



**WEAVER CONSTRUCTION MANAGEMENT, INC.**

3679 S. Huron St., Suite 404

Englewood, CO 80110

Phone: (303) 789-4111 FAX: (303) 789-4310

**SUBMITTAL TRANSMITTAL**

September 15, 2011

**WCM Submittal No: 03300-021**

**PROJECT:** Harold Thompson Regional WRF  
Birdsall Rd.  
Fountain, CO 80817  
Job No. 2908

**ENGINEER:** GMS, Inc.  
611 No. Weber St., #300  
Colorado Springs, CO 80903  
719-475-2935 Roger Sams

**OWNER:** Lower Fountain Metropolitan  
Sewage Disposal District  
901 S. Santa Fe Ave.  
Fountain, CO 80817  
719-382-5303 James Heckman

**CONTRACTOR:** Weaver Construction Management

**SUBJECT:** Cast-in-place concrete for equipment and maintenance building interior slabs - 4500 psi non-air entrained

**SPEC SECTION:** 03300 - Cast-In-Place Concrete

**PREVIOUS SUBMISSION DATES:** n/a

**DEVIATIONS FROM SPEC:** \_\_\_ YES  X  NO

**CONTRACTOR'S STAMP:** This submittal has been reviewed by WCM and approved with respect to the means, methods, techniques, & safety precautions & programs incidental thereto. Weaver General Construction also warrants that this submittal complies with contracted documents and comprises on deviations thereto.

**Contractor's Stamp:**

**Engineer's Stamp:**

Date: 9/15/11

Reviewed by: H.C. Myers  
( X ) Reviewed Without Comments  
( ) Reviewed With Comments

**ENGINEER'S  
COMMENTS:** \_\_\_\_\_

# TRANSIT MIX CONCRETE CO.

**Colorado Springs**                      **Pueblo**  
P.O. Box-1030, CO 80901              P.O. Box-857, CO 81002  
(719) 475-0700 (Fax) 475-0226        (719) 561-8350 (Fax) 566-0231

## CONCRETE MIX DESIGN

August 29, 2011

HDT RFP BP1 Equipment Maintenance Building  
Birdsall Road East of Old Pueblo Road  
Fountain, Colorado

“Interior Slabs-On-Grade”

4500 PSI @ 28 Days • 0.42 Maximum W/CM • Non-Air Entrained

### WEAVER GENERAL CONSTRUCTION

3679 S Huron St. – Suite-404  
Englewood, Colorado 80110

			<u>ONE CUBIC YARD</u>	
Cement	(	Holcim Type I/II	)	520 lbs
Fly Ash	(	SRMG Class F	)	91 lbs
WRA	(	BASF 200N	)	22.9 oz
Sand	(	Daniels Sand Co.	)	1410 lbs
Rock	(	Castle Concrete	)	1720 lbs
Water				256 lbs

### Transit Mix Concrete CO Mix Identification Number: 34502010

#### Approximate Physical Properties:

Unit Weight - pcf	± 145.6
Slump – Inches	4" Max
Air Content - %	3% Max
Water / Cementitious Ratio	0.42

This mix is derived from the enclosed “Summary of Concrete Mix Data” series (TABLE NO.107-36-NA)

Compliance information on the various materials is also enclosed.

Production and delivery is in accordance with ASTM C 94 Standard Specification for Ready-Mixed Concrete. Compressive strength performance is conditional with strict adherence to the current ASTM Standards relating to concrete, and the latest revisions of ACI 301 and 318.

TRANSIT MIX CONCRETE CO.

  
Robert L. Montoya  
Technical Service Manager

# J. B. Morgan, P. E., C.C.E.

CONSULTING STRUCTURAL ENGINEER

## Summary of Concrete Mix Design Data

Table NO. 107-36-NA (Non-Air Entrained Normal Weight Concrete w/ 15% Fly Ash Replacement @ 3-5" Slump)

Client: Transit Mix Concrete CO  
Project: Plant Mixes  
Aggregates: ASTM C 33 Coarse and Fine  
Cement: ASTM C-150 Type I-II  
Fly Ash: ASTM C 618 Class F  
Admixtures: ASTM C-494 WRA

34502010  
↓

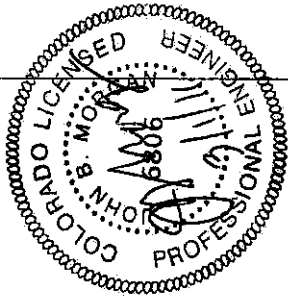
<u>Mix Proportions</u>	<u>4.00</u>	<u>4.50</u>	<u>5.00</u>	<u>5.50</u>	<u>6.00</u>	<u>6.50</u>	<u>7.00</u>	<u>7.50</u>
Cement (Type I-II), lbs.	320	360	400	440	480	520	560	600
Fly Ash (Class F), lbs.	56	63	70	77	84	91	98	105
Total Cementitious, lbs.	376	423	470	517	564	611	658	705
Water Reducer, oz.	13.2	14.8	16.5	19.4	21.2	22.9	24.7	26.4
Mid-Range Water Reducer, oz.	0	0	0	0	0	0	0	0
ASTM C 33 Fine Aggregate, lbs.	1570	1540	1510	1470	1440	1410	1380	1350
No. 57/67 Coarse Aggregate, lbs.	1720	1720	1720	1720	1720	1720	1720	1720
Water, gallons	30.3	30.5	30.7	31.0	30.5	30.7	31.0	31.2
Water, lbs.	252.0	254.0	256.0	258.0	254.0	256.0	258.0	260.0
 <u>Physical Properties</u>								
Wet Unit WT. (PCF)	144.6	144.6	144.8	144.9	145.5	145.6	145.9	146.5
Slump (Inches)	4.00	4.50	4.00	4.25	4.00	4.25	4.00	3.75
Air Content, %	2.2	1.8	1.7	1.5	1.6	1.8	1.7	1.6
Water Cement Ratio	0.670	0.600	0.545	0.499	0.450	0.419	0.392	0.369
Temperature, (°F)	72	73	75	75	77	77	79	80
 <u>Compressive Strength, psi</u>								
3 Day Average	1750	2200	2650	2980	3490	3890	4200	4480
7 Day Average	2110	2470	3000	3540	4020	4510	4980	5200
28 Day Average	3010	3680	4380	5030	5690	6100	6450	6940

Date Cast: Monday, January 24, 2011

2116 Broadmoor Road Circle, Colorado Springs, Colorado

Phone: (719) 635-9393 Mobile: (719) 332-4557 Fax: (505) 446-7055

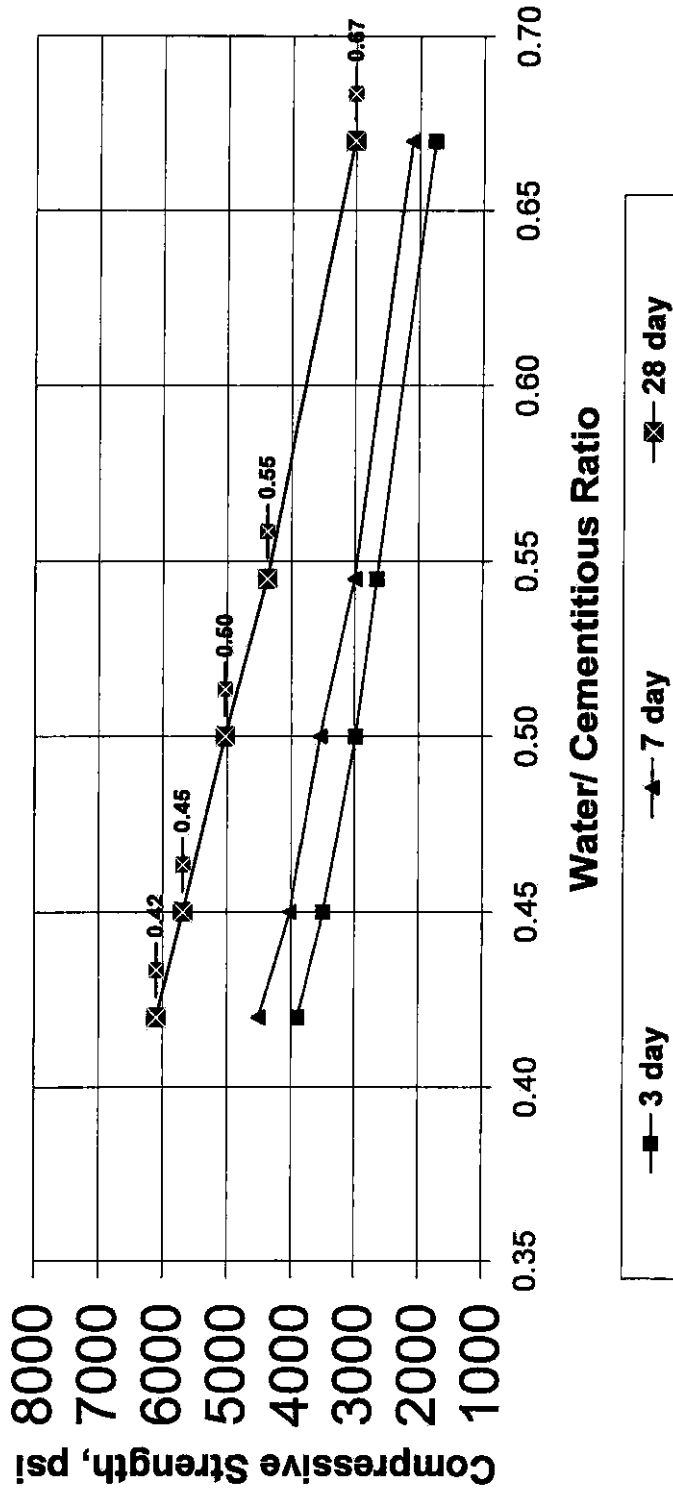




# Transit Mix Concrete Company

## Table NO. 107-36-NA

### Compressive Strength vs. Water Cementitious Ratio



# Material Certification Report

Material: Portland Cement  
Type: I-II(MH) (ASTM C 150)

Test Period: 01-Jun-2011  
To: 30-Jun-2011

## Certification

Holcim cement meets the specifications of ASTM C 150 for Type I-II(MH) cement.

## General Information

Supplier: Holcim (US) Inc.  
Address: 3500 State Highway 120  
Florence, Co. 81226  
Telephone: 719-784-1307  
Date Issued: 11-Jul-2011

Source Location: Portland Plant  
3500 State Highway 120  
Florence, Co. 81226  
Contact: Dick Roush

The following information is based on average test data during the test period. The data is typical of cement shipped by Holcim; individual shipments may vary.

## Tests Data on ASTM Standard Requirements

Chemical			Physical		
Item	Limit <sup>A</sup>	Result	Item	Limit <sup>A</sup>	Result
SiO <sub>2</sub> (%)	-	19.6	Air Content (%)	12 max	7
Al <sub>2</sub> O <sub>3</sub> (%)	6.0 max	4.7	Blaine Fineness (m <sup>2</sup> /kg)	260 min 430 max	397
Fe <sub>2</sub> O <sub>3</sub> (%)	6.0 max	3.4			
CaO (%)	-	63.2			
MgO (%)	6.0 max	1.4	Autoclave Expansion (%) (C 151)	0.80 max	0.00
SO <sub>3</sub> (%) <sup>C</sup>	3.0 max	3.4	Compressive Strength MPa (psi):		
Loss on Ignition (%)	3.0 max	2.4			
Insoluble Residue (%)	0.75 max	0.48	3 days	10.0 (1450) min	30.4 (4410)
CO <sub>2</sub> (%)	-	1.2	7 days	17.0 (2470) min	36.8 (5330)
Limestone (%)	5.0 max	3.2			
CaCO <sub>3</sub> in Limestone (%)	70 min	84	Initial Vicat (minutes)	45-375	127
Inorganic Processing Addition	5.0 max	0.0			
Potential Phase Compositions <sup>D</sup> :			Mortar Bar Expansion (%) (C 1038)		-0.016
C <sub>3</sub> S (%)	-	59			
C <sub>2</sub> S (%)	-	11			
C <sub>3</sub> A (%)	8 max	7			
C <sub>4</sub> AF (%)	-	10			
C <sub>3</sub> S + 4.75C <sub>3</sub> A (%)	100 max	92			

## Tests Data on ASTM Optional Requirements

Chemical			Physical		
Item	Limit <sup>A</sup>	Result	Item	Limit <sup>B</sup>	Result
Equivalent Alkalies (%)		0.72	Heat of Hydration: 7 days, kJ/kg (cal/g) <sup>B</sup>		354 (85)

## Notes

<sup>A</sup> Dashes in the limit / result columns mean Not Applicable.

<sup>B</sup> Test result represents most recent value and is provided for information only. Analysis of Heat of Hydration has been carried out by CTLGroup, Skokie, IL.

<sup>C</sup> It is permissible to exceed the specification limit provided ASTM C 1038 Mortar Bar Expansion does not exceed 0.020 %.

<sup>D</sup> Adjusted per Annex A1.6 of ASTM C150 and AASHTO M85.

This data may have been reported on previous mill certificates. It is typical of the cement being currently shipped.



Salt River Materials Group

PHOENIX CEMENT

Transit Mix Concrete
Attn: Robert Montoya
444 E Costilla St.
Colorado Springs, CO 80903-3761

Product: AASHTO M 295 Class F Fly Ash, Cholla
ASTM C 618

Corporate Headquarters
8800 E Chaparral Rd, Ste 155
Scottsdale, AZ 85250
Phone: 480-850-5757
Fax: 480-850-5758

Cement Manufacturing
601 N Cement Plant Rd
Clarkdale, AZ 86324
Phone: 928-634-2261
Fax: 928-634-3543

19th Avenue Facility
1802 W Lower Buckeye Rd
Phoenix, AZ 85007
Phone: 602-253-9149
Fax: 602-253-9160

Lower Buckeye Facility
1941 W Lower Buckeye Rd
Phoenix, AZ 85009
Phone: 602-258-7798
Fax: 602-525-3362

21st Avenue Facility
1325 N 21st Avenue
Phoenix, AZ 85009
Phone: 602-254-3824
Fax: 602-254-3825

Mesa Community Storage
Dobson & McKellips
Mesa, AZ 85211
Phone: 480-990-7847

Cholla Fly Ash Facility
P O Box 380
Joseph City, AZ 86032
Phone: 928-288-1661
Fax: 928-288-1663

Four Corners Fly Ash Facility
P O Box 1007
Fruitland, NM 87416
Phone: 505-598-8657
Fax: 505-598-8633

San Juan Fly Ash Facility
San Juan Generating Station
Waterflow, NM 87421
Phone: 505-598-7546
Fax: 505-598-7547

Escalante Fly Ash Facility
CR19 / P O Box 620
Prewitt, NM 87405
Phone: 505-285-4590
Fax: 505-285-4667

Gallup Fly Ash Facility
9001/4 N 9th St.
Gallup, NM 87305

5-11-11 POZZOLAN TEST REPORT Ctl#: 52543

Lot: 2093 Results Specifications

Table with 3 columns: Test Name, Results, Specifications. Includes Chemical Analysis (Silicon Dioxide, Aluminum Oxide, etc.) and Physical Analysis (Fineness, Density, etc.).

Table with 3 columns: Test Name, Results, Specifications. Includes Physical Analysis (Fineness, Density, Strength Activity Index, etc.).

All tests have been made in strict accordance with the current standards of the American Society for Testing and Materials covering the type of material specified.

Signature of Lee Gorby
Lee Gorby, Quality Assurance Manager
28 JUN 2011





The Chemical Company

May 12, 2011

Transit Mix Concrete CO  
444 East Costilla  
Colorado Springs, Colorado 80903

**Attention:** Robert Montoya  
**Project:** Various  
**Project location:** Various

Certificate of Conformance  
Pozzolith® 200 N  
BASF Corporation\* Admixture for Concrete

\*(successor in interest to BASF Construction Chemicals, LLC , which is successor by merger to BASF Admixtures, Inc., formerly known as Degussa Admixtures, Inc., formerly known as Master Builders, Inc.)

I, Richard Hubbard, Sr. Technical Marketing Specialist for BASF Corporation, Cleveland, Ohio, certify:

That Pozzolith 200 N is a BASF Corporation Water-Reducing Admixture for concrete; and

That no calcium chloride or chloride based ingredient is used in the manufacture of Pozzolith 200 N; and

That Pozzolith 200 N, based on the chlorides originating from all the ingredients used in its manufacture, contributes less than 0.00013 percent (1.3 ppm) chloride ions by weight of the cement when used at the rate of 65 mL per 100 kg (1 fluid ounce per 100 pounds) of cement; and

That, depending on the dosage used, Pozzolith 200 N meets the requirements for a Type A, Water-Reducing, Type B, Retarding, and Type D, Water Reducing and Retarding Admixture as specified in ASTM C 494, Corps of Engineers' CRD-C 87 and AASHTO M194, the Standard Specifications for Chemical Admixtures for Concrete.

Richard Hubbard  
Sr. Technical Marketing Specialist, BASF Corporation

**BASF Corporation**  
23700 Chagrin Boulevard  
Cleveland, OH 44122  
216 839-7500 ph  
[www.masterbuilders.com](http://www.masterbuilders.com)

**Master  
Builders**  
Admixture Solutions

# Transit Mix Concrete Co. Materials Laboratory

444 East Castilla Avenue  
Colorado Springs, Colorado 80903  
Ph. (719) 475-0700 Fax (719) 475-0226

2596 Hwy 96 East  
Pueblo, Colorado 81002  
Ph. (719) 543-7898 Fax (719) 583-0343

July 8, 2010

RE: No. 57/67 Coarse Concrete Aggregate  
Castle Concrete  
7250 Allegheny Drive  
Colorado Springs, CO 80919

Gentlemen:

This letter presents the results of physical properties and deleterious substances tests performed on a coarse aggregate that was sampled on June 7, 2010 at Black Canyon Quarry. The results are as follows:

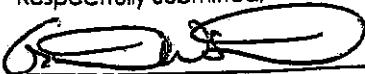
Sieve Size	Percent Passing	Specifications	
		No. 57	No. 67
37.5 mm, 1 1/2"	100	100	----
25.0 mm, 1"	100	95-100	100
19.0 mm, 3/4"	95	----	90-100
12.5 mm, 1/2"	54	25-60	----
9.5 mm, 3/8"	29	----	20-55
4.75 mm, No. 4	5.2	0-10	0-10
2.36 mm, No. 8	3.7	0-5	0-5
75 um, No. 200	0.9	0-1.5	0-1.5
Los Angeles Abrasion (Grading B): 28.0% Loss		AASHTO	T-96
Bulk Specific Gravity (SSD): 2.63 Absorption: 1.4%		AASHTO	T-85
Magnesium Sulfate Soundness (Five Cycles): 6.7% Loss		AASHTO	T-104
Sodium Sulfate Soundness (Five Cycles): 4.8% Loss		AASHTO	T-104
Clay Lumps and Friable Particles: 0		AASHTO	T-112
Fractured Particles (2 Fractured Faces): 100%			
Organic Impurities: Clear		AASHTO	T-21
Bulk Density by Rodding: 98 lb/ft <sup>3</sup> Voids: 40%		AASHTO	T-19
Mortar Bar Expansion (ASR) - Sodium Hydroxide: 0.03%			ASTM C 1260

The above sample was tested according to American Society for Testing and Materials (ASTM) procedures D-75, D-5821, C-702, C-117, C-136, C-33, C-40, C-142, C-88, C-127, C-131, C-29 and C-1567.

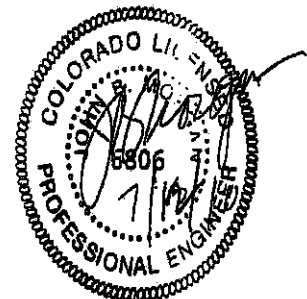
The above sample conforms to the requirements of ASTM C 33, TABLE 1, Limits for Deleterious Substances and Physical Property Requirements of Coarse Aggregate for Concrete, (1S, 2S, 3S, 4S, 5S, 1M, 2M, 3M, 4M, 5M, 1N and 2N).

If you have any questions feel free to contact me at your earliest convenience.

Respectfully Submitted,



Grant W. Smith  
Quality Control Manager





# Transit Mix Concrete Co. Materials Laboratory

444 East Costilla Avenue  
 Colorado Springs, Colorado 80903  
 Ph. (719) 475-0700 Fax (719) 475-0226

2596 Hwy 96 East  
 Pueblo, Colorado 81002  
 Ph. (719) 543-7898 Fax (719) 583-0345

## Modified ASTM C 1260 / C 1567 Tests

No. 004806BC

Standard Test Method for Accelerated Detection of Potentially Deleterious Expansion of Mortar Bars Due to Alkali-Silica Reaction

Materials	Source		Type	Qty.	Batch Weights, g	Notes
Cement	Holcim	Florence, CO	I/II	100%	440	Batched: 6/8/2010
Flyash				0%	0	
Coarse Sand	Black Canyon	Colo Spgs, CO	57/67		990	
Water					206.8	
W/C Ratio					0.47	Completed: 7/8/2010

Specimen ID: BC -1, BC - 2, BC - 3

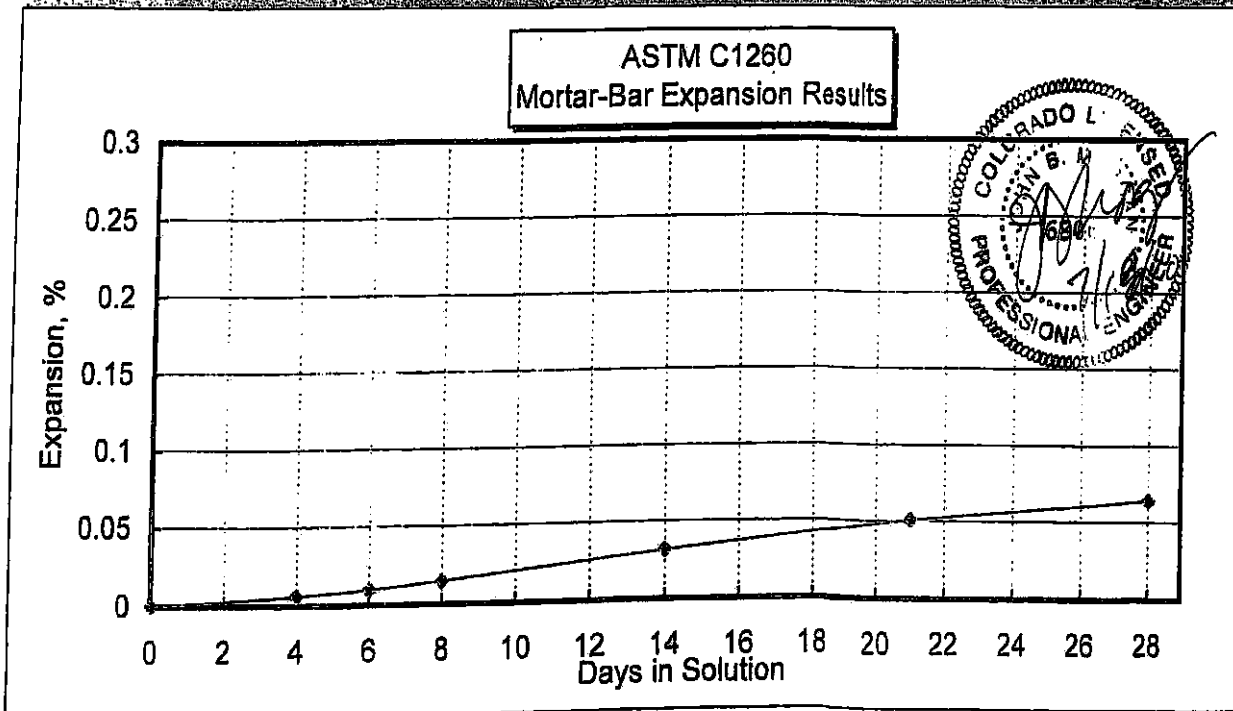
Days	Date	Comparator Readings			Mortar Bar Expansion, %			Average
		1	2	3	1	2	3	
0	6/10/2010	0.1680	0.1708	0.1622				0.0000
4	6/14/2010	0.1685	0.1714	0.1629	0.0050	0.0060	0.0070	0.0060
6	6/16/2010	0.1675	0.1723	0.1641	-0.0050	0.0150	0.0190	0.0097
8	6/18/2010	0.1681	0.1729	0.1644	0.0010	0.0210	0.0220	0.0147
14	6/24/2010	0.1698	0.1738	0.1669	0.0180	0.0300	0.0470	0.0317
21	7/1/2010	0.1718	0.1748	0.1697	0.0380	0.0400	0.0750	0.0510
28	7/8/2010	0.1733	0.1759	0.1711	0.0530	0.0510	0.0890	0.0643

Average Percent Expansion at 14 days in solution (16 days of age)

0.03

28-Day expansion results are for informational purposes only

0.06



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Pueblo, Colorado 81002  
Ph. (719) 543-7898 Fax (719) 583-0345

October 18, 2010

Daniels Sand Company  
3710 Bradley Road  
Colorado Springs, Colorado 80916

RE: Fine Concrete Aggregate

Gentlemen:

This letter presents the results of physical properties and deleterious substances tests performed on a Fine Concrete Aggregate that was sampled on September 9, 2010 at Daniels Sand Pit. The results are as follows:

Sieve Size	Percent Passing	Specifications
		ASTM C 33 Fine Concrete Agg.
9.5 mm, 3/8"	100	100
4.75 mm, No. 4	100	95 - 100
2.36 mm, No. 8	88	80 - 100
1.18 mm, No. 16	62	50 - 85
600 um, No. 30	40	25 - 60
300 um, No. 50	21	10 - 30
150 um, No. 100	7.0	0 - 10
75 um, No. 200	0.8	0 - 3
Fineness Modulus: 2.80		AASHTO T-37
Bulk Specific Gravity (SSD): 2.59	Absorption: 1.1%	AASHTO T-85
Magnesium Sulfate Soundness (Five Cycles): 2.0%	Loss	AASHTO T-104
Sodium Sulfate Soundness (Five Cycles): 1.0%	Loss	AASHTO T-104
Clay Lumps and Friable Particles: 0		AASHTO T-112
Average Sand Equivalent: 88		AASHTO T-176
Organic Impurities: Clear		AASHTO T-21
Mortar Bar Expansion (ASR) - Sodium Hydroxide: 0.04%		AASHTO T-303

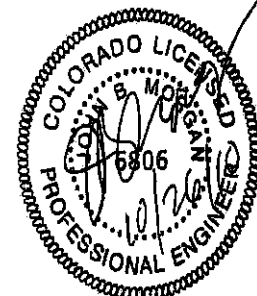
The above sample was tested according to American Society for Testing and Materials (ASTM) procedures D-75, D-2419, C-702, C-117, C-136, C-33, C-40, C-142, C-88, C-128 and C-1260.

If you have any questions feel free to contact me at your earliest convenience.

Respectfully Submitted,



Grant W. Smith  
Quality Control Manager



# Transit Mix Concrete Co. Materials Laboratory

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 Colorado Springs, Colorado 80903  
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2596 Hwy 96 East  
 Pueblo, Colorado 81002  
 Ph. (719) 543-7898 Fax (719) 583-0345

## Modified ASTM C 1260 / C 1567 Tests

No. 0237D-9-14

Standard Test Method for Accelerated Detection of Potentially Deleterious Expansion of Mortar Bars Due to Alkali-Silica Reaction

Materials	Source			Batch Weights, g	Notes
Cement	Holcim	Florence, CO	100%	440	Batched: 9/16/2010
Flyash			0%	0	
Coarse Sand	Daniels	Colo Spgs, CO	No. 8	990	
Water				206.8	
W/C Ratio				0.47	Completed: 10/16/2010

Specimen ID: D No. 8 1, 2, 3

Days	Date	Comparator Readings			Mortar Bar Expansion, %			Average
		1	2	3	1	2	3	
0	9/18/2010	0.1601	0.1699	0.1710				0.0000
4	9/22/2010	0.1615	0.1718	0.1720	0.0140	0.0190	0.0100	0.0143
7	9/25/2010	0.1624	0.1732	0.1722	0.0230	0.0330	0.0120	0.0227
9	9/27/2010	0.1635	0.1726	0.1740	0.0340	0.0270	0.0300	0.0303
14	10/2/2010	0.1648	0.1737	0.1752	0.0470	0.0380	0.0420	0.0423
20	10/8/2010				-1.6010	-1.6990	-1.7100	
28	10/16/2010							

Average Percent Expansion at 14 days in solution (16 days of age)

0.04

28 Day expansion results are for informational purposes only.

