WEAVER CONSTRUCTION MANAGEMENT, INC.
3679 S. Huron St., Suite 404
Englewood, CO 80110
Phone: (303) 789-4111 FAX: (303) 789-4310

SUBMITTAL TRANSMITAL

August 29, 2011
WCM Submittal No: 03300-019

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 Footings & Grade Beams for Equipment and Maintenance Building, 3" Max Slump

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 Weaver General Construction 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: 8/29/11 Reviewed by: H.C. Myers (X) Reviewed Without Comments ( ) Reviewed With Comments ENGINEER'S COMMENTS:	

TRANSIT MIX CONCRETE CO.

Colorado Springs
P.O. Box-1030, CO 80901
(719) 475-0700 (Fax) 475-0226

Pueblo
P.O. Box-857, CO 81002
(719) 561-8350 (Fax) 566-0231

CONCRETE MIX DESIGN

August 26, 2011

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

"Structural Concrete for Footings & Grade Beams"
4500 PSI @ 28 Days • 15% Fly Ash • Air Entrained • 0.42 Maximum W/CM

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

		ONE CUBIC YARD
Cement	(Holcim Type I/II)	520 lbs
Fly Ash	(SRMG Class F)	91 lbs
AEA	(Master Builders AE-90)	3.3 oz
WRA	(Master Builders 200N)	18.3 oz
HRWRA	(Master Builders Polyheed 1020)	22.9 oz
Sand	(Daniels Sand Co.)	1310 lbs
Rock	(Castle Concrete)	1700 lbs
Water		255 lbs

Transit Mix Concrete CO Identification Number: 34502110

Approximate Physical Properties:	
Unit Weight - pcf	± 142.1
Slump – Inches	3" Max
Air Content - %	6% ± 1%
Water / Cementitious Ratio	0.42

This mix is derived from the enclosed "Summary of Concrete Mix Data" series (Table No.107-36). 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 Data

Table NO. 107-36 (Air Entrained Normal Weight Concrete w/ Fly Ash @ 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) and ASTM C 260 (AEA)

3450210

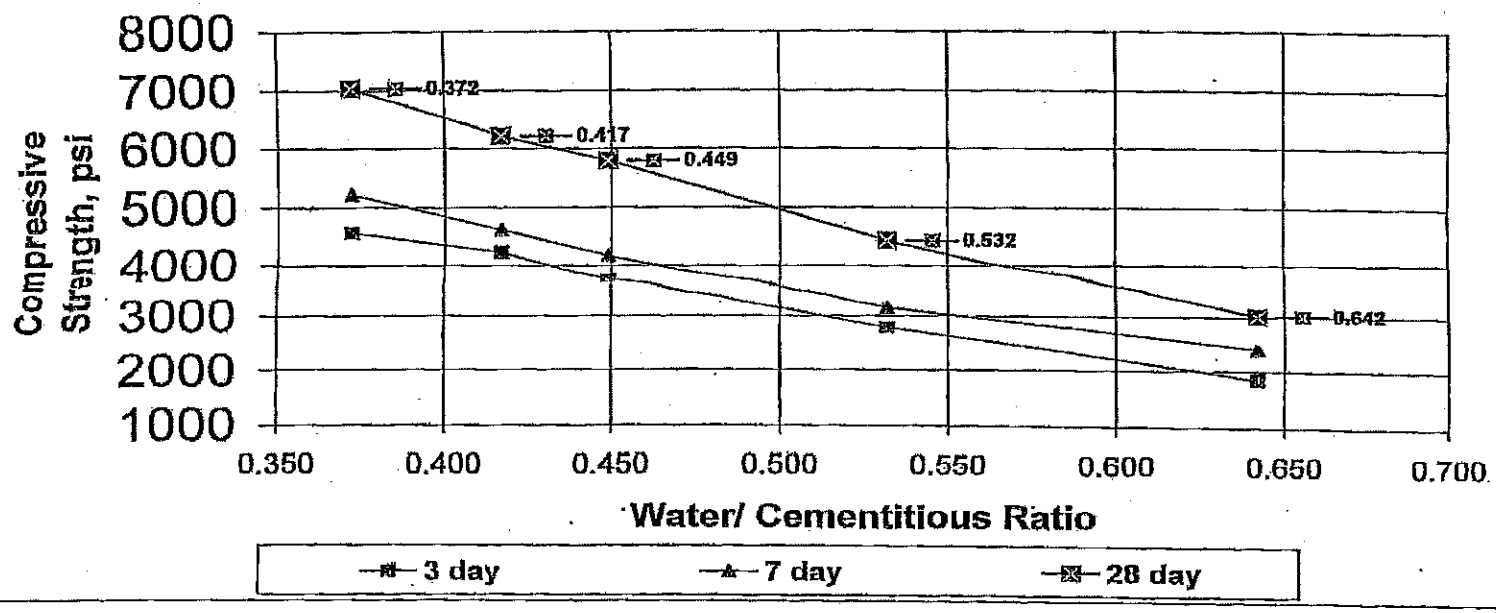
Mix Proportions	**4.00**	**4.50**	**5.00**	**5.50**	**6.00**	**6.50**	**7.00**	**7.50**
Cement (Type I-II), lbs.	320	360	400	440	480	520	560	600
Fly Ash (Class F), lbs.	56	63	70	77	84	91	98	105
Air Entrainer, oz.	2.5	2.6	2.7	2.9	3.1	3.3	3.6	3.9
Water Reducer, oz.	11.3	12.7	14.1	15.5	16.9	18.3	19.7	21.2
High Range Water Reducer, oz.	0	0	0	19.4	21.1	22.9	24.7	26.4
ASTM C 33 Fine Aggregate, lbs.	1550	1500	1460	1390	1350	1310	1270	1230
No. 57/67 Coarse Aggregate, lbs.	1700	1700	1700	1700	1700	1700	1700	1700
Water, gallons	29.0	29.5	30.0	30.2	30.4	30.6	31.0	31.5
Water, lbs.	241.6	245.7	249.9	251.6	253.2	254.9	258.2	262.4
Physical Properties								
Wet Unit WT. (PCF)	140.5	140.7	141.0	141.2	141.7	142.1	142.4	142.4
Slump (Inches)	4.00	4.50	4.25	4.00	4.00	3.75	4.25	4.00
Air Content, %	5.2	5.5	5.8	6.0	5.8	6.0	6.0	6.2
Water Cement Ratio	0.642	0.581	0.532	0.487	0.449	0.417	0.392	0.372
Temperature, (^{0}F)	72	73	75	76	77	77	78	78
Compressive Strength, psi	**2000**	**2500**	**3000**	**3500**	**4000**	**4500**	**5000**	**5500**
3 Day Average	1850	2310	2780	3250	3720	4240	4380	4570
7 Day Average	2400	2860	3150	3640	4180	4620	5010	5220
28 Day Average	3020	3650	4440	5180	5790	6220	6740	7040

Date : Monday, February 08, 2010

400 South 7th Street, Raton, New Mexico 8774
Phone: (575) 445-8738 Mobile: (719) 332-4557 Fax: (575) 445-7055

Transit Mix Concrete Company
Table No. 107-36

Compressive Strength
vs.
Water Cementitious Ratio



Material Certification Report

Material:	Portland Cement	Test Period:	01-Jun-2011
Type:	I-II(MH) (ASTM C 150)	To:	30-Jun-2011

Statement of Conformance

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

Supplier and Source Information

Supplier:	Holcim (US) Inc.	Source Location:	Portland Plant
Address:	3500 State Highway 120		3500 State Highway 120
	Florence, Co. 81226		Florence, Co. 81226
Telephone:	719-784-1307	Contact:	Dick Roush
Date Issued:	11-Jul-2011		

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.

Test Data and Standard Requirements

Chemical			Physical		
Item	Limit[A]	Result	Item	Limit[A]	Result
SiO_2 (%)	-	19.6	Air Content (%)	12 max	7
Al_2O_3 (%)	6.0 max	4.7	Blaine Fineness (m^2/kg)	260 min 430 max	397
Fe_2O_3 (%)	6.0 max	3.4			
CaO (%)	-	63.2			
MgO (%)	6.0 max	1.4	Autoclave Expansion (%) (C 151)	0.80 max	0.00
SO_3 (%)[C]	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_2 (%)	-	1.2	7 days	17.0 (2470) min	36.8 (5330)
Limestone (%)	5.0 max	3.2			
$CaCO_3$ in Limestone (%)	70 min	84	Initial Vicat (minutes)	45-375	127
Inorganic Processing Addition	5.0 max	0.0			
Potential Phase Compositions[D]:			Mortar Bar Expansion (%) (C 1038)		-0.016
C_3S (%)	-	59			
C_2S (%)	-	11		-	-
C_3A (%)	8 max	7			
C_4AF (%)	-	10			
$C_3S + 4.75C_3A$ (%)	100 max	92			

Test Data and Additional Requirements

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

Notes

[A] Dashes in the limit / result columns mean Not Applicable.

[B] 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.

[C] It is permissible to exceed the specification limit provided ASTM C 1038 Mortar Bar Expansion does not exceed 0.020 %.

[D] 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.

SRMG
Salt River Materials Group

PHOENIX CEMENT

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

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
900 1/4 N 9th St.
Gallup, NM 87305

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

POZZOLAN TEST REPORT

5-11-11 Ctl#: 52543

Lot: 2093	Results	Specifications
Chemical Analysis (C311 / C114 / D4326)		
Silicon Dioxide, SiO_2	60.07 %	---
Aluminum Oxide, Al_2O_3	25.68 %	---
Ferric Oxide, Fe_2O_3	6.55 %	---
$SiO_2+Al_2O_3+Fe_2O_3$	92.30 %	70.00 Min
Calcium Oxide, CaO	5.31 %	---
Magnesium Oxide, MgO	1.56 %	---
Sulfur Trioxide, SO_3	0.29 %	5.00 Max
Moisture Content	0.09 %	3.00 Max
Loss on Ignition	0.15 %	6.00 Max
Available Alkalis as Na_2O	0.24 %	---
Alkalis ($\%Na_2O + 0.658\% K_2O$)	1.30 %	---
R Factor (%CaO -5) / (%FeO)	0.05 %	---
Physical Analysis		
Fineness, amount retained on #325 sieve, % (C430)	18.40	34.00 Max
variation, points from average	0.06	5.00 Max
Density, g/cm³ (C188)	2.18	---
Variation from average, %	0.01	5.00 Max
Strength Activity Index with Portland Cement (C311 / C109)		
at 7 days, % of cement control	82.46	---
at 28 days, % of cement control	88.32	75.00 Min
Water Requirement (C311)		
% of cement control	96.69	105.00 Max
Soundness, autoclave expansion (C311 / C151)		
or contraction, %	-0.04	0.80 Max

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.

Lee Gorby, Quality Assurance Manager
28 JUN 2011

BASF

The Chemical Company

July 20, 2011

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

Attention: Robert Montoya
Project: Various
Project location: Various

Certificate of Conformance
MB-AE™ 90
BASF Construction Chemicals, LLC* Air-Entraining 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 MB-AE 90 is a BASF Corporation Air-Entraining Admixture for concrete; and

That no calcium chloride or chloride based ingredient is used in the manufacture of MB-AE 90; and

That MB-AE 90, based on the chlorides originating from all the ingredients used in its manufacture, contributes less than 0.000068 percent (0.68 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 MB-AE 90 meets the requirements of ASTM C 260, Corps of Engineers' CRD-C 13 and AASHTO M154, the Standard Specifications for Air-Entraining Admixtures for Concrete.

Richard Hubbard III

Richard Hubbard
Sr. Technical Marketing Specialist, BASF Corporation

BASF Corporation
23700 Chagrin Boulvard
Cleveland, OH 44122
216 839-7500 ph
www.masterbuilders.com

Master Builders
Admixture Solutions

BASF

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 III

Richard Hubbard
Sr. Technical Marketing Specialist, BASF Corporation

BASF Corporation
23700 Chagrin Boulvard
Cleveland, OH 44122
216 839-7500 ph
www.masterbuilders.com

Master Builders
Admixture Solutions

BASF

The Chemical Company

July 1, 2011

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

Attention: Robert Montoya
Project: Various
Project location: Various

Certificate of Conformance
PolyHeed® 1020
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 PolyHeed 1020 is a BASF Corporation Mid-Range Water-Reducing Admixture for concrete; and

That no calcium chloride or chloride based ingredient is used in the manufacture of PolyHeed 1020; and

That PolyHeed 1020, based on the chlorides originating from all the ingredients used in its manufacture, contributes less than 0.00014 percent (1.4 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, PolyHeed 1020 meets the requirements for a Type A, Water-Reducing and Type F, Water-Reducing, High Range Admixture 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 Boulvard
Cleveland, OH 44122
216 839-7500 ph
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) 583-0345

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	Specifications 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^3 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

COLORADO LICENSED
JOHN P. MO...
38806
PROFESSIONAL ENGINEER

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

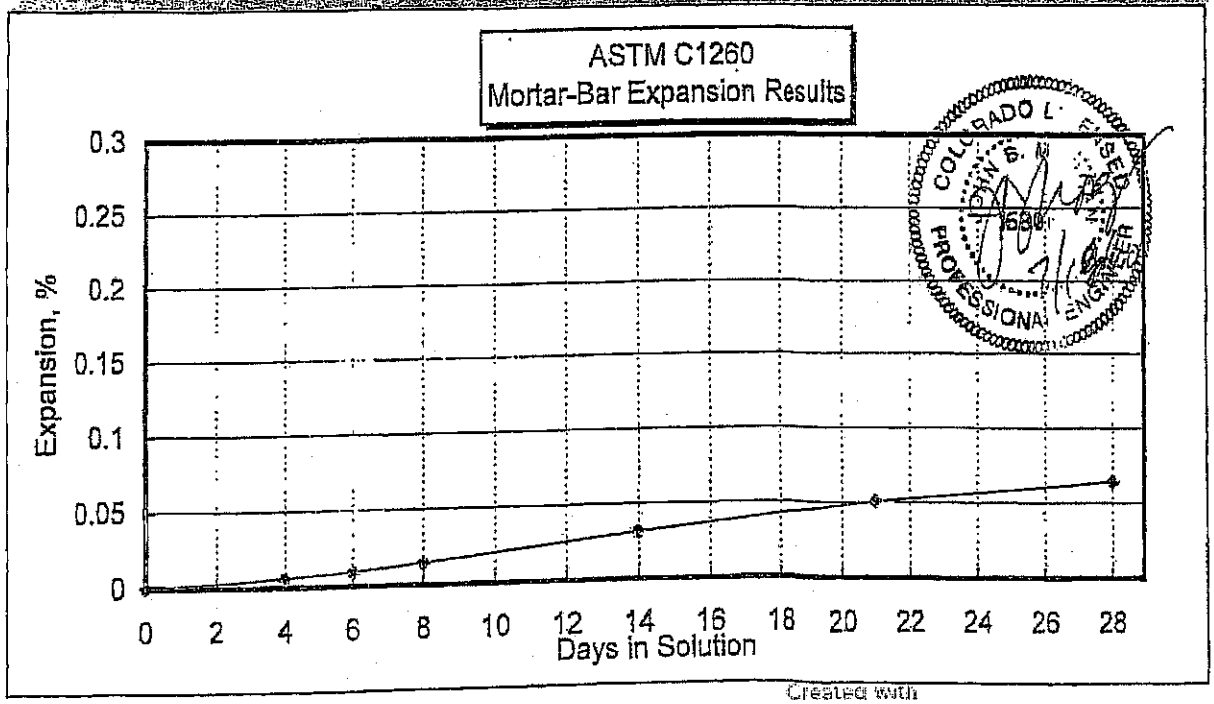
Materials	Source	Type	Qty.	Batch Weights, g	Notes
Cement	Holcim Florence, CO	I/II	100%	440	Batched: 6/8/2010
Flyash			0%	0	
Coarse	Black Canyon Colo Spgs, CO	57/67		990	
Sand					
Water				206.8	
W/C Ratio				0.47	Completed: 7/8/2010

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



Revised: 11/1/2009

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) 583-0345

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

COLORADO LICENSED
JOHN B. MORGAN
6806
PROFESSIONAL ENGINEER
10/12/10

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. 0237D-9-14

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

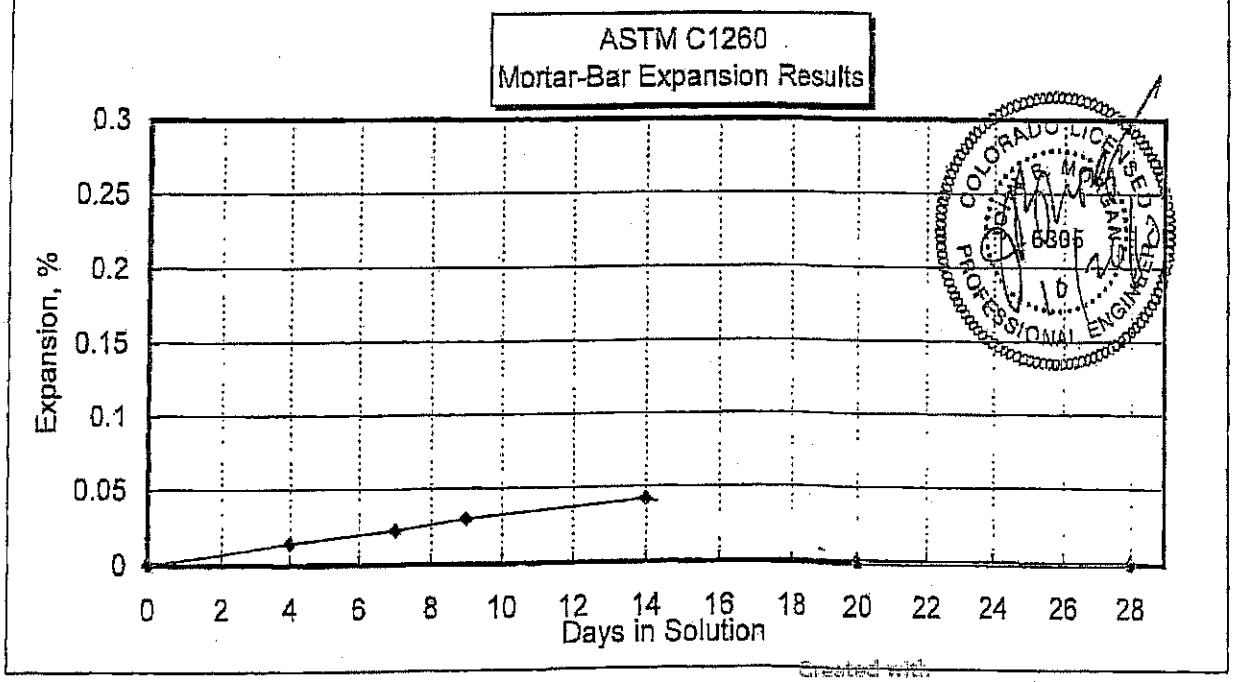
Materials	Source		Batch Weights, g	Notes
Cement	Holcim Florence, CO	100%	440	Batched: 9/16/2010
Flyash		0%	0	
Coarse	Daniels Colo Spgs, CO	No. 8	990	
Sand				
Water			206.8	
W/C Ratio			0.47	Completed: 10/16/2010

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



Revised: 11/1/2009