

# Aggregate Optimization Chart

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

Sample Date: 11/11/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 11/12/2024 through 11/18/2024

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

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

| Agg. Class      | Pit #  | Source   | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | % Contribution |
|-----------------|--------|----------|--------------|-----------------|------------------|----------------|
| 6AA             | 58-003 | Stoneco  | 1600         | 9.53            | 2.69             | 51.6           |
| 26A             | 58-003 | Stoneco  | 300          | 1.79            | 2.69             | 9.7            |
| 2NS             | 63-114 | Highland | 1200         | 7.26            | 2.65             | 38.7           |
| <b>Total Wt</b> |        |          | <b>3100</b>  | <b>18.58</b>    |                  | <b>100.0</b>   |

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



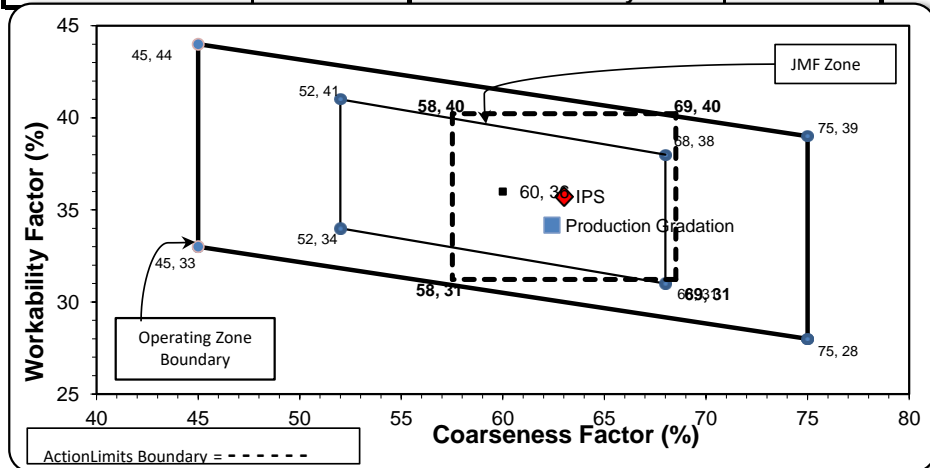
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 99.7  | 100.0 | 100.0 | 99.8                 | 0.2        | 0.2                   |
| 3/4"  | 81.1  | 100.0 | 100.0 | 90.2                 | 9.6        | 9.8                   |
| 1/2"  | 43.9  | 99.3  | 100.0 | 71.0                 | 19.3       | 29.0                  |
| 3/8"  | 22.6  | 88.2  | 100.0 | 58.9                 | 12.1       | 41.1                  |
| #4    | 3.3   | 11.5  | 98.9  | 41.1                 | 17.8       | 58.9                  |
| #8    | 2.0   | 2.4   | 85.0  | 34.2                 | 6.9        | 65.8                  |
| #16   | 1.0   | 1.3   | 66.3  | 26.3                 | 7.9        | 73.7                  |
| #30   | 0.9   | 1.1   | 45.4  | 18.1                 | 8.2        | 81.9                  |
| #50   | 0.8   | 1.0   | 21.0  | 8.6                  | 9.5        | 91.4                  |
| #100  | 0.8   | 1.0   | 4.5   | 2.3                  | 6.4        | 97.7                  |
| LBW   | 0.7   | 0.9   | 0.3   | 0.6                  | 1.7        | 99.4                  |

\*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

|                           |           |                            |           |
|---------------------------|-----------|----------------------------|-----------|
| <b>Coarseness Factor:</b> | <b>62</b> | <b>Workability Factor:</b> | <b>34</b> |
|---------------------------|-----------|----------------------------|-----------|



Initial Production Sample (IPS)

| <b>Coarseness Factor:</b>  | <b>63</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"                         | 99.2                 | 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:

# Aggregate Optimization Chart

**PLANT #:** **P-103**

Sample Date: 11/11/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 11/12/2024 through 11/18/2024

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

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

| Agg. Class      | Pit #  | Source   | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | % Contribution |
|-----------------|--------|----------|--------------|-----------------|------------------|----------------|
| 6AA             | 58-003 | Stoneco  | 1600         | 9.53            | 2.69             | 51.6           |
| 26A             | 58-003 | Stoneco  | 300          | 1.79            | 2.69             | 9.7            |
| 2NS             | 63-114 | Highland | 1200         | 7.26            | 2.65             | 38.7           |
| <b>Total Wt</b> |        |          | <b>3100</b>  | <b>18.58</b>    |                  | <b>100.0</b>   |

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



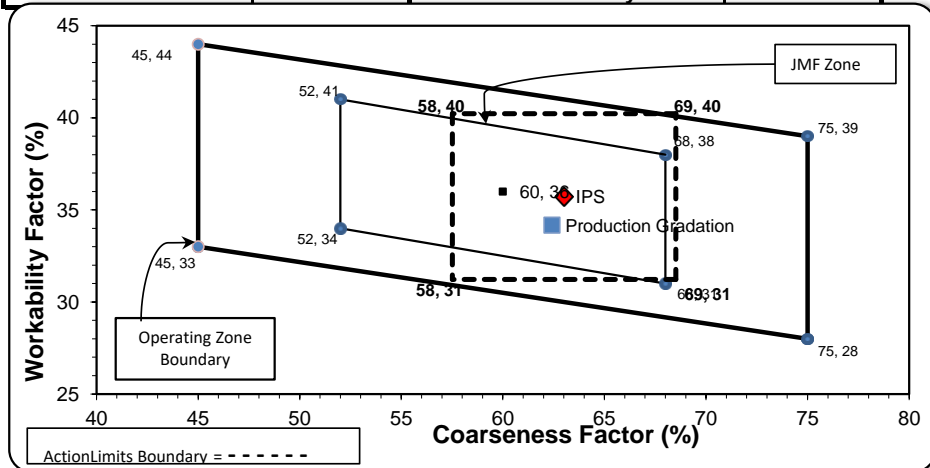
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 99.7  | 100.0 | 100.0 | 99.8                 | 0.2        | 0.2                   |
| 3/4"  | 81.1  | 100.0 | 100.0 | 90.2                 | 9.6        | 9.8                   |
| 1/2"  | 43.9  | 99.3  | 100.0 | 71.0                 | 19.3       | 29.0                  |
| 3/8"  | 22.6  | 88.2  | 100.0 | 58.9                 | 12.1       | 41.1                  |
| #4    | 3.3   | 11.5  | 98.9  | 41.1                 | 17.8       | 58.9                  |
| #8    | 2.0   | 2.4   | 85.0  | 34.2                 | 6.9        | 65.8                  |
| #16   | 1.0   | 1.3   | 66.3  | 26.3                 | 7.9        | 73.7                  |
| #30   | 0.9   | 1.1   | 45.4  | 18.1                 | 8.2        | 81.9                  |
| #50   | 0.8   | 1.0   | 21.0  | 8.6                  | 9.5        | 91.4                  |
| #100  | 0.8   | 1.0   | 4.5   | 2.3                  | 6.4        | 97.7                  |
| LBW   | 0.7   | 0.9   | 0.3   | 0.6                  | 1.7        | 99.4                  |

\*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

|                           |           |                            |           |
|---------------------------|-----------|----------------------------|-----------|
| <b>Coarseness Factor:</b> | <b>62</b> | <b>Workability Factor:</b> | <b>34</b> |
|---------------------------|-----------|----------------------------|-----------|



Initial Production Sample (IPS)

|                            |           |
|----------------------------|-----------|
| <b>Coarseness Factor:</b>  | <b>63</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"    | 99.2                 | 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:

# Aggregate Optimization Chart

**PLANT #:** 12

Sample Date: 11/11/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 11/12/2024 through 11/18/2024

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

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

| Agg. Class      | Pit #  | Source       | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | % Contribution |
|-----------------|--------|--------------|--------------|-----------------|------------------|----------------|
| 6AA             | 71-47  | Presque Isle | 1820         | 11.13           | 2.62             | 59.7           |
| 26A             | 71-47  | Presque Isle | 0            | 0.00            | 2.62             | 0.0            |
| 2NS             | 63-115 | Ray Rd       | 1230         | 7.44            | 2.65             | 40.3           |
| <b>Total Wt</b> |        |              | <b>3050</b>  | <b>18.57</b>    |                  | <b>100.0</b>   |

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



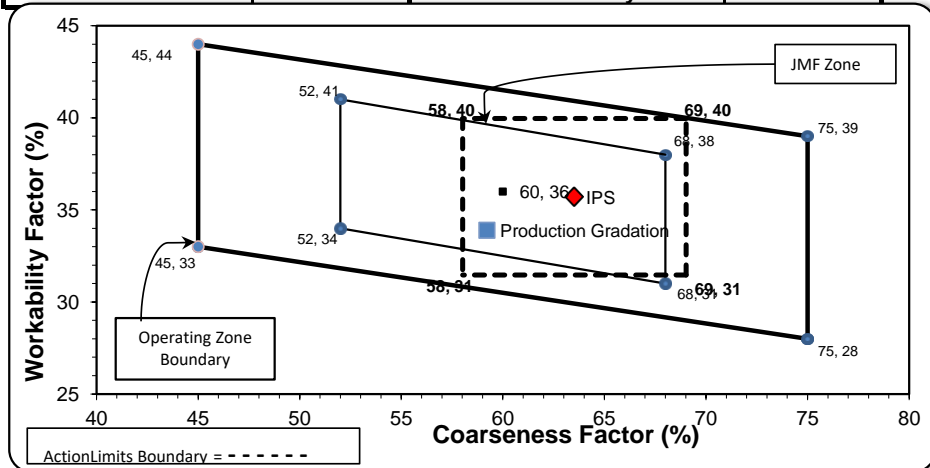
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 98.4  | 100.0 | 100.0 | 99.0                 | 1.0        | 1.0                   |
| 3/4"  | 88.0  | 100.0 | 100.0 | 92.8                 | 6.2        | 7.2                   |
| 1/2"  | 52.8  | 95.4  | 100.0 | 71.8                 | 21.0       | 28.2                  |
| 3/8"  | 34.4  | 83.4  | 100.0 | 60.9                 | 11.0       | 39.1                  |
| #4    | 6.3   | 18.9  | 97.6  | 43.1                 | 17.7       | 56.9                  |
| #8    | 2.6   | 5.0   | 80.2  | 33.9                 | 9.2        | 66.1                  |
| #16   | 2.1   | 2.9   | 64.2  | 27.1                 | 6.8        | 72.9                  |
| #30   | 2.0   | 2.5   | 48.3  | 20.7                 | 6.5        | 79.3                  |
| #50   | 2.0   | 2.3   | 25.4  | 11.4                 | 9.2        | 88.6                  |
| #100  | 1.9   | 2.2   | 5.7   | 3.4                  | 8.0        | 96.6                  |
| LBW   | 1.6   | 2.1   | 1.1   | 1.4                  | 2.0        | 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:** 59      **Workability Factor:** 34



Initial Production Sample (IPS)

**Coarseness Factor:** 64  
**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"  | 59.2                 | 12.1       | 40.8                  |
| #4    | 41.5                 | 17.7       | 58.5                  |
| #8    | 35.7                 | 5.8        | 64.3                  |
| #16   | 27.9                 | 7.9        | 72.1                  |
| #30   | 18.3                 | 9.5        | 81.7                  |
| #50   | 7.3                  | 11.0       | 92.7                  |
| #100  | 2.0                  | 5.3        | 98.0                  |
| LBW   | 0.9                  | 1.1        | 99.1                  |

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

**PLANT #:** p11

Sample Date: 11/11/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 11/12/2024 through 11/18/2024

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

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

| Agg. Class      | Pit #  | Source       | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | % Contribution |
|-----------------|--------|--------------|--------------|-----------------|------------------|----------------|
| 6AA             | 71-47  | Presque Isle | 1820         | 11.13           | 2.62             | 59.7           |
| 26A             | 71-47  | Presque Isle | 0            | 0.00            | 2.62             | 0.0            |
| 2NS             | 63-115 | Ray Rd       | 1230         | 7.44            | 2.65             | 40.3           |
| <b>Total Wt</b> |        |              | <b>3050</b>  | <b>18.57</b>    |                  | <b>100.0</b>   |

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



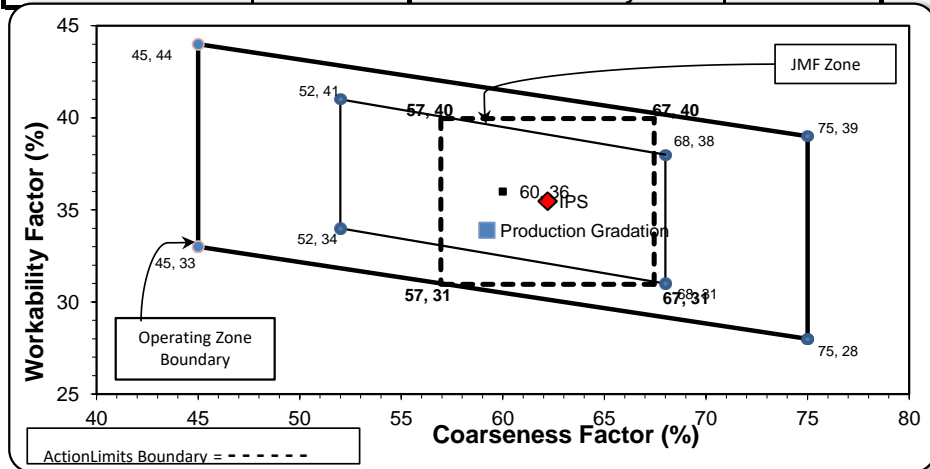
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 98.4  | 100.0 | 100.0 | 99.0                 | 1.0        | 1.0                   |
| 3/4"  | 88.0  | 100.0 | 100.0 | 92.8                 | 6.2        | 7.2                   |
| 1/2"  | 52.8  | 95.4  | 100.0 | 71.8                 | 21.0       | 28.2                  |
| 3/8"  | 34.4  | 83.4  | 100.0 | 60.9                 | 11.0       | 39.1                  |
| #4    | 6.3   | 18.9  | 97.6  | 43.1                 | 17.7       | 56.9                  |
| #8    | 2.6   | 5.0   | 80.2  | 33.9                 | 9.2        | 66.1                  |
| #16   | 2.1   | 2.9   | 64.2  | 27.1                 | 6.8        | 72.9                  |
| #30   | 2.0   | 2.5   | 48.3  | 20.7                 | 6.5        | 79.3                  |
| #50   | 2.0   | 2.3   | 25.4  | 11.4                 | 9.2        | 88.6                  |
| #100  | 1.9   | 2.2   | 5.7   | 3.4                  | 8.0        | 96.6                  |
| LBW   | 1.6   | 2.1   | 1.1   | 1.4                  | 2.0        | 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:** 59      **Workability Factor:** 34



Initial Production Sample (IPS)

**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:

# Aggregate Optimization Chart

**PLANT #:** **P-O2**

Sample Date: 11/11/24

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 11/12/2024 through 11/18/2024

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

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

| Agg. Class      | Pit #  | Source       | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | % Contribution |
|-----------------|--------|--------------|--------------|-----------------|------------------|----------------|
| 6AA             | 71-47  | Presque Isle | 1820         | 11.13           | 2.62             | 59.7           |
| 26A             | 71-47  | Presque Isle | 0            | 0.00            | 2.62             | 0.0            |
| 2NS             | 63-115 | Ray Rd       | 1230         | 7.44            | 2.65             | 40.3           |
| <b>Total Wt</b> |        |              | <b>3050</b>  | <b>18.57</b>    |                  | <b>100.0</b>   |

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



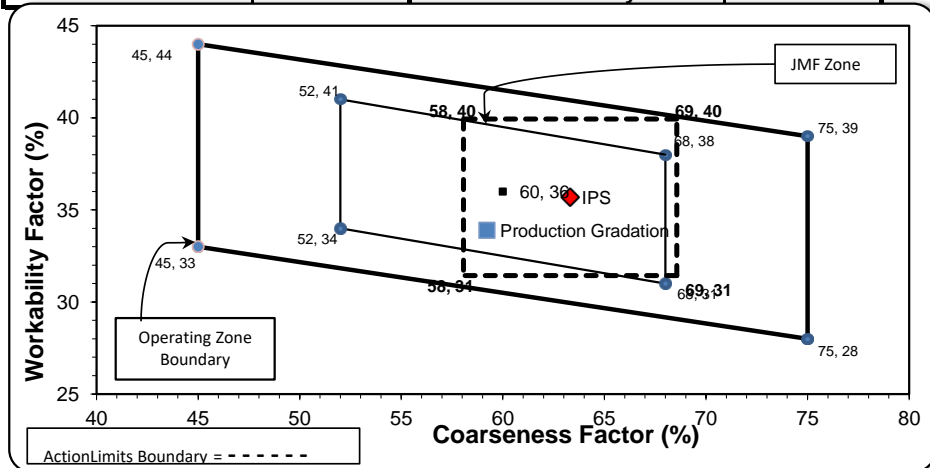
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 98.4  | 100.0 | 100.0 | 99.0                 | 1.0        | 1.0                   |
| 3/4"  | 88.0  | 100.0 | 100.0 | 92.8                 | 6.2        | 7.2                   |
| 1/2"  | 52.8  | 95.4  | 100.0 | 71.8                 | 21.0       | 28.2                  |
| 3/8"  | 34.4  | 83.4  | 100.0 | 60.9                 | 11.0       | 39.1                  |
| #4    | 6.3   | 18.9  | 97.6  | 43.1                 | 17.7       | 56.9                  |
| #8    | 2.6   | 5.0   | 80.2  | 33.9                 | 9.2        | 66.1                  |
| #16   | 2.1   | 2.9   | 64.2  | 27.1                 | 6.8        | 72.9                  |
| #30   | 2.0   | 2.5   | 48.3  | 20.7                 | 6.5        | 79.3                  |
| #50   | 2.0   | 2.3   | 25.4  | 11.4                 | 9.2        | 88.6                  |
| #100  | 1.9   | 2.2   | 5.7   | 3.4                  | 8.0        | 96.6                  |
| LBW   | 1.6   | 2.1   | 1.1   | 1.4                  | 2.0        | 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:** 59      **Workability Factor:** 34



Intial 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"    | 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: