

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: 12

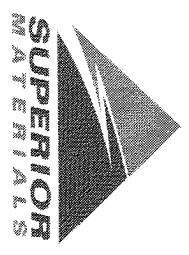
Sample Date: 8/14/23

Dates Test Represents: 8/15/2023 through 8/21/2023

Concrete Grade: S2M, 3500HP

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

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



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

| Aggr. Class | Pit #  | Source       | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | Cumulative 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         | 63-115 | Ray Rd       | 1230         | 7.44            | 2.65             | 40.3                      |
| Total Wt    |        |              | 3050         | 18.57           |                  | 100.0                     |

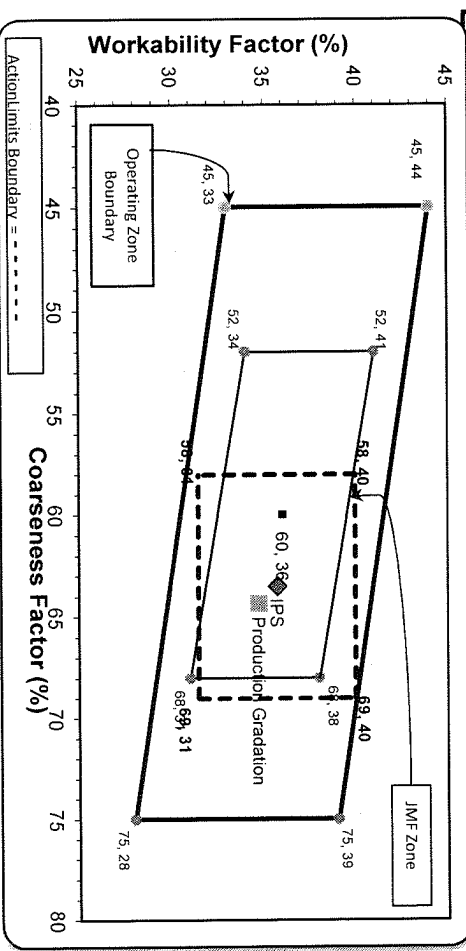
  

| Sieve | 6AA   | 26A   | 2NS   | Cumulative % Passing | % Retained | Cumulative % Retained |
|-------|-------|-------|-------|----------------------|------------|-----------------------|
| 2"    | 100.0 | 100.0 | 100.0 | 100.0                | 0.0        | 0.0                   |
| 1.5"  | 100.0 | 100.0 | 100.0 | 100.0                | 0.0        | 0.0                   |
| 1"    | 97.8  | 100.0 | 100.0 | 98.8                 | 1.2        | 1.2                   |
| 3/4"  | 87.1  | 99.6  | 100.0 | 93.1                 | 5.7        | 6.9                   |
| 1/2"  | 46.4  | 94.6  | 100.0 | 71.2                 | 21.9       | 28.8                  |
| 3/8"  | 22.8  | 84.9  | 100.0 | 58.0                 | 13.2       | 42.0                  |
| #4    | 2.3   | 22.2  | 96.6  | 41.6                 | 16.4       | 58.4                  |
| #8    | 1.8   | 6.9   | 82.6  | 34.7                 | 6.9        | 65.3                  |
| #16   | 1.6   | 4.0   | 67.9  | 28.5                 | 6.2        | 71.5                  |
| #30   | 1.5   | 3.2   | 52.3  | 22.1                 | 6.4        | 77.9                  |
| #50   | 1.4   | 2.8   | 27.7  | 12.1                 | 10.0       | 87.9                  |
| #100  | 1.4   | 2.4   | 5.8   | 3.2                  | 8.9        | 96.8                  |
| LBW   | 1.1   | 2.1   | 0.6   | 1.0                  | 2.3        | 99.0                  |

\*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: **64** Workability Factor: **35**



Initial Production Sample (IPS)

| Sieve | Coarseness Factor: | Workability Factor: | Cumulative % Passing | % Retained | Cumulative % Retained |
|-------|--------------------|---------------------|----------------------|------------|-----------------------|
| 2"    | 64                 | 36                  | 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: \_\_\_\_\_



Plant S12-Onsite Southfield

Product 1051-6AA LS

Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician

Report Date 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 6AA LS  |
|-----------|-----------------------|--------|------|---------|
|           | 2" (50mm)             | 100.0  | %    |         |
|           | 1 1/2" (37.5mm)       | 100.0  | %    | 100-100 |
|           | 1" (25mm)             | 97.8   | %    | 95-100  |
|           | 3/4" (19mm)           | 87.1   | %    |         |
|           | 1/2" (12.5mm)         | 46.4   | %    | 30-60   |
|           | 3/8" (9.5mm)          | 22.8   | %    |         |
|           | #4 (4.75mm)           | 2.3    | %    | 0-8     |
|           | #8 (2.36mm)           | 1.8    | %    |         |
|           | #16 (1.18mm)          | 1.6    | %    |         |
|           | #30 (.6mm)            | 1.5    | %    |         |
|           | #50 (.3mm)            | 1.4    | %    |         |
|           | #100 (.15mm)          | 1.4    | %    |         |
|           | #200 (75µm)           | 1.20   | %    |         |
|           | Wash Loss (#200/75µm) | 1.1    | %    | 0-2     |
|           | Total Moisture        | 3.96   | %    |         |



Plant S12-Onsite Southfield

Product 1067-26A Mod LS

Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician

Report Date 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 26A LS Spec |
|-----------|-----------------------|--------|------|-------------|
|           | 2" (50mm)             | 100.0  | %    |             |
|           | 1 1/2" (37.5mm)       | 100.0  | %    |             |
|           | 1" (25mm)             | 100.0  | %    |             |
|           | 3/4" (19mm)           | 99.6   | %    | 100-100     |
|           | 1/2" (12.5mm)         | 94.6   | %    | 95-100      |
|           | 3/8" (9.5mm)          | 84.9   | %    | 60-95       |
|           | #4 (4.75mm)           | 22.2   | %    | 5-30        |
|           | #8 (2.36mm)           | 6.9    | %    | 0-12        |
|           | #16 (1.18mm)          | 4.0    | %    |             |
|           | #30 (.6mm)            | 3.2    | %    |             |
|           | #50 (.3mm)            | 2.8    | %    |             |
|           | #100 (.15mm)          | 2.4    | %    |             |
|           | #200 (75µm)           | 2.1    | %    |             |
|           | Wash Loss (#200/75µm) | 2.1    | %    | 0-3         |
|           | Total Moisture        | 3.64   | %    |             |



Plant S12-Onsite Southfield

Product 1022-2NS GR

Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician

Report Date 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 2NS GR Spec |
|-----------|-----------------------|--------|------|-------------|
|           | 3/8" (9.5mm)          | 100.0  | %    | 100-100     |
|           | #4 (4.75mm)           | 96.6   | %    | 95-100      |
|           | #8 (2.36mm)           | 82.6   | %    | 65-95       |
|           | #16 (1.18mm)          | 67.9   | %    | 35-75       |
|           | #30 (.6mm)            | 52.3   | %    | 20-55       |
|           | #50 (.3mm)            | 27.7   | %    | 10-30       |
|           | #100 (.15mm)          | 5.8    | %    | 0-10        |
|           | #200 (75µm)           | 0.8    | %    |             |
|           | FM                    | 2.67   |      | 2.6-3       |
|           | Wash Loss (#200/75um) | 0.6    | %    | 0-3         |
|           | Total Moisture        | 5.19   | %    |             |

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **20**

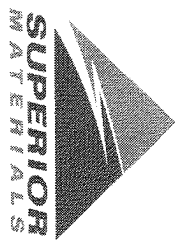
Sample Date: **8/14/23**

Dates Test Represents: **8/15/2023** through **8/21/2023**

Concrete Grade: **S2M, 3500HP**

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

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



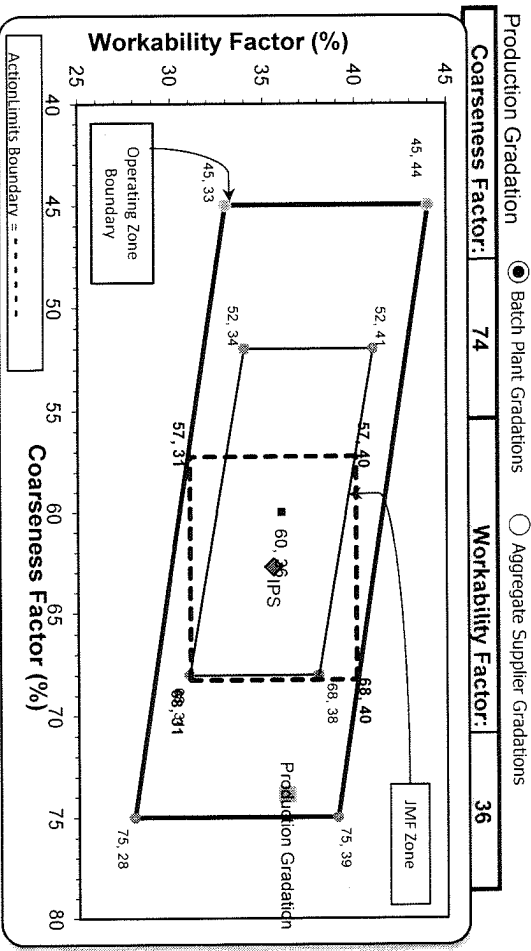
**Superior Materials, LLC**  
 30701 W. 10 Mile Rd.  
 Suite 500  
 Farmington Hills, MI 48336

| 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             | 63-92 | Grange Hall  | 1250         | 7.56            | 2.65             | 41.0           |              |
| <b>Total Wt</b> |       |              |              |                 |                  | <b>3050</b>    | <b>100.0</b> |

| 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"  | 81.4  | 100.0 | 100.0 | 90.2                 | 9.3        | 9.8                   |
| 1/2"  | 28.8  | 94.0  | 100.0 | 62.3                 | 28.0       | 37.7                  |
| 3/8"  | 12.8  | 79.6  | 100.0 | 52.9                 | 9.3        | 47.1                  |
| #4    | 2.9   | 15.9  | 97.5  | 42.5                 | 10.4       | 57.5                  |
| #8    | 2.5   | 5.2   | 84.4  | 36.2                 | 6.3        | 63.8                  |
| #16   | 2.3   | 3.2   | 69.9  | 30.1                 | 6.2        | 69.9                  |
| #30   | 2.2   | 2.7   | 51.7  | 22.5                 | 7.5        | 77.5                  |
| #50   | 2.1   | 2.5   | 21.3  | 10.0                 | 12.5       | 90.0                  |
| #100  | 2.0   | 2.2   | 3.3   | 2.5                  | 7.4        | 97.5                  |
| LBW   | 1.5   | 1.9   | 0.5   | 1.1                  | 1.4        | 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 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: **74** Workability Factor: **36**

Initial Production Sample (IPS)

| Sieve | % Retained | Cumulative % Retained |
|-------|------------|-----------------------|
| 2"    | 0.0        | 0.0                   |
| 1.5"  | 0.0        | 0.0                   |
| 1"    | 0.4        | 0.4                   |
| 3/4"  | 9.3        | 9.8                   |
| 1/2"  | 28.0       | 37.7                  |
| 3/8"  | 9.3        | 47.1                  |
| #4    | 10.4       | 57.5                  |
| #8    | 6.3        | 63.8                  |
| #16   | 6.2        | 69.9                  |
| #30   | 7.5        | 77.5                  |
| #50   | 12.5       | 90.0                  |
| #100  | 7.4        | 97.5                  |
| LBW   | 1.4        | 98.9                  |

| 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"  | 93.3                 | 6.7        | 6.7                   |
| 1/2"  | 70.6                 | 22.6       | 29.4                  |
| 3/8"  | 59.6                 | 11.0       | 40.4                  |
| #4    | 43.9                 | 15.7       | 56.1                  |
| #8    | 35.6                 | 8.4        | 64.4                  |
| #16   | 28.4                 | 7.2        | 71.6                  |
| #30   | 19.4                 | 9.0        | 80.6                  |
| #50   | 7.5                  | 11.9       | 92.5                  |
| #100  | 0.9                  | 6.6        | 99.1                  |
| LBW   | 0.9                  | 0.1        | 99.1                  |

PREPARED BY:  
 SM, LLC Technical Service

Approved By: \_\_\_\_\_



Plant S20-Superior Flint  
 Product 1051-6AA LS  
 Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician  
 Report Date 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 6AA LS  |
|-----------|-----------------------|--------|------|---------|
|           | 2" (50mm)             | 100.0  | %    |         |
|           | 1 1/2" (37.5mm)       | 100.0  | %    | 100-100 |
|           | 1" (25mm)             | 99.2   | %    | 95-100  |
|           | 3/4" (19mm)           | 81.4   | %    |         |
|           | 1/2" (12.5mm)         | 28.8   | %    | 30-60   |
|           | 3/8" (9.5mm)          | 12.8   | %    |         |
|           | #4 (4.75mm)           | 2.9    | %    | 0-8     |
|           | #8 (2.36mm)           | 2.5    | %    |         |
|           | #16 (1.18mm)          | 2.3    | %    |         |
|           | #30 (.6mm)            | 2.2    | %    |         |
|           | #50 (.3mm)            | 2.1    | %    |         |
|           | #100 (.15mm)          | 2.0    | %    |         |
|           | #200 (75µm)           | 1.71   | %    |         |
|           | Wash Loss (#200/75um) | 1.5    | %    | 0-2     |
|           | Total Moisture        | 1.36   | %    |         |



Plant S20-Superior Flint  
 Product 1067-26A Mod LS  
 Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician  
 Report Date 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 26A Mod LS Spec |
|-----------|-----------------------|--------|------|-----------------|
|           | 2" (50mm)             | 100.0  | %    |                 |
|           | 1 1/2" (37.5mm)       | 100.0  | %    |                 |
|           | 1" (25mm)             | 100.0  | %    |                 |
|           | 3/4" (19mm)           | 100.0  | %    | 100-100         |
|           | 1/2" (12.5mm)         | 94.0   | %    | 95-100          |
|           | 3/8" (9.5mm)          | 79.6   | %    | 60-95           |
|           | #4 (4.75mm)           | 15.9   | %    | 5-30            |
|           | #8 (2.36mm)           | 5.2    | %    | 0-12            |
|           | #16 (1.18mm)          | 3.2    | %    |                 |
|           | #30 (.6mm)            | 2.7    | %    |                 |
|           | #50 (.3mm)            | 2.5    | %    |                 |
|           | #100 (.15mm)          | 2.2    | %    |                 |
|           | #200 (75µm)           | 2.0    | %    |                 |
|           | Wash Loss (#200/75µm) | 1.9    | %    | 0-3             |
|           | Total Moisture        | 1.37   | %    |                 |



Plant S20-Superior Flint  
Product 1022-2NS GR  
Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician  
Report Date 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 2NS GR Spec |
|-----------|-----------------------|--------|------|-------------|
|           | 3/8" (9.5mm)          | 100.0  | %    | 100-100     |
|           | #4 (4.75mm)           | 97.5   | %    | 95-100      |
|           | #8 (2.36mm)           | 84.4   | %    | 65-95       |
|           | #16 (1.18mm)          | 69.9   | %    | 35-75       |
|           | #30 (.6mm)            | 51.7   | %    | 20-55       |
|           | #50 (.3mm)            | 21.3   | %    | 10-30       |
|           | #100 (.15mm)          | 3.3    | %    | 0-10        |
|           | #200 (75µm)           | 0.7    | %    |             |
|           | FM                    | 2.72   |      | 2.6-3       |
|           | Wash Loss (#200/75um) | 0.5    | %    | 0-3         |
|           | Total Moisture        | 3.16   | %    |             |



# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-32**

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

Sample Date: 8/14/23

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

Dates Test Represents: 8/15/2023 through 8/21/2023

Concrete Grade: **S2M, 3500HP**

| Agg. Class | Pit #  | Source       | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | Contribution % |
|------------|--------|--------------|--------------|-----------------|------------------|----------------|
| 6AA        | 71-47  | Presque Isle | 1500         | 9.17            | 2.62             | 49.2           |
| 26A        | 71-47  | Presque Isle | 320          | 1.96            | 2.62             | 10.5           |
| 2NS        | 95-013 | Smelter Bay  | 1230         | 7.44            | 2.65             | 40.3           |
| Total Wt   |        |              |              |                 |                  | 100.0          |

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"    | 98.1  | 100.0 | 100.0 | 99.1                 | 0.9        | 0.9                   |
| 3/4"  | 86.7  | 100.0 | 100.0 | 93.5                 | 5.6        | 6.5                   |
| 1/2"  | 43.9  | 95.3  | 100.0 | 71.9                 | 21.5       | 28.1                  |
| 3/8"  | 27.4  | 85.9  | 100.0 | 62.8                 | 37.2       | 37.2                  |
| #4    | 5.2   | 23.9  | 96.1  | 43.8                 | 56.2       | 56.2                  |
| #8    | 2.5   | 6.0   | 84.8  | 36.1                 | 63.9       | 70.4                  |
| #16   | 2.2   | 3.0   | 70.0  | 29.6                 | 70.4       | 78.6                  |
| #30   | 2.1   | 2.3   | 49.9  | 21.4                 | 78.6       | 89.3                  |
| #50   | 2.0   | 2.1   | 23.6  | 10.7                 | 89.3       | 96.1                  |
| #100  | 1.9   | 1.9   | 6.9   | 3.9                  | 96.1       | 98.6                  |
| LBW   | 1.5   | 1.7   | 1.2   | 1.4                  | 98.6       | 98.6                  |

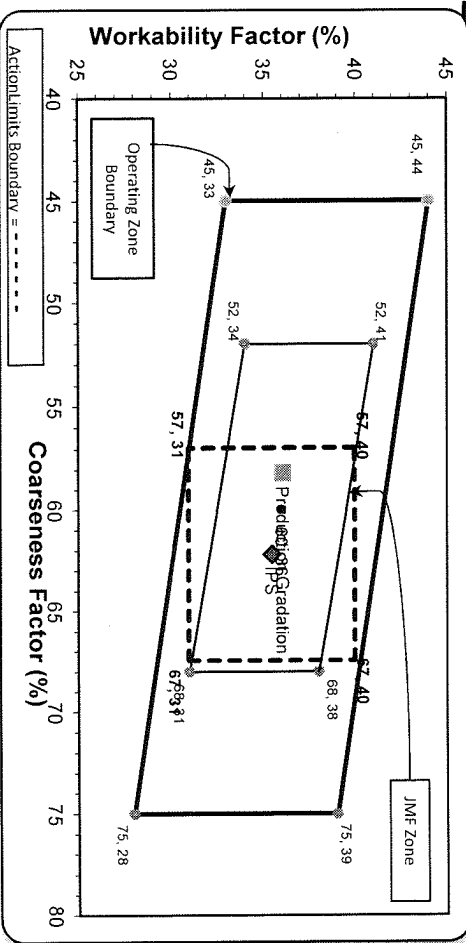
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max.  
 nom. max. #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max.  
 nom. max. #100 and #200 sieves.  
 \*% Retained must be at least 4% for the 3/4" sieve when a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

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

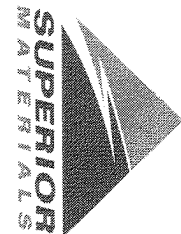
Initial Production Sample (IPS)

Coarseness Factor: **58** Workability Factor: **36**

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                  |



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

PREPARED BY:  
 SM, LLC Technical Service

Approved By:

# Edw. C. Levy Co.

JMT  
8911 W. Jefferson  
Detroit, 48209  
(313) 429-2429

**Plant** 958-JMT

**Product** 1054-6AA LS PI

**Period:** 08/13/2023 - 08/19/2023

**Name/Title** Doug Storey / QC Technician

**Report Date** 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 6AA LS PI Spec |
|-----------|-----------------------|--------|------|----------------|
|           | 2" (50mm)             | 100.0  | %    |                |
|           | 1 1/2" (37.5mm)       | 100.0  | %    | 100-100        |
|           | 1" (25mm)             | 98.1   | %    | 95-100         |
|           | 3/4" (19mm)           | 86.7   | %    |                |
|           | 1/2" (12.5mm)         | 43.9   | %    | 30-60          |
|           | 3/8" (9.5mm)          | 27.4   | %    |                |
|           | #4 (4.75mm)           | 5.2    | %    | 0-8            |
|           | #8 (2.36mm)           | 2.5    | %    |                |
|           | #16 (1.18mm)          | 2.2    | %    |                |
|           | #30 (.6mm)            | 2.1    | %    |                |
|           | #50 (.3mm)            | 2.0    | %    |                |
|           | #100 (.15mm)          | 1.9    | %    |                |
|           | #200 (75µm)           | 1.6    | %    |                |
|           | Wash Loss (#200/75um) | 1.5    | %    | 0-2            |
|           | Total Moisture        | 2.8    | %    |                |

Plant 958-JMT  
 Product 1067-26A Mod LS  
 Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician  
 Report Date 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 26A Mod LS Spec |
|-----------|-----------------------|--------|------|-----------------|
|           | 2" (50mm)             | 100.0  | %    |                 |
|           | 1 1/2" (37.5mm)       | 100.0  | %    |                 |
|           | 1" (25mm)             | 100.0  | %    |                 |
|           | 3/4" (19mm)           | 100.0  | %    | 100-100         |
|           | 1/2" (12.5mm)         | 95.3   | %    | 95-100          |
|           | 3/8" (9.5mm)          | 85.9   | %    | 60-95           |
|           | #4 (4.75mm)           | 23.9   | %    | 5-30            |
|           | #8 (2.36mm)           | 6.0    | %    | 0-12            |
|           | #16 (1.18mm)          | 3.0    | %    |                 |
|           | #30 (.6mm)            | 2.3    | %    |                 |
|           | #50 (.3mm)            | 2.1    | %    |                 |
|           | #100 (.15mm)          | 1.9    | %    |                 |
|           | #200 (75µm)           | 1.7    | %    |                 |
|           | Wash Loss (#200/75um) | 1.7    | %    | 0-3             |
|           | Total Moisture        | 3.3    | %    |                 |

Plant 958-JMT  
 Product 1022-2NS GR - Smelter Bay  
 Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician  
 Report Date 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 2NS GR Spec |
|-----------|-----------------------|--------|------|-------------|
|           | 3/8" (9.5mm)          | 100.0  | %    | 100-100     |
|           | #4 (4.75mm)           | 96.1   | %    | 95-100      |
|           | #8 (2.36mm)           | 84.8   | %    | 65-95       |
|           | #16 (1.18mm)          | 70.0   | %    | 35-75       |
|           | #30 (.6mm)            | 49.9   | %    | 20-55       |
|           | #50 (.3mm)            | 23.6   | %    | 10-30       |
|           | #100 (.15mm)          | 6.9    | %    | 0-10        |
|           | #200 (75µm)           | 1.5    | %    |             |
|           | FM                    | 2.69   |      | 2.6-3       |
|           | Wash Loss (#200/75µm) | 1.2    | %    | 0-3         |
|           | Total Moisture        | 5.2    | %    |             |

# Aggregate Optimization Chart

# Production Gradation Report

PLANT #: **P-102**

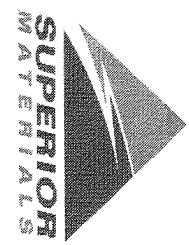
Sample Date: **8/14/23**

Dates Test Represents: **8/15/2023** through **8/21/2023**

Concrete Grade: **S2M, 3500HP**

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

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



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

| Aggr. Class | Pit #  | Source        | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | Contribution % |
|-------------|--------|---------------|--------------|-----------------|------------------|----------------|
| 6AA         | 58-003 | Stoneco       | 1650         | 9.83            | 2.69             | 53.2           |
| 26A         | 58-003 | Stoneco       | 250          | 1.49            | 2.69             | 8.1            |
| 2NS         | 81-019 | Pleasant Lake | 1200         | 7.26            | 2.65             | 38.7           |
| Total Wt:   |        |               | <b>3100</b>  | <b>18.58</b>    |                  | <b>100.0</b>   |

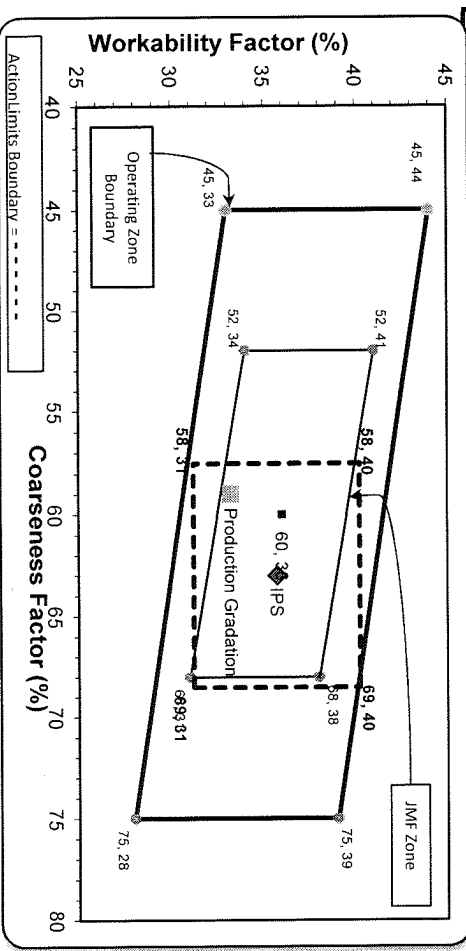
  

| Sieve | 6AA   | 26A   | 2NS   | Cumulative % Passing | % Retained | Cumulative % Retained |
|-------|-------|-------|-------|----------------------|------------|-----------------------|
| 2"    | 100.0 | 100.0 | 100.0 | 100.0                | 0.0        | 0.0                   |
| 1.5"  | 100.0 | 100.0 | 100.0 | 100.0                | 0.0        | 0.0                   |
| 1"    | 100.0 | 100.0 | 100.0 | 100.0                | 0.0        | 0.0                   |
| 3/4"  | 85.1  | 100.0 | 100.0 | 92.1                 | 7.9        | 7.9                   |
| 1/2"  | 47.8  | 100.0 | 100.0 | 72.2                 | 19.9       | 27.8                  |
| 3/8"  | 28.0  | 87.1  | 100.0 | 60.6                 | 11.6       | 39.4                  |
| #4    | 6.5   | 10.3  | 97.7  | 42.1                 | 18.5       | 57.9                  |
| #8    | 3.0   | 3.3   | 81.1  | 33.3                 | 8.9        | 66.7                  |
| #16   | 2.4   | 2.4   | 63.4  | 26.0                 | 7.2        | 74.0                  |
| #30   | 2.2   | 2.1   | 45.5  | 19.0                 | 7.1        | 81.0                  |
| #50   | 2.1   | 1.9   | 21.7  | 9.7                  | 9.3        | 90.3                  |
| #100  | 1.9   | 1.8   | 6.5   | 3.7                  | 6.0        | 96.3                  |
| LBW   | 1.7   | 1.6   | 1.1   | 1.5                  | 2.2        | 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 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: **33**



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"    | 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: \_\_\_\_\_



**Plant** S102-Superior Novi

**Product** 1051-6AA LS

**Period:** 08/13/2023 - 08/19/2023

**Name/Title** Doug Storey / QC Technician

**Report Date** 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 6AA LS  |
|-----------|-----------------------|--------|------|---------|
|           | 2" (50mm)             | 100.0  | %    |         |
|           | 1 1/2" (37.5mm)       | 100.0  | %    | 100-100 |
|           | 1" (25mm)             | 100.0  | %    | 95-100  |
|           | 3/4" (19mm)           | 85.1   | %    |         |
|           | 1/2" (12.5mm)         | 47.8   | %    | 30-60   |
|           | 3/8" (9.5mm)          | 28.0   | %    |         |
|           | #4 (4.75mm)           | 6.5    | %    | 0-8     |
|           | #8 (2.36mm)           | 3.0    | %    |         |
|           | #16 (1.18mm)          | 2.4    | %    |         |
|           | #30 (.6mm)            | 2.2    | %    |         |
|           | #50 (.3mm)            | 2.1    | %    |         |
|           | #100 (.15mm)          | 1.9    | %    |         |
|           | #200 (75µm)           | 1.79   | %    |         |
|           | Wash Loss (#200/75um) | 1.7    | %    | 0-2     |
|           | Total Moisture        | 3.08   | %    |         |



Plant S102-Superior Novi  
 Product 1067-26A Mod LS  
 Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician  
 Report Date 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 26A Mod LS Spec |
|-----------|-----------------------|--------|------|-----------------|
|           | 2" (50mm)             | 100.0  | %    |                 |
|           | 1 1/2" (37.5mm)       | 100.0  | %    |                 |
|           | 1" (25mm)             | 100.0  | %    |                 |
|           | 3/4" (19mm)           | 100.0  | %    | 100-100         |
|           | 1/2" (12.5mm)         | 100.0  | %    | 95-100          |
|           | 3/8" (9.5mm)          | 87.1   | %    | 60-95           |
|           | #4 (4.75mm)           | 10.3   | %    | 5-30            |
|           | #8 (2.36mm)           | 3.3    | %    | 0-12            |
|           | #16 (1.18mm)          | 2.4    | %    |                 |
|           | #30 (.6mm)            | 2.1    | %    |                 |
|           | #50 (.3mm)            | 1.9    | %    |                 |
|           | #100 (.15mm)          | 1.8    | %    |                 |
|           | #200 (75µm)           | 1.7    | %    |                 |
|           | Wash Loss (#200/75µm) | 1.6    | %    | 0-3             |
|           | Total Moisture        | 1.82   | %    |                 |



Plant S102-Superior Novi  
Product 1022-2NS GR  
Period: 08/13/2023 - 08/19/2023

Name/Title Doug Storey / QC Technician  
Report Date 08/19/2023

| Procedure | Sieve/Test            | Result | Unit | 2NS GR Spec |
|-----------|-----------------------|--------|------|-------------|
|           | 3/8" (9.5mm)          | 100.0  | %    | 100-100     |
|           | #4 (4.75mm)           | 97.7   | %    | 95-100      |
|           | #8 (2.36mm)           | 81.1   | %    | 65-95       |
|           | #16 (1.18mm)          | 63.4   | %    | 35-75       |
|           | #30 (.6mm)            | 45.5   | %    | 20-55       |
|           | #50 (.3mm)            | 21.7   | %    | 10-30       |
|           | #100 (.15mm)          | 6.5    | %    | 0-10        |
|           | #200 (75µm)           | 1.9    | %    |             |
|           | FM                    | 2.84   |      | 2.6-3       |
|           | Wash Loss (#200/75µm) | 1.1    | %    | 0-3         |
|           | Total Moisture        | 3.24   | %    |             |