

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

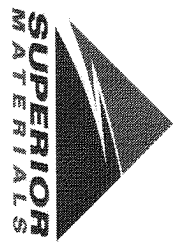
Sample Date: **1/3/22**

Dates Test Represents: **1/4/2022** through **1/10/2022**

Concrete Grade: **DM**

Contractor: _____

MDOT No.: _____



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

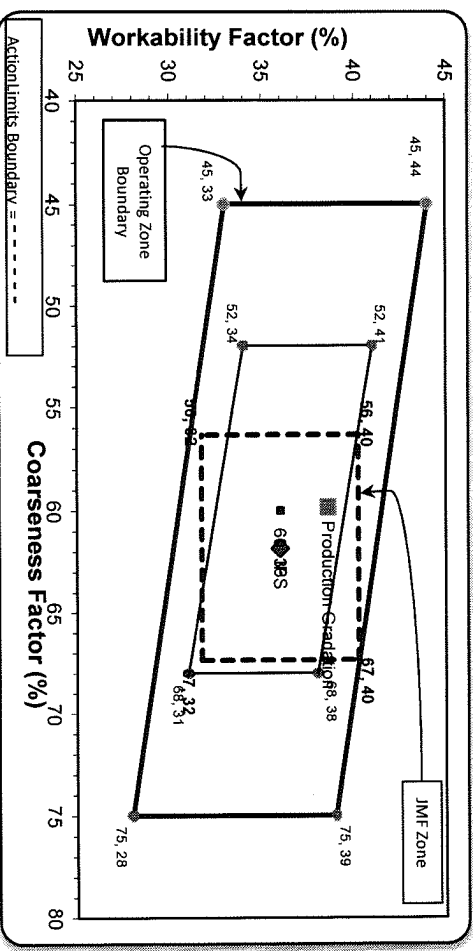
| Agg. Class | Pit # | Source | Weight (ssd) | ft ³ | Specific Gravity | % Contribution |
|------------------|--------|--------------|--------------|-----------------|------------------|----------------|
| 6AA | 71-47 | Presque Isle | 1455 | 8.90 | 2.62 | 50.1 |
| 26A | 71-47 | Presque Isle | 300 | 1.83 | 2.62 | 10.3 |
| 2NS | 95-013 | Smelter Bay | 1150 | 6.95 | 2.65 | 39.6 |
| Total Wt: | | | 2905 | 17.69 | | 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" | 97.6 | 100.0 | 100.0 | 98.8 | 1.2 | 1.2 |
| 3/4" | 75.9 | 100.0 | 100.0 | 87.9 | 10.9 | 12.1 |
| 1/2" | 43.1 | 97.0 | 100.0 | 71.2 | 16.7 | 28.8 |
| 3/8" | 26.2 | 87.7 | 100.0 | 61.8 | 9.4 | 38.2 |
| #4 | 7.0 | 25.7 | 97.3 | 44.7 | 17.1 | 55.3 |
| #8 | 3.6 | 9.0 | 84.3 | 36.1 | 8.6 | 63.9 |
| #16 | 3.0 | 4.1 | 68.9 | 29.2 | 6.9 | 70.8 |
| #30 | 2.7 | 3.0 | 48.5 | 20.9 | 8.3 | 79.1 |
| #50 | 2.6 | 2.6 | 23.8 | 11.0 | 9.9 | 89.0 |
| #100 | 2.4 | 2.3 | 7.2 | 4.3 | 6.7 | 95.7 |
| LBW | 1.9 | 1.8 | 1.6 | 1.8 | 2.5 | 98.2 |

*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: **36** Adjusted WF: **38.6**



| Sieve | Initial Production Sample (IPS) | Coarseness Factor: | Workability Factor: | Adjusted WF |
|-------|---------------------------------|--------------------|---------------------|-------------|
| | | 62 | 36 | 38.6 |

| 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" | 95.0 | 5.0 | 5.0 |
| 1/2" | 72.3 | 22.8 | 27.7 |
| 3/8" | 60.4 | 11.8 | 39.6 |
| #4 | 42.6 | 17.8 | 57.4 |
| #8 | 36.0 | 6.6 | 64.0 |
| #16 | 29.5 | 6.5 | 70.5 |
| #30 | 20.3 | 9.2 | 79.7 |
| #50 | 9.5 | 10.8 | 90.5 |
| #100 | 3.4 | 6.1 | 96.6 |
| LBW | 1.3 | 2.1 | 98.7 |

PREPARED BY:
SM, LLC Technical Service

Approved By: _____

Plant 958-JMT

Product 1054-6AA LS PI

Name/Title Doug Storey / QC Technician

Period: 01/02/2022 - 01/08/2022

Report Date 01/07/2022

| Procedure | Sieve/Test | Result | Unit | 6AA LS PI Spec |
|-----------|-----------------------|--------|------|----------------|
| | 2" (50mm) | 100.0 | % | |
| | 1 1/2" (37.5mm) | 100.0 | % | 100-100 |
| | 1" (25mm) | 97.6 | % | 95-100 |
| | 3/4" (19mm) | 75.9 | % | |
| | 1/2" (12.5mm) | 43.1 | % | 30-60 |
| | 3/8" (9.5mm) | 26.2 | % | |
| | #4 (4.75mm) | 7.0 | % | 0-8 |
| | #8 (2.36mm) | 3.6 | % | |
| | #16 (1.18mm) | 3.0 | % | |
| | #30 (.6mm) | 2.7 | % | |
| | #50 (.3mm) | 2.6 | % | |
| | #100 (.15mm) | 2.4 | % | |
| | #200 (75µm) | 2.1 | % | |
| | Wash Loss (#200/75um) | 1.9 | % | 0-2 |
| | Total Moisture | 4.3 | % | |

Plant 958-JMT

Product 1067-26A Mod LS

Name/Title Doug Storey / QC Technician

Period: 01/02/2022 - 01/08/2022

Report Date 01/07/2022

| 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) | 97.0 | % | 95-100 |
| | 3/8" (9.5mm) | 87.7 | % | 60-95 |
| | #4 (4.75mm) | 25.7 | % | 5-30 |
| | #8 (2.36mm) | 9.0 | % | 0-12 |
| | #16 (1.18mm) | 4.1 | % | |
| | #30 (.6mm) | 3.0 | % | |
| | #50 (.3mm) | 2.6 | % | |
| | #100 (.15mm) | 2.3 | % | |
| | #200 (75µm) | 2.0 | % | |
| | Wash Loss (#200/75um) | 1.8 | % | 0-3 |
| | Total Moisture | 3.4 | % | |

Plant 958-JMT

Product 1022-2NS GR - Smelter Bay

Name/Title Doug Storey / QC Technician

Period: 01/02/2022 - 01/08/2022

Report Date 01/07/2022

| Procedure | Sieve/Test | Result | Unit | 2NS GR Spec |
|-----------|-----------------------|--------|------|-------------|
| | 3/8" (9.5mm) | 100.0 | % | 100-100 |
| | #4 (4.75mm) | 97.3 | % | 95-100 |
| | #8 (2.36mm) | 84.3 | % | 65-95 |
| | #16 (1.18mm) | 68.9 | % | 35-75 |
| | #30 (.6mm) | 48.5 | % | 20-55 |
| | #50 (.3mm) | 23.8 | % | 10-30 |
| | #100 (.15mm) | 7.2 | % | 0-10 |
| | #200 (75µm) | 2.1 | % | |
| | FM | 2.70 | | 2.6-3 |
| | Wash Loss (#200/75um) | 1.6 | % | 0-3 |
| | Total Moisture | 5.3 | % | |