



LETTER OF TRANSMITTAL

PIPELINE CONTRACTORS

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Commerce City, CO 80022
Office 303-289-4355
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ISSUED TO:

Owner ATTN: Owner Representative

DATE:

REGARDING:

TRANSMITTAL NO.:

Project JBS Job No 00XX

We are issuing you under separate cover the following (via):

- Blue Prints
- Submittals
- Change Order
- Request for Information
- Copy of a letter
- Shop Drawings

| # | Copies | Item Dated | Item # | Description |
|---|--------------|------------|--------|---|
| | 1-Electronic | | A-003 | Water and Sanitary Bedding To be mixed with Squeegee |
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- For your bid
- For Approval
- As Requested
- Returned for Correction
- For Review and Comment
- For Pricing

Prints are loaned to you and are to be returned to us by: Date: _____

Bids are due on or before: Date: _____

COMMENTS

CC:

Amie Parent

Amie Parent
JBS Pipeline Contractors

April 18, 2019

Mr. Joe Frei
Albert Frei and Sons
PO Box 700
Henderson, Colorado 80640

Subject: Physical Properties Testing
Aurora Squeegee
Project No. 19-1001

Dear Joe:

This letter presents results of physical properties testing performed on material picked up at your facility in January 2019. Representative samples delivered were identified as Aurora Squeegee from the Hatchery Pit in Henderson, Colorado. Testing was performed to determine the materials compliance with ASTM, AASHTO, and City of Aurora specifications. The following testing was performed in general conformance with the applicable standards.

- 1) Sieve Analysis (Gradation) – ASTM C 136 (AASHTO T 27)
- 2) Material Finer Than No. 200 Sieve by Washing – ASTM C 117 (AASHTO T 11)
- 3) Specific Gravity & Absorption of Coarse Aggregate – ASTM C 127 (AASHTO T 85)
- 4) Clay Lumps & Friable Particles in Aggregate – ASTM C 142 (AASHTO T 112)
- 5) Rodded Unit Weight & Voids – ASTM C 29 (AASHTO T 19)
- 6) Loose Unit Weight & Voids – ASTM C 29 (AASHTO T 19)
- 7) Los Angeles Abrasion – ASTM C 131 (AASHTO T 96)
- 8) Moisture Content – ASTM D 2216 (AASHTO T 265)
- 9) Fractured Faces – ASTM D 5821 (AASHTO T 335)

A summary of the aggregate test results is attached, followed by the complete test results. Based on the test results, the material tested meets the required specifications for No. 9 Stone.

Respectfully submitted,

BEST ENGINEERING


Matthew A. Best, P.E.
Project Engineer



BEST ENGINEERING SOLUTIONS AND TECHNOLOGIES

AGGREGATE SUMMARY SHEET

PROJECT INFORMATION

| | | | |
|------------------|------------------------------|-----------------|----------------------|
| PROJECT NAME: | 2019 Aggregate Qualification | CLIENT NAME: | Albert Frei and Sons |
| MATERIAL TYPE: | Aurora Squeegee | PROJECT NUMBER: | 19-1001 |
| SAMPLE LOCATION: | Hatchery Pit | | |

| MECHANICAL SIEVE ANALYSIS (ASTM C 136, ASTM C 117, ASTM D 422) | | | | | |
|---|--------|-----------------|---------------------|----------------|--------------------|
| SIEVE SIZE | | PERCENT PASSING | City of Aurora Spec | ASTM C 33 SPEC | AASHTO (CDOT) SPEC |
| US STD | METRIC | | | | |
| 3/8" | 9.5 | 100 | 100 | - | - |
| NO. 4 | 4.75 | 94 | 70-100 | - | - |
| NO. 8 | 2.36 | 75 | 36-43 | - | - |
| NO.16 | 1.18 | 54 | 20-82 | - | - |
| NO. 30 | 0.6 | 35 | 8-65 | - | - |
| NO. 50 | 0.3 | 18 | 2-30 | - | - |
| NO. 100 | 0.15 | 5 | 1-10 | - | - |
| NO. 200 | 0.075 | 1.2 | 0-5 | - | - |

*INDICATES OUT OF TOLERANCE

| SPECIFIC GRAVITY AND ABSORPTION (ASTM C 127) | | | |
|---|---------|---------------|-----------|
| | RESULTS | SPECIFICATION | PASS/FAIL |
| Specific Gravity | 2.60 | N/A | N/A |
| Absorption (%) | 1.1% | N/A | N/A |

| CLAY LUMPS AND FRIABLE PARTICLES (ASTM C 142) | | | |
|--|---------|---------------|-----------|
| | RESULTS | SPECIFICATION | PASS/FAIL |
| Weighted Particles | 0.2% | 2.0% Max | Pass |

| UNIT WEIGHT AND VOIDS IN AGGREGATE (ASTM C 29) | | | |
|---|---------|---------------|-----------|
| Rodded | RESULTS | SPECIFICATION | PASS/FAIL |
| Unit Weight (pcf) | 99 | N/A | N/A |
| Percent Voids | 83% | N/A | N/A |
| Tons per cubic yard | 1.34 | N/A | N/A |
| Loose | RESULTS | SPECIFICATION | PASS/FAIL |
| Unit Weight (pcf) | 93 | N/A | N/A |
| Percent Voids | 42% | N/A | N/A |
| Tons per cubic yard | 1.26 | N/A | N/A |

| LOS ANGELES ABRASION (ASTM C 131) | | | |
|--------------------------------------|---------|---------------|-----------|
| Grading C | RESULTS | SPECIFICATION | PASS/FAIL |
| Percent Loss | 34.6% | 50% Max | Pass |

| DETERMINATION OF MOISTURE CONTENT OF SOIL AND ROCK (ASTM D 2216) | | | |
|---|---------|---------------|-----------|
| | RESULTS | SPECIFICATION | PASS/FAIL |
| Aurora Squeegee | 0.6% | N/A | N/A |

| PERCENTAGE OF FRACTURED PARTICLES (ASTM D 5821) | | | |
|--|---------|---------------|-----------|
| 2 Or More Faces | RESULTS | SPECIFICATION | PASS/FAIL |
| Percent Fractured | 95.6% | N/A | N/A |

ATTACHMENT A
LABORATORY TEST RESULTS

PROJECT INFORMATION

| | | | |
|------------------|------------------------------|-----------------|----------------------|
| PROJECT NAME: | 2019 Aggregate Qualification | CLIENT NAME: | Albert Frei and Sons |
| MATERIAL TYPE: | Aurora Squeegee | PROJECT NUMBER: | 19-1001 |
| SAMPLE LOCATION: | Hatchery Pit | | |

| SPECIFIC GRAVITY AND ABSORPTION (COARSE) (ASTM C 127) | | | | |
|--|----------------|----------------------|-----------------------------|----------------|
| Oven Dry Weight (g) | SSD Weight (g) | Submerged Weight (g) | Bulk (SSD) Specific Gravity | Absorption (%) |
| 2500.3 | 2529.0 | 1555.0 | 2.60 | 1.1% |

| Material Finer Than No. 200 Sieve (ASTM C 117) | | |
|---|----------------------|---------------------------|
| Initial Dry Weight (g) | Final Dry Weight (g) | Passing No. 200 Sieve (%) |
| 642.5 | 634.9 | 1.2% |

| UNIT WEIGHT AND VOIDS IN AGGREGATE (ASTM C 29) | | | |
|---|---------------------|----------------------------------|-------------------|
| Rodded | Sample Weight (lbs) | Bucket Volume (ft ³) | Unit Weight (pcf) |
| Sample 1 | 24.68 | 0.25 | 98.7 |
| Sample 2 | 24.87 | 0.25 | 99.5 |
| Sample 3 | 24.77 | 0.25 | 99.1 |
| Average Unit Weight | | | 99 |
| Loose | Sample Weight (lbs) | Bucket Volume (ft ³) | Unit Weight (pcf) |
| Sample 1 | 23.12 | 0.25 | 92.5 |
| Sample 2 | 23.37 | 0.25 | 93.5 |
| Sample 3 | 23.26 | 0.25 | 93.0 |
| Average Unit Weight | | | 93 |

| CLAY LUMPS AND FRIABLE PARTICLES (ASTM C 142) | | | | | |
|--|-----------------|---------------------|------------------|--------------|-------------------|
| Retained Sieve Size | Percent Grading | Initial Weight (g) | Final Weight (g) | Percent Loss | Weighted Loss (%) |
| No. 4 | 6 | 2005.0 | 1998.1 | 0.3% | 0.0% |
| No. 16 | 40 | 50.1 | 49.8 | 0.6% | 0.5% |
| - No. 16 | 54 | - | - | - | - |
| Total Grading | 100 | Total Weighted Loss | | 0.5% | |

| PERCENTAGE OF FRACTURED PARTICLES (ASTM D 5821) | | |
|--|------------------|---|
| Initial Weight (g) | Final Weight (g) | Fractured Particles Minimum 2 Faces (%) |
| 151.3 | 144.6 | 95.6% |

| LOS ANGELES ABRASION (ASTM C 131) | | | |
|--------------------------------------|--------------------|------------------|------------------|
| Grading | Initial Weight (g) | Final Weight (g) | Percent Loss (%) |
| C | 5001.2 | 3271.8 | 34.6 |