SUBMITTAL

Submittal number	14.0	Date	06/24/2018
Project	TRAILS AT CROWFOOT #1&9	6954 N. CROWFOOT VALLEY RD. PARKER, CO 80138	
Project number	201810		
Spec section			
Subsection		Status	Open
Current action	Submitted	Ball in court	
Topic	Filter Material Class A		

Submitter	
Reviewer	
Cc	

Date submitted	06/24/2018	Submission due date	06/24/2018
Released for review	06/24/2018	Review due date	06/29/2018
Date returned		Required on site date	
Date closed			

Notes

LETTER OF TRANSMITTAL

PIPELINE CONTRACTORS
8600 Verbena St.
Commerce City, CO 80022
Office 303-289-4355
Fax 303-289-4353

ISSUED TO:

Owner ATTN: Con Cockrun, Kelley Trucking

DATE: 6/21/18

TRANSMITTAL NO.: A-014

REGARDING:

Project JBS Job No 0150

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

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

#	Copies	Item Dated	Item #	Description
	1-Electronic		A-014	Trenchdrain

☐ For your bid	☐ Returned for Correction	☐		
☒ For Approval	☐ For Review and Comment	☐		
☐ As Requested	☐ 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
JBS Pipeline Contractors

Best Engineering Solutions and Technologies

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

January 27, 2017

Subject: Physical Properties Testing
Class A Filter
Project No. 17-1004

Dear Rick:

This letter presents results of physical properties testing performed on material picked up at your facility in November, 2016. Representative samples delivered were identified as Class A Filter from the Pit 6 Quarry in Idaho Springs, 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) Sodium Sulfate Soundness – ASTM C 88 (AASHTO T 104)
6) Magnesium Sulfate Soundness – ASTM C 88 (AASHTO T 104)
7) Rodded Unit Weight & Voids – ASTM C 29 (AASHTO T 19)
8) Loose Unit Weight & Voids – ASTM C 29 (AASHTO T 19)
9) Los Angeles Abrasion – ASTM C 131 (AASHTO T 96)
10) Moisture Content – ASTM D 2216 (AASHTO T 265)
11) 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 the Class A Filter.

Respectfully submitted,

BEST ENGINEERING

COLORADO LICENSED MATTHEW ALAN BEST 0051186 PROFESSIONAL ENGINEER

Matthew A. Best, P.E. 1/27/17
Project Engineer

MAB:mab
Distribution: (1) Email rfoster@albertfreiandsons.com

BEST ENGINEERING SOLUTIONS AND TECHNOLOGIES

AGGREGATE SUMMARY SHEET

PROJECT INFORMATION

PROJECT NAME:	**2017 Aggregate Testing**	CLIENT NAME:	**Albert Frei and Sons**
MATERIAL TYPE:	**Class A Filter**	PROJECT NUMBER:	**17-1004**
SAMPLE LOCATION:	**Pit 6 - Idaho Springs Quarry, 33501 US Highway 6**		

MECHANICAL SIEVE ANALYSIS (ASTM C 136 & ASTM C 117)

SIEVE SIZE		PERCENT PASSING	ASTM C 33 SPEC	AASHTO (CDOT) SPEC	
US STD	METRIC				
3'	75	**100**	**-**	**100**	**-**
2.5"	63.5	**100**	**-**	**-**	**-**
2"	50	**100**	**-**	**-**	**-**
1.5"	38	**99**	**-**	**-**	**-**
1"	25	**68**	**-**	**-**	**-**
3/4"	19	**48**	**-**	**20-90**	**-**
1/2"	12.5	**23**	**-**	**-**	**-**
3/8"	9.5	**13**	**-**	**-**	**-**
NO. 4	4.75	**1**	**-**	**0-20**	**-**
NO. 200	0.075	**0.8**	**-**	**3.0 Max**	**-**

*INDICATES OUT OF TOLERANCE

SPECIFIC GRAVITY AND ABSORPTION (ASTM C 127)

	RESULTS	SPECIFICATION	PASS/FAIL
Specific Gravity	**2.77**	**N/A**	**N/A**
Absorption (%)	**0.9%**	**N/A**	**N/A**

CLAY LUMPS AND FRIABLE PARTICLES (ASTM C 142)

	RESULTS	SPECIFICATION	PASS/FAIL
Weighted Particles	**0.1%**	**2.0% Max**	**Pass**

DETERMINATION OF MOISTURE CONTENT OF SOIL AND ROCK (ASTM D 2216)

	RESULTS	SPECIFICATION	PASS/FAIL
Class A Filter	**0.6%**	**N/A**	**N/A**

SODIUM SULFATE SOUNDNESS (ASTM C 88)

	RESULTS	SPECIFICATION	PASS/FAIL
Weighted Loss	**2.4%**	**12% Max**	**Pass**

MAGNESIUM SULFATE SOUNDNESS (ASTM C 88)

	RESULTS	SPECIFICATION	PASS/FAIL
Weighted Loss	**2.8%**	**18% Max**	**Pass**

UNIT WEIGHT AND VOIDS IN AGGREGATE (ASTM C 29)

Rodded	RESULTS	SPECIFICATION	PASS/FAIL
Unit Weight (pcf)	**104**	**N/A**	**N/A**
Percent Voids	**39%**	**N/A**	**N/A**
Tons per cubic yard	**1.4**	**N/A**	**N/A**
Loose	RESULTS	SPECIFICATION	PASS/FAIL
Unit Weight (pcf)	**96**	**N/A**	**N/A**
Percent Voids	**44%**	**N/A**	**N/A**
Tons per cubic yard	**1.30**	**N/A**	**N/A**

LOS ANGELES ABRASION (ASTM C 131)

Grading B	RESULTS	SPECIFICATION	PASS/FAIL
Percent Loss	**32.0%**	**50% Max**	**Pass**

PERCENTAGE OF FRACTURED PARTICLES (ASTM D 5821)

2 Or More Faces	RESULTS	SPECIFICATION	PASS/FAIL
Percent Fractured	**100%**	**N/A**	**N/A**

ATTACHMENT A

LABORATORY TEST RESULTS

BEST ENGINEERING SOLUTIONS AND TECHNOLOGIES

AGGREGATE SUMMARY SHEET

PROJECT INFORMATION

PROJECT NAME:	**2017 Aggregate Testing**	CLIENT NAME:	**Albert Frei and Sons**
MATERIAL TYPE:	**Class A Filter**	PROJECT NUMBER:	**17-1004**
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1/2"	12.5	**23**	**-**	**-**	**-**
3/8"	9.5	**13**	**-**	**-**	**-**
NO. 4	4.75	**1**	**-**	**0-20**	**-**
NO. 200	0.075	**0.8**	**-**	**3.0 Max**	**-**

*INDICATES OUT OF TOLERANCE

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	RESULTS	SPECIFICATION	PASS/FAIL
Specific Gravity	**2.77**	**N/A**	**N/A**
Absorption (%)	**0.9%**	**N/A**	**N/A**

CLAY LUMPS AND FRIABLE PARTICLES (ASTM C 142)

	RESULTS	SPECIFICATION	PASS/FAIL
Weighted Particles	**0.1%**	**2.0% Max**	**Pass**

DETERMINATION OF MOISTURE CONTENT OF SOIL AND ROCK (ASTM D 2216)

	RESULTS	SPECIFICATION	PASS/FAIL
Class A Filter	**0.6%**	**N/A**	**N/A**

SODIUM SULFATE SOUNDNESS (ASTM C 88)

	RESULTS	SPECIFICATION	PASS/FAIL
Weighted Loss	**2.4%**	**12% Max**	**Pass**

MAGNESIUM SULFATE SOUNDNESS (ASTM C 88)

	RESULTS	SPECIFICATION	PASS/FAIL
Weighted Loss	**2.8%**	**18% Max**	**Pass**

UNIT WEIGHT AND VOIDS IN AGGREGATE (ASTM C 29)

Rodded	RESULTS	SPECIFICATION	PASS/FAIL
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Percent Voids	**39%**	**N/A**	**N/A**
Tons per cubic yard	**1.4**	**N/A**	**N/A**
Loose	RESULTS	SPECIFICATION	PASS/FAIL
Unit Weight (pcf)	**96**	**N/A**	**N/A**
Percent Voids	**44%**	**N/A**	**N/A**
Tons per cubic yard	**1.30**	**N/A**	**N/A**

LOS ANGELES ABRASION (ASTM C 131)

Grading B	RESULTS	SPECIFICATION	PASS/FAIL
Percent Loss	**32.0%**	**50% Max**	**Pass**

PERCENTAGE OF FRACTURED PARTICLES (ASTM D 5821)

2 Or More Faces	RESULTS	SPECIFICATION	PASS/FAIL
Percent Fractured	**100%**	**N/A**	**N/A**