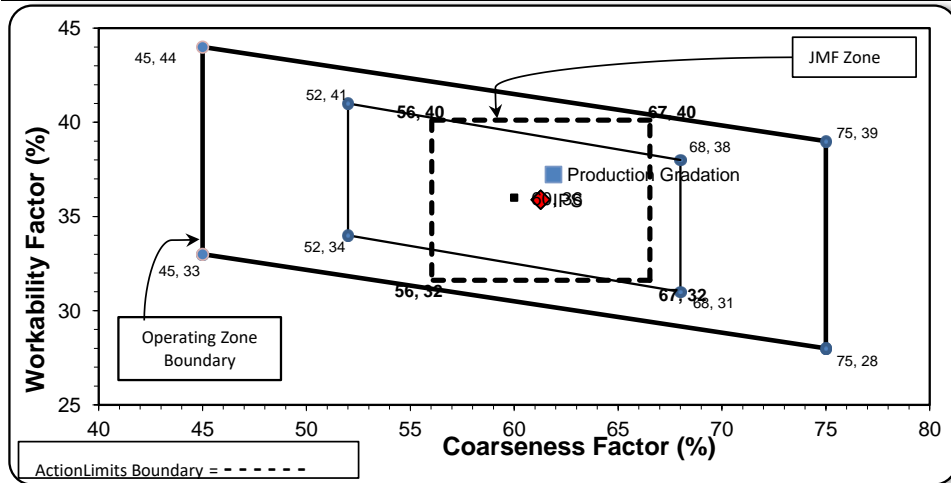
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for the 3/4" sieve when a 1.5"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

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations  Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>62</b>	<b>Workability Factor:</b>	<b>35</b>	<b>37.2</b>
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<b>Coarseness Factor:</b>	<b>61</b>
<b>Workability Factor:</b>	<b>36</b>

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



PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

**PLANT #:** 12

Sample Date: 4/8/24

Dates Test Represents: 4/9/2024 through 4/15/2024

Concrete Grade: DM, 4500HP

Contractor: \_\_\_\_\_

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1450	8.87	2.62	49.9
26A	71-47	Presque Isle	305	1.87	2.62	10.5
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
<b>Total Wt</b>			<b>2905</b>	<b>17.69</b>		<b>100.0</b>

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



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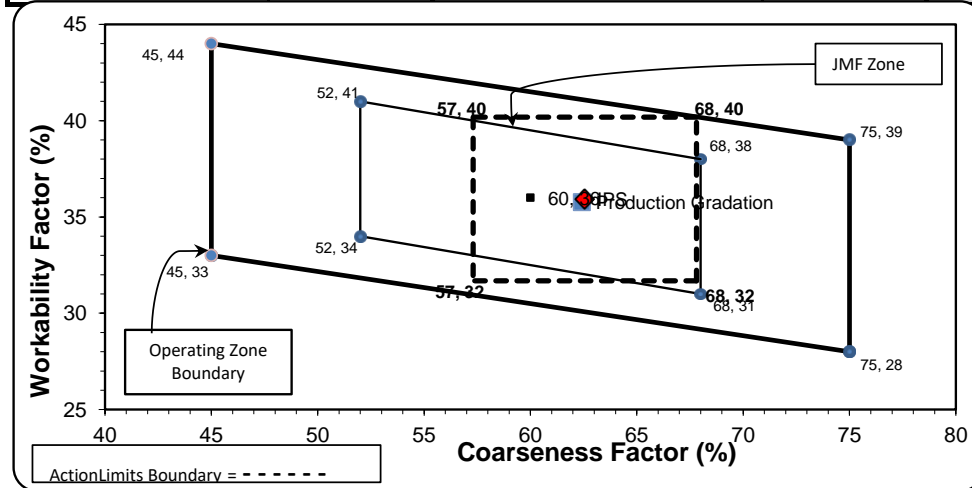
Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.4	100.0	100.0	99.2	0.8	0.8
3/4"	79.1	100.0	100.0	89.6	9.6	10.4
1/2"	35.4	93.8	100.0	67.1	22.5	32.9
3/8"	20.6	80.8	100.0	58.4	8.8	41.6
#4	4.8	15.7	96.7	42.3	16.0	57.7
#8	2.5	3.0	80.1	33.3	9.1	66.7
#16	2.5	2.0	63.1	26.4	6.8	73.6
#30	2.0	1.8	47.2	19.9	6.6	80.1
#50	1.9	1.6	24.0	10.6	9.3	89.4
#100	1.8	1.5	4.5	2.8	7.8	97.2
LBW	1.6	1.3	0.6	1.2	1.7	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.  
 \*% 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

Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b>	<b>62</b>	<b>Workability Factor:</b>	<b>33</b>	<b>Adjusted WF</b>	<b>35.8</b>	<b>Coarseness Factor:</b>	<b>63</b>
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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"	89.0	10.3	11.0
1/2"	70.3	18.7	29.7
3/8"	59.9	10.4	40.1
#4	41.9	18.0	58.1
#8	35.9	6.0	64.1
#16	27.8	8.2	72.2
#30	18.9	8.8	81.1
#50	6.3	12.6	93.7
#100	1.7	4.6	98.3
LBW	1.0	0.7	99.0

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

# Production Gradation Report

**PLANT #:** P-02

Sample Date: 4/8/24

Concrete Grade: **DM, 4500HP**

Contractor: \_\_\_\_\_

Dates Test Represents: 4/9/2024 through 4/15/2024

MDOT No.: \_\_\_\_\_

Agg. Class	Pit #	Source	Weight (SSD)	ft <sup>3</sup>	Specific Gravity	% Contribution
6AA	71-47	Presque Isle	1450	8.87	2.62	49.9
26A	71-47	Presque Isle	305	1.87	2.62	10.5
2NS	63-115	Ray Rd	1150	6.95	2.65	39.6
<b>Total Wt</b>			<b>2905</b>	<b>17.69</b>		<b>100.0</b>

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



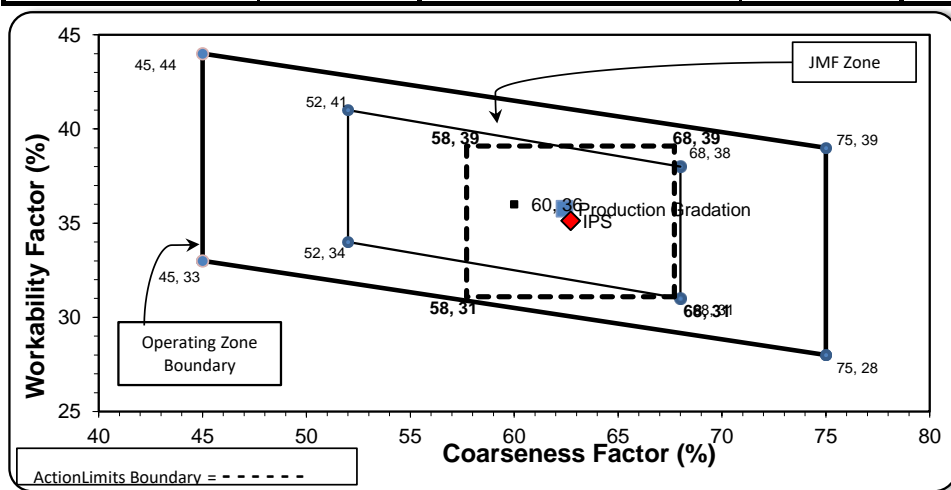
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Sieve	6AA	26A	2NS	Cumulative % Passing	% Retained	Cumulative % Retained
2"	100.0	100.0	100.0	100.0	0.0	0.0
1.5"	100.0	100.0	100.0	100.0	0.0	0.0
1"	98.4	100.0	100.0	99.2	0.8	0.8
3/4"	79.1	100.0	100.0	89.6	9.6	10.4
1/2"	35.4	93.8	100.0	67.1	22.5	32.9
3/8"	20.6	80.8	100.0	58.4	8.8	41.6
#4	4.8	15.7	96.7	42.3	16.0	57.7
#8	2.5	3.0	80.1	33.3	9.1	66.7
#16	2.5	2.0	63.1	26.4	6.8	73.6
#30	2.0	1.8	47.2	19.9	6.6	80.1
#50	1.9	1.6	24.0	10.6	9.3	89.4
#100	1.8	1.5	4.5	2.8	7.8	97.2
LBW	1.6	1.3	0.6	1.2	1.7	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.  
 \*% 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  Adjusted WF Initial Production Sample (IPS)

<b>Coarseness Factor:</b> 62	<b>Workability Factor:</b> 33	<b>Adjusted WF:</b> 35.8	<b>Coarseness Factor:</b> 63
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<b>Coarseness Factor:</b> 63	<b>Workability Factor:</b> 35
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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

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 SM, LLC Technical Service

Approved By: