

# Aggregate Optimization Chart

**PLANT #:** **P-101**

Sample Date: **8/15/22**

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: **8/16/2022** through **8/22/2022**

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

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

| Agg. Class      | Pit #  | Source       | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | % Contribution |
|-----------------|--------|--------------|--------------|-----------------|------------------|----------------|
| 6AA             | 71-47  | Presque Isle | 1625         | 9.94            | 2.62             | 53.2           |
| 26A             | 71-47  | Presque Isle | 200          | 1.22            | 2.62             | 6.5            |
| 2NS             | 75-051 | Mid Michigan | 1230         | 7.41            | 2.66             | 40.3           |
| <b>Total Wt</b> |        |              | <b>3055</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"    | 98.0  | 100.0 | 100.0 | 98.9                 | 1.1        | 1.1                   |
| 3/4"  | 87.4  | 100.0 | 100.0 | 93.3                 | 5.6        | 6.7                   |
| 1/2"  | 41.8  | 98.7  | 100.0 | 69.0                 | 24.3       | 31.0                  |
| 3/8"  | 21.0  | 87.9  | 100.0 | 57.2                 | 11.8       | 42.8                  |
| #4    | 2.9   | 22.1  | 99.0  | 42.8                 | 14.3       | 57.2                  |
| #8    | 1.9   | 5.2   | 85.3  | 35.7                 | 7.2        | 64.3                  |
| #16   | 1.6   | 2.9   | 70.1  | 29.3                 | 6.4        | 70.7                  |
| #30   | 1.5   | 2.4   | 53.2  | 22.4                 | 6.9        | 77.6                  |
| #50   | 1.4   | 2.1   | 26.3  | 11.5                 | 10.9       | 88.5                  |
| #100  | 1.3   | 1.9   | 6.8   | 3.6                  | 7.9        | 96.4                  |
| LBW   | 1.2   | 1.7   | 1.0   | 1.2                  | 2.4        | 98.8                  |

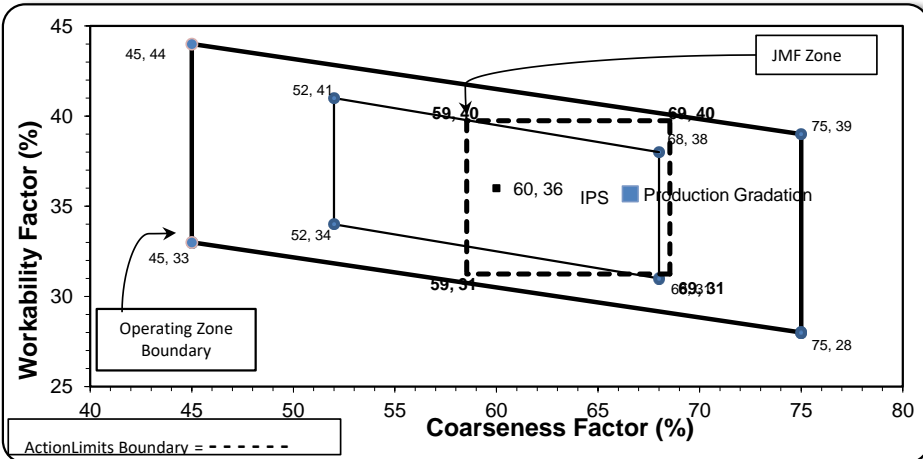
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max., nom. max., #100 and #200 sieves.  
 \*% Retained must be at least 8% for the 1" sieve when a 2" max. size (nom. Max. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

|                           |           |                            |           |
|---------------------------|-----------|----------------------------|-----------|
| <b>Coarseness Factor:</b> | <b>67</b> | <b>Workability Factor:</b> | <b>36</b> |
|---------------------------|-----------|----------------------------|-----------|

Initial Production Sample (IPS)

|                            |           |
|----------------------------|-----------|
| <b>Coarseness Factor:</b>  | <b>64</b> |
| <b>Workability Factor:</b> | <b>35</b> |



| 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"  | 93.9                 | 6.1        | 6.1                   |
| 1/2"  | 71.4                 | 22.5       | 28.6                  |
| 3/8"  | 59.0                 | 12.4       | 41.0                  |
| #4    | 45.1                 | 13.9       | 54.9                  |
| #8    | 35.5                 | 9.6        | 64.5                  |
| #16   | 28.3                 | 7.2        | 71.7                  |
| #30   | 21.3                 | 6.9        | 78.7                  |
| #50   | 11.0                 | 10.3       | 89.0                  |
| #100  | 3.4                  | 7.6        | 96.6                  |
| LBW   | 1.1                  | 2.3        | 98.9                  |

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

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

Sample Date: 8/15/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 8/16/2022 through 8/22/2022

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             | 81-019 | Pleasant Lake | 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%



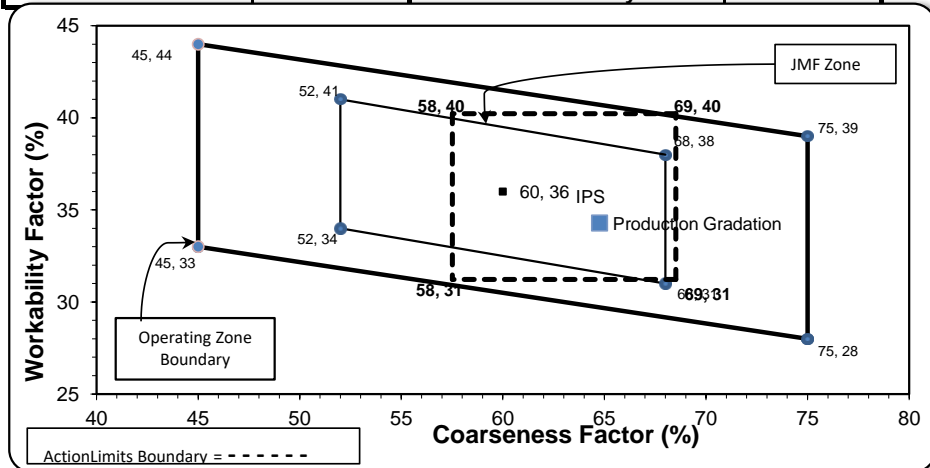
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 100.0 | 100.0 | 100.0 | 100.0                | 0.0        | 0.0                   |
| 3/4"  | 81.1  | 100.0 | 100.0 | 90.2                 | 9.8        | 9.8                   |
| 1/2"  | 43.7  | 99.6  | 100.0 | 70.9                 | 19.3       | 29.1                  |
| 3/8"  | 20.1  | 86.4  | 100.0 | 57.4                 | 13.5       | 42.6                  |
| #4    | 3.8   | 23.1  | 99.3  | 42.6                 | 14.8       | 57.4                  |
| #8    | 1.8   | 6.7   | 84.5  | 34.3                 | 8.3        | 65.7                  |
| #16   | 1.2   | 3.5   | 68.5  | 27.5                 | 6.8        | 72.5                  |
| #30   | 1.0   | 2.6   | 50.6  | 20.4                 | 7.1        | 79.6                  |
| #50   | 0.9   | 2.3   | 26.2  | 10.8                 | 9.5        | 89.2                  |
| #100  | 0.8   | 2.2   | 7.6   | 3.6                  | 7.3        | 96.4                  |
| LBW   | 1.0   | 2.0   | 1.4   | 1.3                  | 2.3        | 98.7                  |

\*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:** **65**      **Workability Factor:** **34**



Initial 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"    | 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: 8/15/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 8/16/2022 through 8/22/2022

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             | 81-019 | Pleasant Lake | 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%



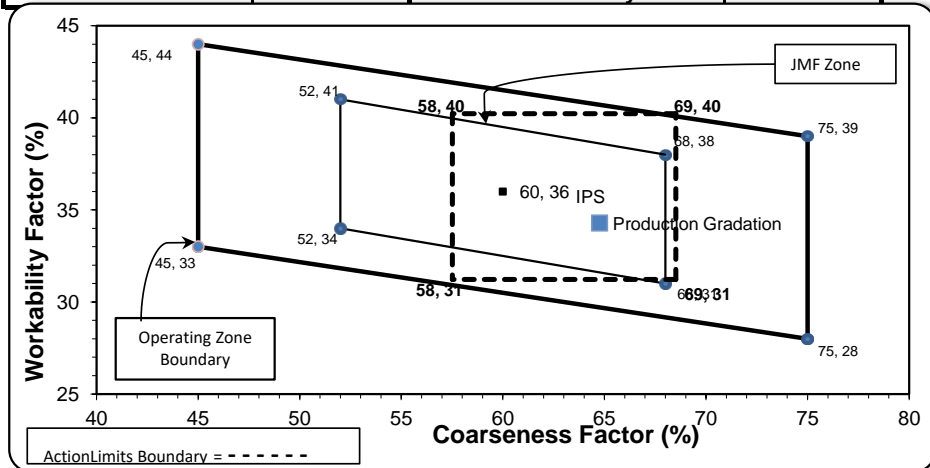
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 100.0 | 100.0 | 100.0 | 100.0                | 0.0        | 0.0                   |
| 3/4"  | 81.1  | 100.0 | 100.0 | 90.2                 | 9.8        | 9.8                   |
| 1/2"  | 43.7  | 99.6  | 100.0 | 70.9                 | 19.3       | 29.1                  |
| 3/8"  | 20.1  | 86.4  | 100.0 | 57.4                 | 13.5       | 42.6                  |
| #4    | 3.8   | 23.1  | 99.3  | 42.6                 | 14.8       | 57.4                  |
| #8    | 1.8   | 6.7   | 84.5  | 34.3                 | 8.3        | 65.7                  |
| #16   | 1.2   | 3.5   | 68.5  | 27.5                 | 6.8        | 72.5                  |
| #30   | 1.0   | 2.6   | 50.6  | 20.4                 | 7.1        | 79.6                  |
| #50   | 0.9   | 2.3   | 26.2  | 10.8                 | 9.5        | 89.2                  |
| #100  | 0.8   | 2.2   | 7.6   | 3.6                  | 7.3        | 96.4                  |
| LBW   | 1.0   | 2.0   | 1.4   | 1.3                  | 2.3        | 98.7                  |

\*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>34</b> |
|---------------------------|-----------|----------------------------|-----------|



Intial 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-14**

Sample Date: 8/15/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 8/16/2022 through 8/22/2022

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

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

| Agg. Class      | Pit #  | Source   | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | % Contribution |
|-----------------|--------|----------|--------------|-----------------|------------------|----------------|
| 6AA             | 58-003 | Stoneco  | 1550         | 9.23            | 2.69             | 49.8           |
| 26A             | 58-003 | Stoneco  | 350          | 2.09            | 2.69             | 11.3           |
| 2NS             | 19-55  | Schlegel | 1210         | 7.26            | 2.67             | 38.9           |
| <b>Total Wt</b> |        |          | <b>3110</b>  | <b>18.58</b>    |                  | <b>100.0</b>   |

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



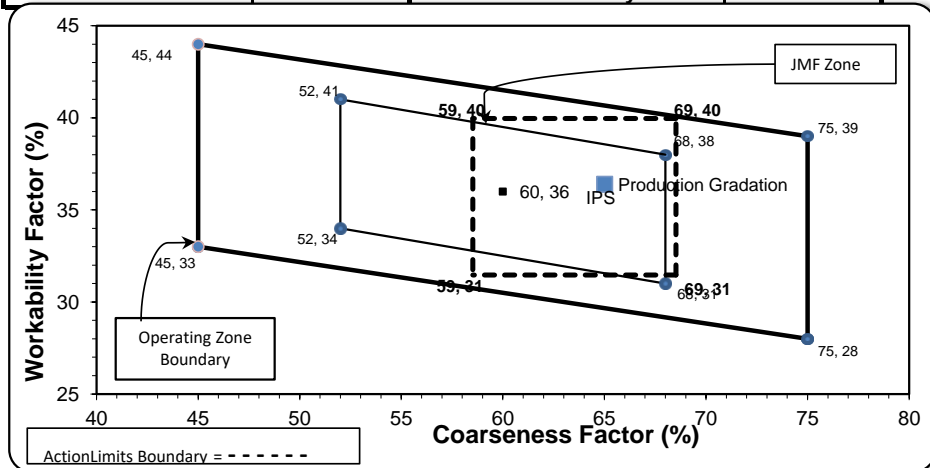
**Builders Redi-Mix**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"  | 81.1  | 100.0 | 100.0 | 90.6                 | 9.4        | 9.4                   |
| 1/2"  | 43.7  | 99.6  | 100.0 | 71.9                 | 18.7       | 28.1                  |
| 3/8"  | 20.1  | 86.4  | 100.0 | 58.6                 | 13.2       | 41.4                  |
| #4    | 3.8   | 23.1  | 99.9  | 43.4                 | 15.3       | 56.6                  |
| #8    | 1.8   | 6.7   | 89.3  | 36.4                 | 7.0        | 63.6                  |
| #16   | 1.2   | 3.5   | 67.3  | 27.2                 | 9.2        | 72.8                  |
| #30   | 1.0   | 2.6   | 45.8  | 18.6                 | 8.6        | 81.4                  |
| #50   | 0.9   | 2.3   | 17.0  | 7.3                  | 11.3       | 92.7                  |
| #100  | 0.8   | 2.2   | 2.8   | 1.7                  | 5.6        | 98.3                  |
| LBW   | 1.0   | 2.0   | 0.5   | 0.9                  | 0.8        | 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.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

**Coarseness Factor:** **65**      **Workability Factor:** **36**



Initial Production Sample (IPS)

| <b>Coarseness Factor:</b> <b>64</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"                                | 59.2                 | 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 #:** **P-32**

Sample Date: 8/15/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 8/16/2022 through 8/22/2022

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

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

| Agg. Class      | Pit #  | Source       | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | % Contribution |
|-----------------|--------|--------------|--------------|-----------------|------------------|----------------|
| 6AA             | 71-47  | Presque Isle | 1620         | 9.91            | 2.62             | 53.1           |
| 26A             | 71-47  | Presque Isle | 200          | 1.22            | 2.62             | 6.6            |
| 2NS             | 95-013 | Smelter Bay  | 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%



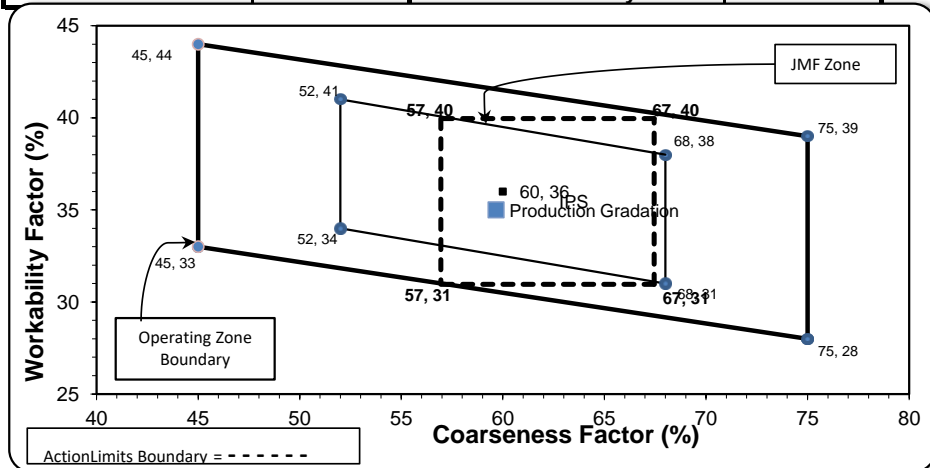
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 97.6  | 100.0 | 100.0 | 98.7                 | 1.3        | 1.3                   |
| 3/4"  | 85.4  | 100.0 | 100.0 | 92.2                 | 6.5        | 7.8                   |
| 1/2"  | 49.9  | 96.8  | 100.0 | 73.2                 | 19.1       | 26.8                  |
| 3/8"  | 28.7  | 86.1  | 100.0 | 61.2                 | 12.0       | 38.8                  |
| #4    | 6.1   | 27.7  | 95.5  | 43.6                 | 17.6       | 56.4                  |
| #8    | 2.4   | 8.2   | 82.3  | 35.0                 | 8.6        | 65.0                  |
| #16   | 1.9   | 3.8   | 67.1  | 28.3                 | 6.7        | 71.7                  |
| #30   | 1.8   | 2.8   | 48.8  | 20.8                 | 7.5        | 79.2                  |
| #50   | 1.8   | 2.5   | 24.7  | 11.1                 | 9.7        | 88.9                  |
| #100  | 1.7   | 2.3   | 8.0   | 4.3                  | 6.8        | 95.7                  |
| LBW   | 1.5   | 1.9   | 1.4   | 1.5                  | 2.8        | 98.5                  |

\*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:** **60**      **Workability Factor:** **35**



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-35**

Sample Date: 8/15/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 8/16/2022 through 8/22/2022

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             | 81-019 | Pleasant Lake | 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%



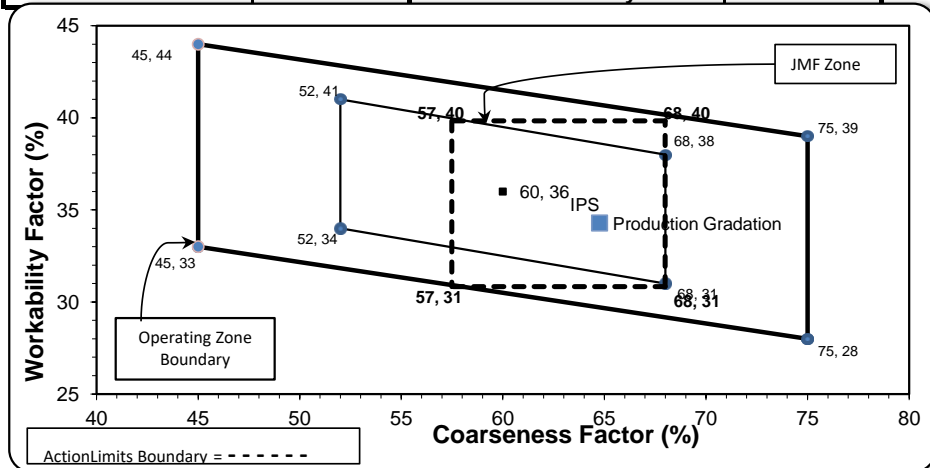
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 100.0 | 100.0 | 100.0 | 100.0                | 0.0        | 0.0                   |
| 3/4"  | 81.1  | 100.0 | 100.0 | 90.2                 | 9.8        | 9.8                   |
| 1/2"  | 43.7  | 99.6  | 100.0 | 70.9                 | 19.3       | 29.1                  |
| 3/8"  | 20.1  | 86.4  | 100.0 | 57.4                 | 13.5       | 42.6                  |
| #4    | 3.8   | 23.1  | 99.3  | 42.6                 | 14.8       | 57.4                  |
| #8    | 1.8   | 6.7   | 84.5  | 34.3                 | 8.3        | 65.7                  |
| #16   | 1.2   | 3.5   | 68.5  | 27.5                 | 6.8        | 72.5                  |
| #30   | 1.0   | 2.6   | 50.6  | 20.4                 | 7.1        | 79.6                  |
| #50   | 0.9   | 2.3   | 26.2  | 10.8                 | 9.5        | 89.2                  |
| #100  | 0.8   | 2.2   | 7.6   | 3.6                  | 7.3        | 96.4                  |
| LBW   | 1.0   | 2.0   | 1.4   | 1.3                  | 2.3        | 98.7                  |

\*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:** **65**      **Workability Factor:** **34**



Initial Production Sample (IPS)

**Coarseness Factor:** **63**  
**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"    | 99.2                 | 0.8        | 0.8                   |
| 3/4"  | 90.9                 | 8.3        | 9.1                   |
| 1/2"  | 71.3                 | 19.6       | 28.7                  |
| 3/8"  | 59.4                 | 11.9       | 40.6                  |
| #4    | 43.0                 | 16.5       | 57.0                  |
| #8    | 35.3                 | 7.6        | 64.7                  |
| #16   | 28.2                 | 7.1        | 71.8                  |
| #30   | 21.6                 | 6.6        | 78.4                  |
| #50   | 9.1                  | 12.5       | 90.9                  |
| #100  | 1.7                  | 7.4        | 98.3                  |
| LBW   | 1.1                  | 0.6        | 98.9                  |

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

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

Sample Date: 8/15/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 8/16/2022 through 8/22/2022

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

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

| Agg. Class      | Pit # | Source       | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | % Contribution |
|-----------------|-------|--------------|--------------|-----------------|------------------|----------------|
| 6AA             | 71-47 | Presque Isle | 1550         | 9.48            | 2.62             | 50.8           |
| 26A             | 71-47 | Presque Isle | 300          | 1.83            | 2.62             | 9.8            |
| 2NS             | 63-92 | Grange Hall  | 1200         | 7.26            | 2.65             | 39.3           |
| <b>Total Wt</b> |       |              | <b>3050</b>  | <b>18.57</b>    |                  | <b>100.0</b>   |

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



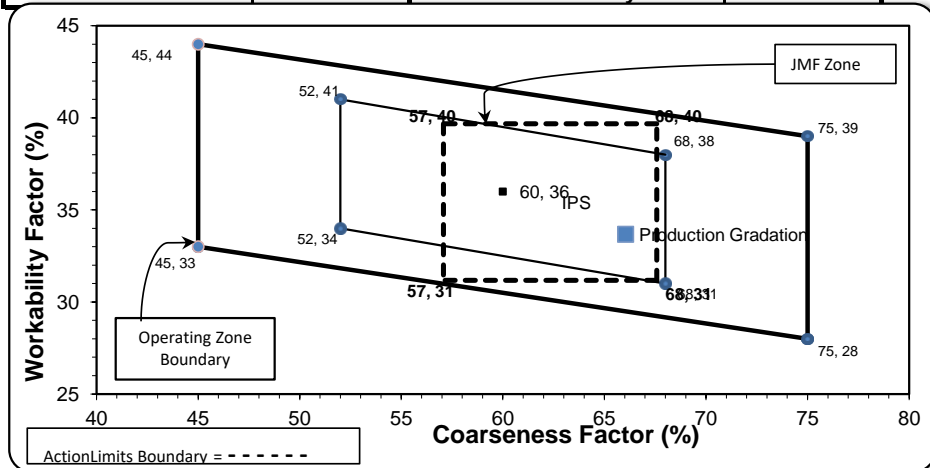
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 94.8  | 100.0 | 100.0 | 97.4                 | 2.6        | 2.6                   |
| 3/4"  | 71.3  | 100.0 | 100.0 | 85.4                 | 11.9       | 14.6                  |
| 1/2"  | 33.8  | 96.8  | 100.0 | 66.0                 | 19.4       | 34.0                  |
| 3/8"  | 16.5  | 86.1  | 100.0 | 56.2                 | 9.8        | 43.8                  |
| #4    | 3.9   | 27.7  | 97.0  | 42.9                 | 13.3       | 57.1                  |
| #8    | 2.6   | 8.2   | 80.2  | 33.7                 | 9.2        | 66.3                  |
| #16   | 2.1   | 3.8   | 63.8  | 26.5                 | 7.1        | 73.5                  |
| #30   | 1.8   | 2.8   | 44.6  | 18.7                 | 7.8        | 81.3                  |
| #50   | 1.7   | 2.5   | 19.0  | 8.6                  | 10.2       | 91.4                  |
| #100  | 1.5   | 2.3   | 3.2   | 2.2                  | 6.3        | 97.8                  |
| LBW   | 1.2   | 1.9   | 0.7   | 1.1                  | 1.2        | 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  Batch Plant Gradations  Aggregate Supplier Gradations

**Coarseness Factor:** **66**      **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"    | 99.1                 | 0.9        | 0.9                   |
| 3/4"  | 90.5                 | 8.6        | 9.5                   |
| 1/2"  | 69.8                 | 20.7       | 30.2                  |
| 3/8"  | 59.8                 | 10.0       | 40.2                  |
| #4    | 42.2                 | 17.6       | 57.8                  |
| #8    | 35.4                 | 6.7        | 64.6                  |
| #16   | 28.8                 | 6.7        | 71.2                  |
| #30   | 21.4                 | 7.4        | 78.6                  |
| #50   | 8.8                  | 12.6       | 91.2                  |
| #100  | 1.8                  | 7.0        | 98.2                  |
| LBW   | 0.7                  | 1.0        | 99.3                  |

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Aggregate Optimization Chart

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

Sample Date: 8/15/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 8/16/2022 through 8/22/2022

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

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             | 52.5           |
| 26A             | 71-47  | Presque Isle    | 200          | 1.22            | 2.62             | 6.6            |
| 2NS             | 44-051 | Krake Willis Rd | 1250         | 7.56            | 2.65             | 41.0           |
| <b>Total Wt</b> |        |                 | <b>3050</b>  | <b>18.57</b>    |                  | <b>100.0</b>   |

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



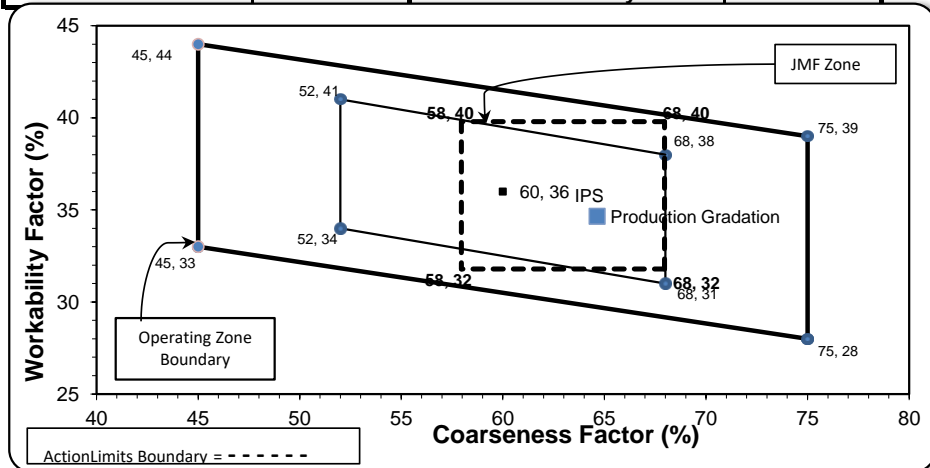
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 98.0  | 100.0 | 100.0 | 99.0                 | 1.0        | 1.0                   |
| 3/4"  | 87.4  | 100.0 | 100.0 | 93.4                 | 5.6        | 6.6                   |
| 1/2"  | 41.8  | 98.7  | 100.0 | 69.4                 | 24.0       | 30.6                  |
| 3/8"  | 21.0  | 87.9  | 100.0 | 57.8                 | 11.6       | 42.2                  |
| #4    | 2.9   | 22.1  | 96.7  | 42.6                 | 15.2       | 57.4                  |
| #8    | 1.9   | 5.2   | 81.3  | 34.7                 | 7.9        | 65.3                  |
| #16   | 1.6   | 2.9   | 67.2  | 28.6                 | 6.1        | 71.4                  |
| #30   | 1.5   | 2.4   | 50.9  | 21.8                 | 6.8        | 78.2                  |
| #50   | 1.4   | 2.1   | 24.9  | 11.1                 | 10.7       | 88.9                  |
| #100  | 1.3   | 1.9   | 7.3   | 3.8                  | 7.3        | 96.2                  |
| LBW   | 1.2   | 1.7   | 1.2   | 1.2                  | 2.6        | 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 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:** **65**      **Workability Factor:** **35**



Initial 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"  | 89.8                 | 10.2       | 10.2                  |
| 1/2"  | 70.7                 | 19.1       | 29.3                  |
| 3/8"  | 59.6                 | 11.1       | 40.4                  |
| #4    | 43.2                 | 16.4       | 56.8                  |
| #8    | 35.8                 | 7.4        | 64.2                  |
| #16   | 29.2                 | 6.6        | 70.8                  |
| #30   | 21.4                 | 7.8        | 78.6                  |
| #50   | 9.8                  | 11.6       | 90.2                  |
| #100  | 3.7                  | 6.1        | 96.3                  |
| LBW   | 1.2                  | 2.5        | 98.8                  |

PREPARED BY:  
 SM, LLC Technical Service

Approved By:



# Aggregate Optimization Chart

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

Sample Date: 8/15/22

Concrete Grade: **S2M, 3500HP**

Dates Test Represents: 8/16/2022 through 8/22/2022

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

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             | 52.5           |
| 26A             | 71-47  | Presque Isle | 220          | 1.35            | 2.62             | 7.2            |
| 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%



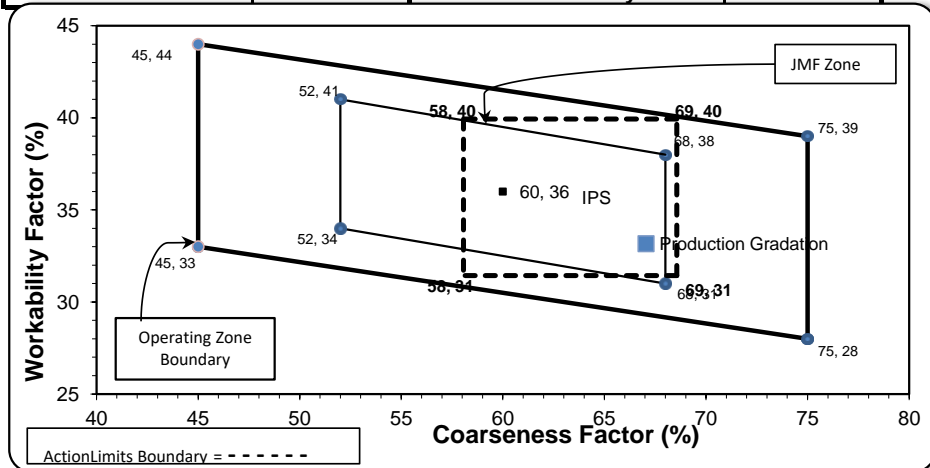
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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"    | 94.8  | 100.0 | 100.0 | 97.3                 | 2.7        | 2.7                   |
| 3/4"  | 71.3  | 100.0 | 100.0 | 84.9                 | 12.3       | 15.1                  |
| 1/2"  | 33.8  | 96.8  | 100.0 | 65.0                 | 19.9       | 35.0                  |
| 3/8"  | 16.5  | 86.1  | 100.0 | 55.2                 | 9.8        | 44.8                  |
| #4    | 3.9   | 27.7  | 96.1  | 42.8                 | 12.4       | 57.2                  |
| #8    | 2.6   | 8.2   | 77.4  | 33.2                 | 9.6        | 66.8                  |
| #16   | 2.1   | 3.8   | 61.3  | 26.1                 | 7.1        | 73.9                  |
| #30   | 1.8   | 2.8   | 46.2  | 19.8                 | 6.3        | 80.2                  |
| #50   | 1.7   | 2.5   | 26.8  | 11.9                 | 7.9        | 88.1                  |
| #100  | 1.5   | 2.3   | 7.6   | 4.0                  | 7.9        | 96.0                  |
| LBW   | 1.2   | 1.9   | 1.1   | 1.2                  | 2.8        | 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 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: **67**      Workability Factor: **33**



Initial 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: