

# Aggregate Optimization Chart

## Production Gradation Report

**PLANT #:** P-36

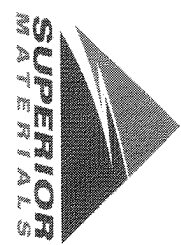
Sample Date: 3/30/20

Dates Test Represents: 3/31/2020 through 4/6/2020

Concrete Grade: S2M

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

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



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

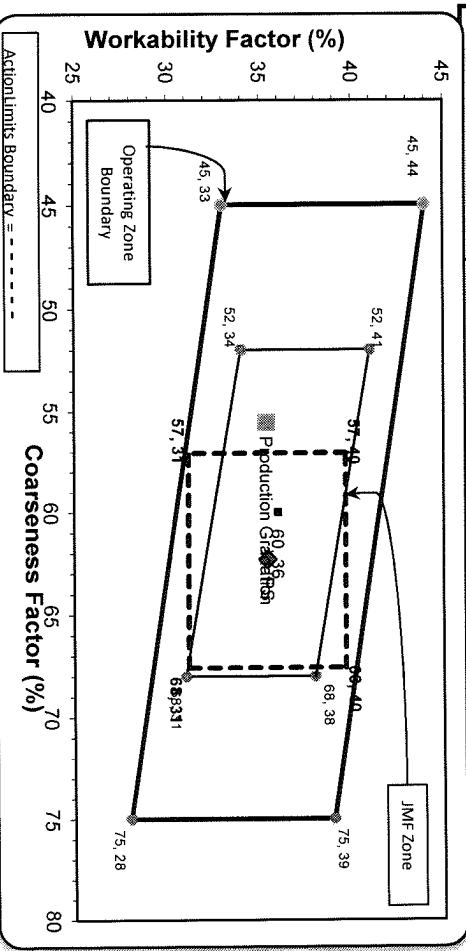
| Agg. Class | Pit # | Source          | Weight (SSD) | ft <sup>3</sup> | Specific Gravity | Contribution % |
|------------|-------|-----------------|--------------|-----------------|------------------|----------------|
| 6AA        | 71-47 | Presque Isle    | 1450         | 8.87            | 2.62             | 47.5           |
| 26A        | 71-47 | Presque Isle    | 400          | 2.45            | 2.62             | 13.1           |
| 2NS        | 63-92 | Garage Hall     | 1200         | 7.26            | 2.65             | 39.3           |
|            |       | <b>Total Wt</b> | <b>3050</b>  | <b>18.57</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"    | 99.4  | 100.0 | 100.0 | 99.7                 | 0.3        | 0.3                   |
| 3/4"  | 85.3  | 100.0 | 100.0 | 93.0                 | 6.7        | 7.0                   |
| 1/2"  | 48.8  | 97.7  | 100.0 | 75.4                 | 17.7       | 24.6                  |
| 3/8"  | 26.5  | 92.7  | 100.0 | 64.1                 | 11.3       | 35.9                  |
| #4    | 4.5   | 24.9  | 97.7  | 43.8                 | 20.3       | 56.2                  |
| #8    | 2.3   | 6.7   | 84.9  | 35.4                 | 8.5        | 64.6                  |
| #16   | 1.9   | 3.5   | 70.0  | 28.9                 | 6.5        | 71.1                  |
| #30   | 1.8   | 2.9   | 50.8  | 21.2                 | 7.7        | 78.8                  |
| #50   | 1.8   | 2.7   | 21.4  | 9.6                  | 11.6       | 90.4                  |
| #100  | 1.7   | 2.5   | 4.5   | 2.9                  | 6.7        | 97.1                  |
| LBW   | 1.6   | 2.2   | 1.6   | 1.7                  | 1.2        | 98.3                  |

\*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. 1.5") aggregate is used.

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Initial Production Sample (IPS)



| Sieve | Coarseness Factor: 62 |            | Workability Factor: 35 |            |
|-------|-----------------------|------------|------------------------|------------|
|       | Cumulative % Passing  | % Retained | Cumulative % Passing   | % Retained |
| 2"    | 100.0                 | 0.0        | 100.0                  | 0.0        |
| 1.5"  | 100.0                 | 0.0        | 100.0                  | 0.0        |
| 1"    | 99.1                  | 0.9        | 99.1                   | 0.9        |
| 3/4"  | 90.5                  | 8.6        | 90.5                   | 8.6        |
| 1/2"  | 69.8                  | 20.7       | 69.8                   | 20.7       |
| 3/8"  | 59.8                  | 10.0       | 59.8                   | 10.0       |
| #4    | 42.2                  | 17.6       | 42.2                   | 17.6       |
| #8    | 35.4                  | 6.7        | 35.4                   | 6.7        |
| #16   | 28.8                  | 6.7        | 28.8                   | 6.7        |
| #30   | 21.4                  | 7.4        | 21.4                   | 7.4        |
| #50   | 8.8                   | 12.6       | 8.8                    | 12.6       |
| #100  | 1.8                   | 7.0        | 1.8                    | 7.0        |
| LBW   | 0.7                   | 1.0        | 0.7                    | 1.0        |

PREPARED BY:  
SM, LLC Technical Service

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



2470 Auburn Road  
Auburn Hills, MI 48432

Plant S36-Superior Auburn Hills

Product 1051-6AA LS

Name/Title Doug Storey / QC Technician

Period: 03/29/2020 - 04/04/2020

Report Date 04/04/2020

| Procedure | Sieve/Test            | Result | Unit | 6AA LS  |
|-----------|-----------------------|--------|------|---------|
|           | 2" (50mm)             | 100.0  | %    |         |
|           | 1 1/2" (37.5mm)       | 100.0  | %    | 100-100 |
|           | 1" (25mm)             | 99.4   | %    | 95-100  |
|           | 3/4" (19mm)           | 85.3   | %    |         |
|           | 1/2" (12.5mm)         | 48.8   | %    | 30-60   |
|           | 3/8" (9.5mm)          | 26.5   | %    |         |
|           | #4 (4.75mm)           | 4.5    | %    | 0-8     |
|           | #8 (2.36mm)           | 2.3    | %    |         |
|           | #16 (1.18mm)          | 1.9    | %    |         |
|           | #30 (.6mm)            | 1.8    | %    |         |
|           | #50 (.3mm)            | 1.8    | %    |         |
|           | #100 (.15mm)          | 1.7    | %    |         |
|           | #200 (75µm)           | 1.61   | %    |         |
|           | Wash Loss (#200/75um) | 1.6    | %    | 0-2     |
|           | Total Moisture        | 1.18   | %    |         |



Plant S36-Superior Auburn Hills  
Product 1067-26A Mod LS  
Period: 03/29/2020 - 04/04/2020

Name/Title Doug Storey / QC Technician  
Report Date 04/04/2020

| 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)           | 100.0  | %    | 100-100     |
|           | 1/2" (12.5mm)         | 97.7   | %    | 95-100      |
|           | 3/8" (9.5mm)          | 92.7   | %    | 60-95       |
|           | #4 (4.75mm)           | 24.9   | %    | 5-30        |
|           | #8 (2.36mm)           | 6.7    | %    | 0-12        |
|           | #16 (1.18mm)          | 3.5    | %    |             |
|           | #30 (.6mm)            | 2.9    | %    |             |
|           | #50 (.3mm)            | 2.7    | %    |             |
|           | #100 (.15mm)          | 2.5    | %    |             |
|           | #200 (75µm)           | 2.3    | %    |             |
|           | Wash Loss (#200/75um) | 2.2    | %    | 0-3         |
|           | Total Moisture        | 4.47   | %    |             |



2470 Auburn Road  
Auburn Hills, MI 48432

**Plant** S36-Superior Auburn Hills  
**Product** 1022-2NS GR  
**Period:** 03/29/2020 - 04/04/2020

**Name/Title** Doug Storey / QC Technician  
**Report Date** 04/04/2020

| 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)           | 84.9   | %    | 65-95       |
|           | #16 (1.18mm)          | 70.0   | %    | 35-75       |
|           | #30 (.6mm)            | 50.8   | %    | 20-55       |
|           | #50 (.3mm)            | 21.4   | %    | 10-30       |
|           | #100 (.15mm)          | 4.5    | %    | 0-10        |
|           | #200 (75µm)           | 1.8    | %    |             |
|           | FM                    | 2.71   |      | 2.6-3       |
|           | Wash Loss (#200/75um) | 1.6    | %    | 0-3         |
|           | Total Moisture        | 3.96   | %    |             |

# Aggregate Optimization Chart

# Production Gradation Report

**PLANT #:** P-02

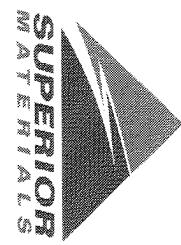
Sample Date: 3/30/20

Dates Test Represents: 3/31/2020 through 4/6/2020

Concrete Grade: S2M

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 | 1450         | 8.87            | 2.62             | 47.5           |              |
| 26A              | 71-47  | Presque Isle | 300          | 1.83            | 2.62             | 9.8            |              |
| 2NS              | 63-115 | Ray Rd       | 1300         | 7.86            | 2.65             | 42.6           |              |
| <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"    | 100.0 | 100.0 | 100.0 | 100.0                | 0.0        | 0.0                   |
| 3/4"  | 86.7  | 100.0 | 100.0 | 93.7                 | 6.3        | 6.3                   |
| 1/2"  | 30.7  | 97.4  | 100.0 | 66.8                 | 26.9       | 33.2                  |
| 3/8"  | 9.0   | 88.8  | 100.0 | 55.6                 | 11.2       | 44.4                  |
| #4    | 3.8   | 25.9  | 96.7  | 45.6                 | 10.1       | 54.4                  |
| #8    | 3.2   | 8.0   | 79.7  | 36.3                 | 9.3        | 63.7                  |
| #16   | 3.0   | 3.5   | 64.0  | 29.0                 | 7.2        | 71.0                  |
| #30   | 2.8   | 2.8   | 49.8  | 22.8                 | 6.2        | 77.2                  |
| #50   | 2.6   | 2.5   | 27.5  | 13.2                 | 9.6        | 86.8                  |
| #100  | 2.4   | 2.3   | 5.7   | 3.8                  | 9.4        | 96.2                  |
| LBW   | 1.9   | 1.9   | 0.7   | 1.4                  | 2.4        | 98.6                  |

Verify this number is 100%

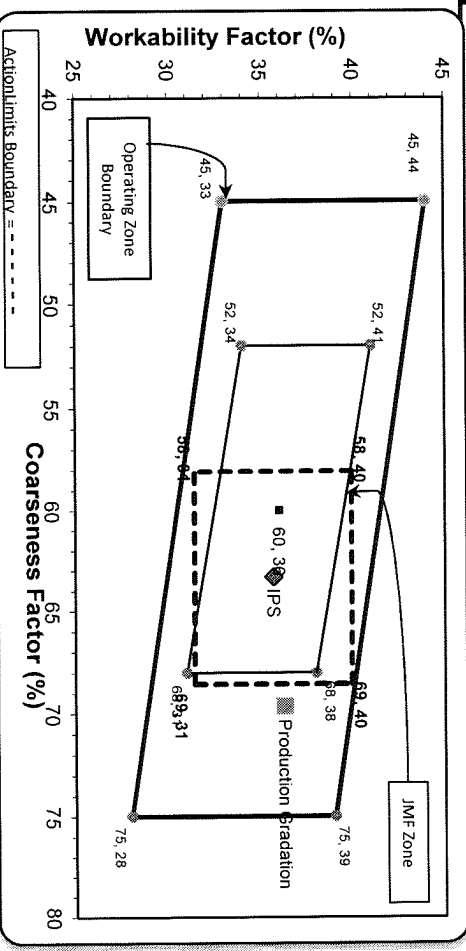
\*Maximum % Retained must be above the 3/8" sieve.  
 \*Any two adjacent sieves must equal 10% except max.  
 nom. max. #100 and #200 sieves.  
 \*% Retained must be at least 4% for each sieve except max.  
 nom. max. #100 and #200 sieves.  
 \*% Retained must be at least 8% for the 1" sieve when  
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

Production Gradation  Batch Plant Gradations  Aggregate Supplier Gradations

Coarseness Factor: 70 Workability Factor: 36

Initial Production Sample (IPS)

Coarseness Factor: 63 Workability Factor: 36



| Sieve | % 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: \_\_\_\_\_

# Edw. C. Levy Co.

## Quality Test Report

Plant 958-JMT  
 Product 1054-6AA LS PI  
 Specification 6AA LS PI Spec

### Sample Information

Sample No -674954548  
 Date Sampled 04/06/2020 12:53  
 Sampled By Codi Hodnicki  
 Type Job Site  
 Method Bucket-Blend

Split Sample   
 Resample

Test Note  
 Hoover

### Gradation Results

Date Completed 04/06/2020 12:53

Tested By Codi Hodnicki

| Unit | Moist Mass | Dry Mass | Wash Mass | Moisture % | Wash Loss % | Procedure |
|------|------------|----------|-----------|------------|-------------|-----------|
| g    | 3918.00    | 3808.00  | 3734.00   | 2.9        | 1.9         |           |

| Sieve           | Mass Retained | Cum Mass Retained | Ind % Retained | % Retained | % Passing | Target | Specification | Comment |
|-----------------|---------------|-------------------|----------------|------------|-----------|--------|---------------|---------|
| 2" (50mm)       | 0.00          | 0.00              | 0.0            | 0.0        | 100.0     |        |               |         |
| 1 1/2" (37.5mm) | 0.00          | 0.00              | 0.0            | 0.0        | 100.0     |        | 100-100       |         |
| 1" (25mm)       | 0.00          | 0.00              | 0.0            | 0.0        | 100.0     |        | 95-100        |         |
| 3/4" (19mm)     | 505.00        | 505.00            | 13.3           | 13.3       | 86.7      |        |               |         |
| 1/2" (12.5mm)   | 2135.00       | 2640.00           | 56.1           | 69.3       | 30.7      |        | 30-60         |         |
| 3/8" (9.5mm)    | 825.00        | 3465.00           | 21.7           | 91.0       | 9.0       |        |               |         |
| #4 (4.75mm)     | 198.00        | 3663.00           | 5.2            | 96.2       | 3.8       |        | 0-8           |         |
| #8 (2.36mm)     | 22.00         | 3685.00           | 0.6            | 96.8       | 3.2       |        |               |         |
| #16 (1.18mm)    | 10.00         | 3695.00           | 0.3            | 97.0       | 3.0       |        |               |         |
| #30 (.6mm)      | 6.00          | 3701.00           | 0.2            | 97.2       | 2.8       |        |               |         |
| #50 (.3mm)      | 7.00          | 3708.00           | 0.2            | 97.4       | 2.6       |        |               |         |
| #100 (.15mm)    | 9.00          | 3717.00           | 0.2            | 97.6       | 2.4       |        |               |         |
| #200 (75µm)     | 12.00         | 3729.00           | 0.3            | 97.9       | 2.1       |        |               |         |
| Pan             | 5.00          | 3734.00           | 2.1            | 100.0      | 0.0       |        |               |         |

### Other Test Results

| Test Name             | Date             | Result | Unit | Target | Specification | Comment |
|-----------------------|------------------|--------|------|--------|---------------|---------|
|                       | Procedure        | Lab    |      |        | Tested By     |         |
| Total Moisture        | 04/06/2020 12:53 | 2.9    | %    |        | Codi Hodnicki |         |
| Wash Loss (#200/75um) | 04/06/2020 12:53 | 1.9    | %    |        | 0-2           |         |
|                       |                  | JMT    |      |        | Codi Hodnicki |         |



EDW. C. LEVY CO.  
3900 Dix Avenue, Detroit, MI 48209  
(313) 943-7293

## Quality Test Report

**Plant** 164-SCA DETROIT DOCK  
**Product** 1067-26A Mod LS  
**Specification** 26A Mod LS Spec

### Sample Information

**Sample No** -1989702239  
**Date Sampled** 04/06/2020 16:32  
**Sampled By** Codi Hodnicki  
**Type** Shipping  
**Method** Bucket-Blend

**Split Sample**   
**Resample**

**Test Note**  
Hoover

### Gradation Results

**Date Completed** 04/06/2020 16:32

**Tested By** Codi Hodnicki

| Unit | Moist Mass | Dry Mass | Wash Mass | Moisture % | Wash Loss % | Procedure |
|------|------------|----------|-----------|------------|-------------|-----------|
| g    | 2258.00    | 2171.00  | 2130.00   | 4.0        | 1.9         |           |

| Sieve           | Mass Retained | Cum Mass Retained | Ind % Retained | % Retained | % Passing | Target | Specification | Comment |
|-----------------|---------------|-------------------|----------------|------------|-----------|--------|---------------|---------|
| 2" (50mm)       | 0.00          | 0.00              | 0.0            | 0.0        | 100.0     |        |               |         |
| 1 1/2" (37.5mm) | 0.00          | 0.00              | 0.0            | 0.0        | 100.0     |        |               |         |
| 1" (25mm)       | 0.00          | 0.00              | 0.0            | 0.0        | 100.0     |        |               |         |
| 3/4" (19mm)     | 0.00          | 0.00              | 0.0            | 0.0        | 100.0     |        | 100-100       |         |
| 1/2" (12.5mm)   | 56.00         | 56.00             | 2.6            | 2.6        | 97.4      |        | 95-100        |         |
| 3/8" (9.5mm)    | 188.00        | 244.00            | 8.7            | 11.2       | 88.8      |        | 60-95         |         |
| #4 (4.75mm)     | 1365.00       | 1609.00           | 62.9           | 74.1       | 25.9      |        | 5-30          |         |
| #8 (2.36mm)     | 389.00        | 1998.00           | 17.9           | 92.0       | 8.0       |        | 0-12          |         |
| #16 (1.18mm)    | 96.00         | 2094.00           | 4.4            | 96.5       | 3.5       |        |               |         |
| #30 (.6mm)      | 16.00         | 2110.00           | 0.7            | 97.2       | 2.8       |        |               |         |
| #50 (.3mm)      | 6.00          | 2116.00           | 0.3            | 97.5       | 2.5       |        |               |         |
| #100 (.15mm)    | 5.00          | 2121.00           | 0.2            | 97.7       | 2.3       |        |               |         |
| #200 (75µm)     | 6.00          | 2127.00           | 0.3            | 98.0       | 2.0       |        |               |         |
| Pan             | 3.00          | 2130.00           | 2.0            | 100.0      | 0.0       |        |               |         |

### Other Test Results

| Test Name             | Date             | Result           | Unit | Target | Specification | Comment |
|-----------------------|------------------|------------------|------|--------|---------------|---------|
|                       | Procedure        | Lab              |      |        | Tested By     |         |
| Total Moisture        | 04/06/2020 16:32 | 4.0              | %    |        | Codi Hodnicki |         |
| Wash Loss (#200/75um) | 04/06/2020 16:32 | 1.9              | %    |        | 0-3           |         |
|                       |                  | SCA DETROIT DOCK |      |        | Codi Hodnicki |         |
|                       |                  | SCA DETROIT DOCK |      |        | Codi Hodnicki |         |



Plant S02-Superior Hoover

Product 1022-2NS GR

Name/Title Doug Storey / QC Technician

Period: 03/29/2020 - 04/04/2020

Report Date 04/04/2020

| Procedure | Sieve/Test            | Result | Unit | 2NS GR Spec |
|-----------|-----------------------|--------|------|-------------|
|           | 3/8" (9.5mm)          | 100.0  | %    | 100-100     |
|           | #4 (4.75mm)           | 96.7   | %    | 95-100      |
|           | #8 (2.36mm)           | 79.7   | %    | 65-95       |
|           | #16 (1.18mm)          | 64.0   | %    | 35-75       |
|           | #30 (.6mm)            | 49.8   | %    | 20-55       |
|           | #50 (.3mm)            | 27.5   | %    | 10-30       |
|           | #100 (.15mm)          | 5.7    | %    | 0-10        |
|           | #200 (75µm)           | 0.8    | %    |             |
|           | FM                    | 2.77   |      | 2.6-3       |
|           | Wash Loss (#200/75um) | 0.7    | %    | 0-3         |
|           | Total Moisture        | 3.33   | %    |             |