

Aggregate Optimization Chart

Production Gradation Report

PLANT #: **P-32**

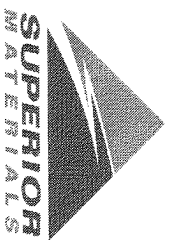
Sample Date: **9/12/22**

Dates Test Represents: **9/13/2022** through **9/19/2022**

Concrete Grade: **DM 4500HP**

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 | 1355 | 8.29 | 2.62 | 46.6 | |
| 26A | 71-47 | Presque Isle | 400 | 2.45 | 2.62 | 13.8 | |
| 2NS | 95-013 | Smelter Bay | 1150 | 6.95 | 2.65 | 39.6 | |
| Total Wt | | | | | | 2905 | 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" | 96.3 | 100.0 | 100.0 | 98.3 | 1.7 | 1.7 |
| 3/4" | 76.7 | 100.0 | 100.0 | 89.1 | 9.1 | 10.9 |
| 1/2" | 35.6 | 97.0 | 100.0 | 69.5 | 19.6 | 30.5 |
| 3/8" | 18.1 | 89.4 | 100.0 | 60.3 | 9.2 | 39.7 |
| #4 | 4.1 | 29.5 | 96.5 | 44.2 | 16.2 | 55.8 |
| #8 | 2.3 | 9.0 | 84.6 | 35.8 | 8.4 | 64.2 |
| #16 | 1.9 | 4.1 | 69.7 | 29.0 | 6.8 | 71.0 |
| #30 | 1.8 | 3.1 | 50.5 | 21.3 | 7.8 | 78.7 |
| #50 | 1.7 | 2.8 | 23.8 | 10.6 | 10.7 | 89.4 |
| #100 | 1.6 | 2.5 | 6.7 | 3.7 | 6.9 | 96.3 |
| LBW | 1.4 | 2.2 | 1.1 | 1.4 | 2.4 | 98.6 |

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

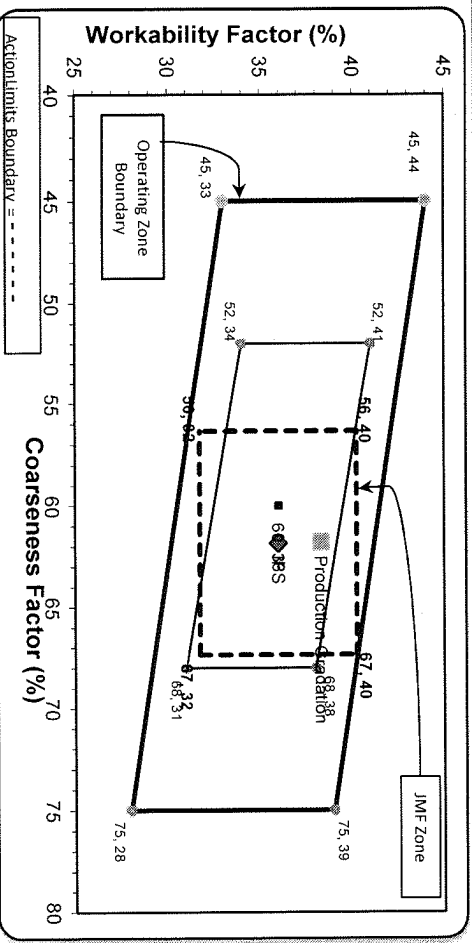
*Maximum % Retained must be above the 3/8" sieve.
 *Any two adjacent sieves must equal 10% except max.
 nom. max., #100 and #200 sieves.
 *% Retained must be at least 4% for each sieve except max.
 nom. max., #100 and #200 sieves.
 *% Retained must be at least 8% for the 1" sieve when
 a 2" max. size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

Production Gradation Batch Plant Gradations Aggregate Supplier Gradations

Coarseness Factor: **62** Workability Factor: **36** Adjusted WF: **38.3**

Initial Production Sample (IPS)

Coarseness Factor: **62** 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" | 95.0 | 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 1022-2NS GR - Smelter Bay
 Period: 09/11/2022 - 09/17/2022

Name/Title Doug Storey / QC Technician
 Report Date 09/16/2022

| Procedure | Sieve/Test | Result | Unit | 2NS GR Spec |
|-----------|-----------------------|--------|------|-------------|
| | 3/8" (9.5mm) | 100.0 | % | 100-100 |
| | #4 (4.75mm) | 96.5 | % | 95-100 |
| | #8 (2.36mm) | 84.6 | % | 65-95 |
| | #16 (1.18mm) | 69.7 | % | 35-75 |
| | #30 (.6mm) | 50.5 | % | 20-55 |
| | #50 (.3mm) | 23.8 | % | 10-30 |
| | #100 (.15mm) | 6.7 | % | 0-10 |
| | #200 (75µm) | 1.5 | % | |
| | FM | 2.68 | | 2.6-3 |
| | Wash Loss (#200/75um) | 1.1 | % | 0-3 |
| | Total Moisture | 4.2 | % | |

Plant 958-JMT
 Product 1067-26A Mod LS
 Period: 09/11/2022 - 09/17/2022

Name/Title Doug Storey / QC Technician
 Report Date 09/16/2022

| 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) | 89.4 | % | 60-95 |
| | #4 (4.75mm) | 29.5 | % | 5-30 |
| | #8 (2.36mm) | 9.0 | % | 0-12 |
| | #16 (1.18mm) | 4.1 | % | |
| | #30 (.6mm) | 3.1 | % | |
| | #50 (.3mm) | 2.8 | % | |
| | #100 (.15mm) | 2.5 | % | |
| | #200 (75µm) | 2.3 | % | |
| | Wash Loss (#200/75um) | 2.2 | % | 0-3 |
| | Total Moisture | 2.9 | % | |

Plant 958-JMT
 Product 1054-6AA LS PI
 Period: 09/11/2022 - 09/17/2022

Name/Title Doug Storey / QC Technician
 Report Date 09/16/2022

| Procedure | Sieve/Test | Result | Unit | 6AA LS PI Spec |
|-----------|-----------------------|--------|------|----------------|
| | 2" (50mm) | 100.0 | % | |
| | 1 1/2" (37.5mm) | 100.0 | % | 100-100 |
| | 1" (25mm) | 96.3 | % | 95-100 |
| | 3/4" (19mm) | 76.7 | % | |
| | 1/2" (12.5mm) | 35.6 | % | 30-60 |
| | 3/8" (9.5mm) | 18.1 | % | |
| | #4 (4.75mm) | 4.1 | % | 0-8 |
| | #8 (2.36mm) | 2.3 | % | |
| | #16 (1.18mm) | 1.9 | % | |
| | #30 (.6mm) | 1.8 | % | |
| | #50 (.3mm) | 1.7 | % | |
| | #100 (.15mm) | 1.6 | % | |
| | #200 (75µm) | 1.5 | % | |
| | Wash Loss (#200/75um) | 1.4 | % | 0-2 |
| | Total Moisture | 2.6 | % | |