

# Aggregate Optimization Chart

**PLANT #:** **P-36**

Sample Date: 2/10/20

Concrete Grade: **TM**

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

Dates Test Represents: 2/11/2020 through 2/17/2020

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

| Agg. Class      | Pit # | Source       | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | % Contribution |
|-----------------|-------|--------------|--------------|-----------------|------------------|----------------|
| 6AA             | 71-47 | Presque Isle | 1690         | 10.34           | 2.62             | 58.5           |
| 26A             | 71-47 | Presque Isle | 100          | 0.61            | 2.62             | 3.5            |
| 2NS             | 63-92 | Grange Hall  | 1100         | 6.65            | 2.65             | 38.1           |
| <b>Total Wt</b> |       |              | <b>2890</b>  | <b>17.60</b>    |                  | <b>100.0</b>   |

<----- 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"  | 87.0  | 100.0 | 100.0 | 92.4                 | 7.6        | 7.6                   |
| 1/2"  | 54.2  | 99.2  | 100.0 | 73.2                 | 19.2       | 26.8                  |
| 3/8"  | 31.5  | 74.6  | 100.0 | 59.1                 | 14.1       | 40.9                  |
| #4    | 5.9   | 13.2  | 97.4  | 41.0                 | 18.1       | 59.0                  |
| #8    | 3.2   | 4.6   | 84.6  | 34.2                 | 6.7        | 65.8                  |
| #16   | 2.7   | 3.4   | 69.1  | 28.0                 | 6.2        | 72.0                  |
| #30   | 2.6   | 3.2   | 49.5  | 20.5                 | 7.5        | 79.5                  |
| #50   | 2.4   | 3.0   | 20.2  | 9.2                  | 11.3       | 90.8                  |
| #100  | 2.3   | 2.9   | 2.9   | 2.5                  | 6.6        | 97.5                  |
| LBW   | 1.8   | 2.6   | 0.3   | 1.3                  | 1.3        | 98.7                  |

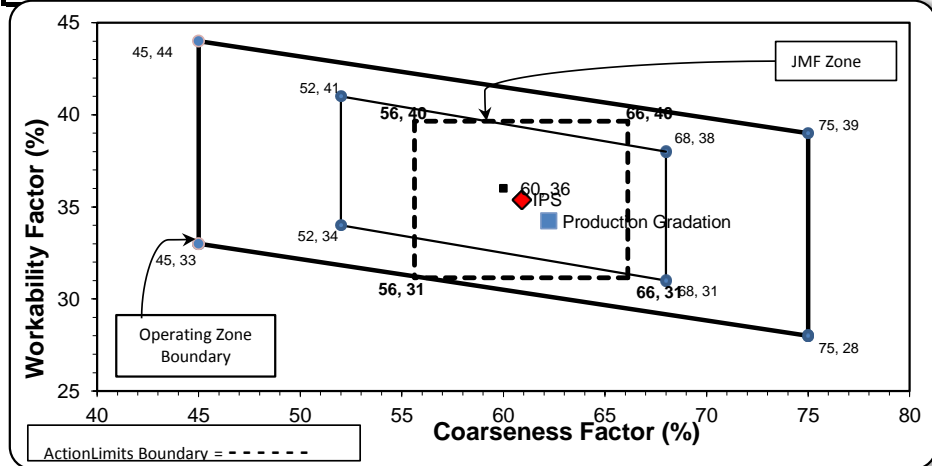


**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

\*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.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

**Coarseness Factor: 62**      **Workability Factor: 34**



Initial Production Sample (IPS)

**Coarseness Factor: 61**  
**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"    | 99.1                 | 0.9        | 0.9                   |
| 3/4"  | 90.8                 | 8.3        | 9.2                   |
| 1/2"  | 70.6                 | 20.2       | 29.4                  |
| 3/8"  | 60.7                 | 9.9        | 39.3                  |
| #4    | 42.3                 | 18.4       | 57.7                  |
| #8    | 35.4                 | 6.9        | 64.6                  |
| #16   | 28.7                 | 6.7        | 71.3                  |
| #30   | 21.3                 | 7.4        | 78.7                  |
| #50   | 8.8                  | 12.5       | 91.2                  |
| #100  | 1.8                  | 7.0        | 98.2                  |
| LBW   | 0.8                  | 1.0        | 99.2                  |

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

**PLANT #:** **P-39**

Sample Date: 2/10/20

Concrete Grade: **TM**

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

Dates Test Represents: 2/11/2020 through 2/17/2020

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

| Agg. Class      | Pit # | Source       | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | % Contribution |
|-----------------|-------|--------------|--------------|-----------------|------------------|----------------|
| 6AA             | 71-47 | Presque Isle | 1600         | 9.79            | 2.62             | 55.4           |
| 26A             | 71-47 | Presque Isle | 140          | 0.86            | 2.62             | 4.8            |
| 2NS             | 63-92 | Grange Hall  | 1150         | 6.95            | 2.65             | 39.8           |
| <b>Total Wt</b> |       |              | <b>2890</b>  | <b>17.60</b>    |                  | <b>100.0</b>   |

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



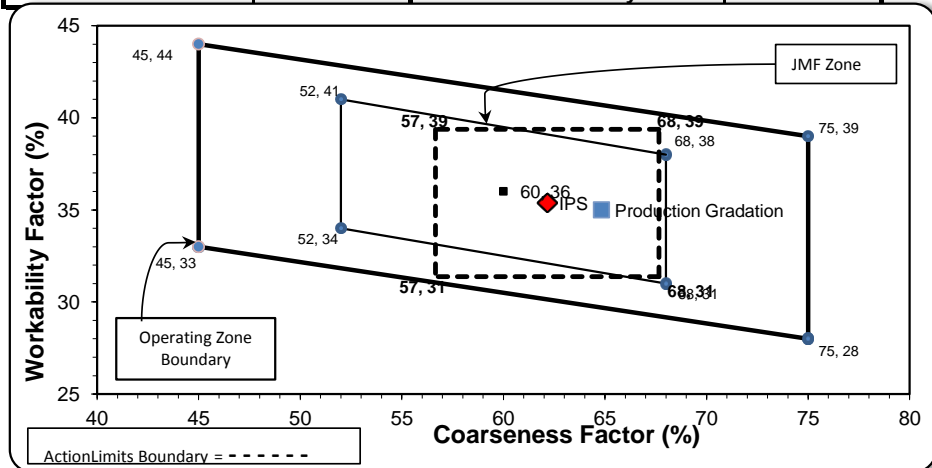
**Superior Materials, LLC**  
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| Sieve | 6AA   | 26A   | 2NS   | Cumulative % Passing | % Retained | Cumulative % Retained |
|-------|-------|-------|-------|----------------------|------------|-----------------------|
| 2"    | 100.0 | 100.0 | 100.0 | 100.0                | 0.0        | 0.0                   |
| 1.5"  | 100.0 | 100.0 | 100.0 | 100.0                | 0.0        | 0.0                   |
| 1"    | 99.2  | 100.0 | 100.0 | 99.6                 | 0.4        | 0.4                   |
| 3/4"  | 87.5  | 100.0 | 100.0 | 93.1                 | 6.5        | 6.9                   |
| 1/2"  | 46.0  | 99.2  | 100.0 | 70.1                 | 23.0       | 29.9                  |
| 3/8"  | 26.1  | 74.6  | 100.0 | 57.9                 | 12.2       | 42.1                  |
| #4    | 4.3   | 13.2  | 97.4  | 41.8                 | 16.1       | 58.2                  |
| #8    | 2.0   | 4.6   | 84.6  | 35.0                 | 6.8        | 65.0                  |
| #16   | 1.7   | 3.4   | 69.1  | 28.6                 | 6.4        | 71.4                  |
| #30   | 1.6   | 3.2   | 49.5  | 20.7                 | 7.9        | 79.3                  |
| #50   | 1.5   | 3.0   | 20.2  | 9.0                  | 11.7       | 91.0                  |
| #100  | 1.4   | 2.9   | 2.9   | 2.1                  | 6.9        | 97.9                  |
| LBW   | 1.2   | 2.6   | 0.3   | 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 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

|                           |           |                            |           |
|---------------------------|-----------|----------------------------|-----------|
| <b>Coarseness Factor:</b> | <b>65</b> | <b>Workability Factor:</b> | <b>35</b> |
|---------------------------|-----------|----------------------------|-----------|



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"    | 100.0                | 0.0        | 0.0                   |
| 3/4"  | 89.9                 | 10.1       | 10.1                  |
| 1/2"  | 70.9                 | 19.0       | 29.1                  |
| 3/8"  | 59.8                 | 11.1       | 40.2                  |
| #4    | 42.8                 | 17.0       | 57.2                  |
| #8    | 35.4                 | 7.4        | 64.6                  |
| #16   | 28.8                 | 6.5        | 71.2                  |
| #30   | 21.1                 | 7.7        | 78.9                  |
| #50   | 9.7                  | 11.4       | 90.3                  |
| #100  | 3.7                  | 6.1        | 96.3                  |
| LBW   | 1.2                  | 2.4        | 98.8                  |

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