

EMC Cement BV

Technical Information Series



Summary of CemPozz® (Fly Ash) Performance in Concrete

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# Summary of CemPozz® (FA) Performance in Concrete

## Material Safety Data Sheet

### MATERIAL SAFETY DATA SHEET

#### EMC CemPozz®

#### MATERIAL IDENTIFICATION AND INFORMATION

INGREDIENTS	FORMULA	%(1)	OSHA PEL(2)	ACGIH TLV(2)
Aluminosilicate Glass	Contains Al,Si,Fe,Ca,Mg	80-95	Not Listed(3)	Not Listed(3)
Crystalline Silica (total) (respirable)	SiO <sub>2</sub>	3-7 Note (5)	30/(%SiO <sub>2</sub> +2)(4) 10/(%SiO <sub>2</sub> +2)(4)	0.3 0.1
Portland Cement		0-15	10/(%SiO <sub>2</sub> +2)	0.05

**Notes:**

- (1) Values approximate, material is derived from naturally occurring minerals.
- (2) Airborne exposure limits in mg/m<sup>3</sup>.
- (3) Not listed specifically by substance name. Exposure to Aluminosilicate glass dust may be covered by inert or nuisance dust limits of 15 mg/m<sup>3</sup> for total dust and 5 mg/m<sup>3</sup> for respirable portion.
- (4) The percentage of Crystalline Silica in the formula is the amount determined from airborne samples.
- (5) Presence of respirable Crystalline Silica has not been established.

#### PHYSICAL/CHEMICAL CHARACTERISTICS

Boiling Point	N/A	Specific Gravity (H <sub>2</sub> O=1)	2.6-2.8
Vapor Pressure (mm Hg and Temperature)	N/A	Melting Point	N/A
Vapor Density (Air = 1)	N/A	Evaporation Rate	N/A
Solubility in Water	Negligible	Water Reactive	Minimal

Appearance and Odor - Gray to tan color, no odor; average particle size is 10-25 microns.

#### FIRE AND EXPLOSION HAZARD DATA

Extinguisher Media:	No special media required	Auto-Ignition Temperature:	N/A
Flammability Limits in Air % by Vo	N/A	LEL/UEL:	N/A
Special Fire Fighting Procedures:	No special procedures required	Flash Point and Method Used:	N/A
Unusual Fire and Explosion Hazard	None, this material is considered non-flammable and non-combustible. Use fire extinguishing agent suitable for surrounding media.		

#### REACTIVITY HAZARD DATA

Stability:	Considered to be stable will react with water to form cement like products
Hazardous Decomposition Products:	Decomposition products are unknown and not suspected.
Hazardous Polymerization:	Hazardous polymerization not known to occur.
Reactivity:	Material is considered inert, avoid contact with strong acids, reducing agents, and oxidize

#### HEALTH HAZARD DATA

PRIMARY ROUTES OF ENTRY:	CARCINOGEN LISTED IN:
Inhalation - Can be inhaled.	NTP - Yes* (Crystalline Silica)
Ingestion - Can be ingested.	IARC Monograph - Yes* (Crystalline Silica)
Skin Absorption - Can irritate skin.	OSHA - No

\* Respirable Crystalline Silica is listed as a carcinogen in IARC and NTP. Presence of Crystalline Silica in respirable dust has not been established.

**HEALTH HAZARDS:**

Acute - Dust may irritate eyes, skin, respiratory tract and mucous membranes. Dust hazard should not occur under normal use.  
Chronic - Pneumoconiosis  
Signs and Symptoms of Exposure - Eye, skin or respiratory tract irritation.  
Medical Conditions Generally Aggravated by Exposure - May aggravate existing pulmonary condition if high dust situation is created.  
Dusting conditions should not occur under normal use.

**EMERGENCY FIRST AID PROCEDURES:**

Eye Contact - Immediately flush eyes with water to remove dust particles and seek medical attention.  
Skin Contact - Wash skin with soap and water, if irritation develops, seek medical attention.  
Inhalation - Immediately remove affected person to fresh air, if irritation develops, seek medical attention.  
Ingestion - Rinse mouth out with water. Induce vomiting is significant quantities ingested.

Summary of CemPozz® (FA) Performance in Concrete

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**Material Safety Data Sheet**  
(cont'd)

**MATERIAL SAFETY DATA SHEET**

**EMC CemPozz®**

**CONTROL AND PROTECTIVE MEASURES**

Respiratory Protection - If airborne dust exposure approaches the TLV or PEL (Section 1) use half-mask or full-face air purifying respirator equipped with NIOSH or MSHA-approved high efficiency filters for protection against pneumoconiosis-producing dust. An airline respirator may be required where dust levels are extremely high.

Protective Gloves - Limit contact with skin. Use rubber or cloth gloves as necessary.

Eye Protection - Wear goggles or face shield as appropriate. Avoid contact lenses.

Ventilation To Be Used - Keep dust levels below PEL. Use general and local exhaust ventilation and dust collection systems to keep dust levels within acceptable limits.

Other Protective Clothing and Equipment - None normally required, wear long sleeves and long pants to reduce skin contact. Use work gloves, goggles and face shield as necessary.

Hygienic Work Practices - Do not allow dust to get into eyes, to be inhaled, to be swallowed, or remain on skin if irritation occurs. Practice good personal hygiene. Wash or shower after use. Launder clothes as normal.

**PRECAUTIONS FOR SAFE HANDLING/LEAK PROCEDURES**

Steps To Be Taken If Material Is Spilled Or Released - Avoid creating airborne dust. Pick up with shovel or mechanical equipment. Wet methods and vacuuming may be used on spills.

Waste Disposal Methods - Handle as inert bulk material. Material may be disposed of as a non-hazardous solid waste consistent with state, federal and local disposal regulations. Disposal in a sanitary landfill is usually adequate.

Precautions To Be Taken In Handling And Storage - Keep material dry in storage. No special handling required. Avoid creating airborne dust.

Other Precautions And/Or Special Hazards - None.

Note: Information herein is based on data considered to be accurate as of date prepared. No warranty or representation, express or implied, is made as to the accuracy or completeness of this data and safety information. No responsibility can be assumed by vendor for any damage or injury resulting from abnormal use, failure to adhere to recommended practices, or from any hazards inherent in the nature of the product.

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CemPozz® (FA) Chemical Composition

**WYOMING ANALYTICAL LABORATORIES, INC.**

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Golden, CO 80403

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October 16, 2009

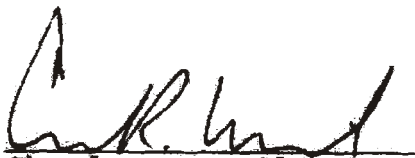
Enoch Duvall  
Texas EMC Products, Ltd.

Denver Div. # 09878-1  
Sample ID: EMC FK Sample

CHEMICAL ANALYSIS  
WT%, DRY BASIS

Silicon Dioxide, SiO <sub>2</sub>	54.47	
Aluminum Oxide, Al <sub>2</sub> O <sub>3</sub>	18.25	
Iron Oxide, Fe <sub>2</sub> O <sub>3</sub>	4.87	
Total (SiO <sub>2</sub> + Al <sub>2</sub> O <sub>3</sub> + Fe <sub>2</sub> O <sub>3</sub> )		77.58
Calcium Oxide, CaO	15.20	
Magnesium Oxide, MgO	2.89	
Sodium Oxide, Na <sub>2</sub> O	0.55	
Potassium Oxide, K <sub>2</sub> O	1.02	
Titanium Dioxide, TiO <sub>2</sub>	1.29	
Manganese Dioxide, MnO <sub>2</sub>	0.10	
Phosphorus Pentoxide, P <sub>2</sub> O <sub>5</sub>	0.29	
Strontium Oxide, SrO	0.31	
Barium Oxide, BaO	0.22	
Sulfur Trioxide, SO <sub>3</sub>	0.47	
Loss on Ignition	0.09	
Moisture, as Received	0.04	

Analysis per ASTM C 311

  
Charles R. Wilson  
Division Manager

**Summary of CemPozz® (FA) Performance in Concrete**

**Concrete mix-designs using CemPozz® (FA), their slump and strength development (MPa).**

<b>CemPozz® (%)</b>	<b>70**</b>	<b>60**</b>	<b>50**</b>	<b>50***</b>
<b>Cementitious materials* (kg/m³)</b>	277	277	277	300
<b>CemPozz® (kg/m³)</b>	194	166	139	150
<b>Water (kg/m³)</b>	89	83	83	90
<b>25 mm limestone aggregate (kg/m³)</b>	1106	1097	1047	1107
<b>Fine aggregate (kg/m³)</b>	951	960	968	868
<b>Air-entrainer (ml/m³)</b>	0	0	0	150
<b>Water reducer (oz/cwt)</b>	5	5	5	1
<b>w/cm</b>	0.32	0.30	0.30	0.30
<b>Slump (mm)</b>	169	175	175	5
<b>7 days compressive strength (MPa)</b>	16.5	17.9	19.7	25.8
<b>28 days compress. strength (MPa)</b>	27.6	29.4	34.3	40.9
<b>56 days compress. strength (MPa)</b>	36.5	38.9	43.4	49.7

\* Portland cement + CemPozz® (FA)

\*\* Ready-Mix Concrete mix design,

\*\*\* TXDOT mix design (Low slump mix for the paving projects)

**Summary of CemPozz® (FA) Performance in Concrete**

**Test results according to ASTM C 989 Standard  
Compliance with Slag Grade 120**

**LABORATORY TESTING REPORT**

\* Corrected Copy 05/01/2009

Engineering • Testing • Environmental • Facilities • Infrastructure



**Raba-Kistner Consultants, Inc.**  
12821 W. Golden Lane  
P.O. Box 690287, San Antonio, TX 78269-0287  
(210) 699-9090 • FAX (210) 699-6426  
www.rkci.com

TO: Texas EMC Products, Ltd.

PROJECT NO.: ASD06-061-00  
DATE BATCHED: 03/23/2009  
ASSIGNMENT NO.: S09-016917  
TESTED BY: Noe Sandoval

PROJECT: CEM-POZZ

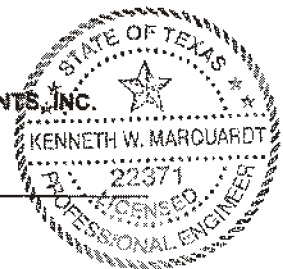
TESTING PROCEDURES: ASTM C 989 & ASTM C 109

Mix I.D.	Control	Cem-Pozz (50%)	% of Control	Flow		ASTM C 989 Specification	* Grade 120
				Control	Cem-Pozz		
Water Demand	226 ML	117 ML	51.8	111	105	110 ± 5	* Minimum 90%
<b>Compressive Strength (Average psi):</b>							
Age (days)	Average (psi)		Minimum, * 90%				
	Control	Cem-Pozz					
1	2,200	2,640	120%				
7	4,850	5,120	106%				
28	5,680	7,070	124%				
<b>Chemical Requirements:</b>		Sulfate (SO <sub>3</sub> ) 0.72		Maximum 4.0 %			

Note(s): Meets ASTM C 989, Grade 120

RABA-KISTNER CONSULTANTS, INC.

BY: *Kenn 5/1/09*



# Summary of CemPozz® (FA) Performance in Concrete

## Sulfate Resistance, ASTM C 1012

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Project No. ASD04-198-01  
Assignment No. S06-037758  
August 22, 2006  
(Revised 04/30/07)

Texas EMC Projects, Ltd.

RE: **ASTM C-1012 Sulfate Resistance  
Cem-Pozz NG**

### ASTM C-109: COMPRESSIVE STRENGTH MORTAR CUBES (Cast Date: 06-14-06):

<b>Mixture:</b>	Type 1 Portland Cement:	250.0g (50%)	
	Cem Pozz NG:	250.0g (50%)	
	Ottawa Sand (Graded):	1375.0g	
	Water:	242.5g	
	Flow:	108	Required Flow: 110 ± 5

### COMPRESSIVE STRENGTH, (psi) (Average):

<u>Age</u>		<u>Required</u>
24 hrs:	1895	---
48 hrs:	2455	---
72 hrs:	2980	3000 ± 150

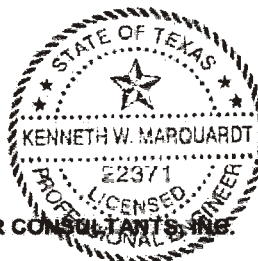
### ASTM C-1012: SULFATE vs. EXPANSION (Cast Date: 06-14-05):

**Mixture:** Same as ASTM C-109

Flow:	108	Required Flow: 108 ± 5
-------	-----	------------------------

### % EXPANSION (Average of 6 Mortar Bars):

Week 1	<u>0.015</u>
Week 2	<u>0.024</u>
Week 3	<u>0.027</u>
Week 4	<u>0.028</u>
Week 8	<u>0.030</u>
Week 13	<u>0.033</u>
Week 15	<u>0.033</u>
6 months	<u>0.038</u>
1 year	<u>0.055</u>



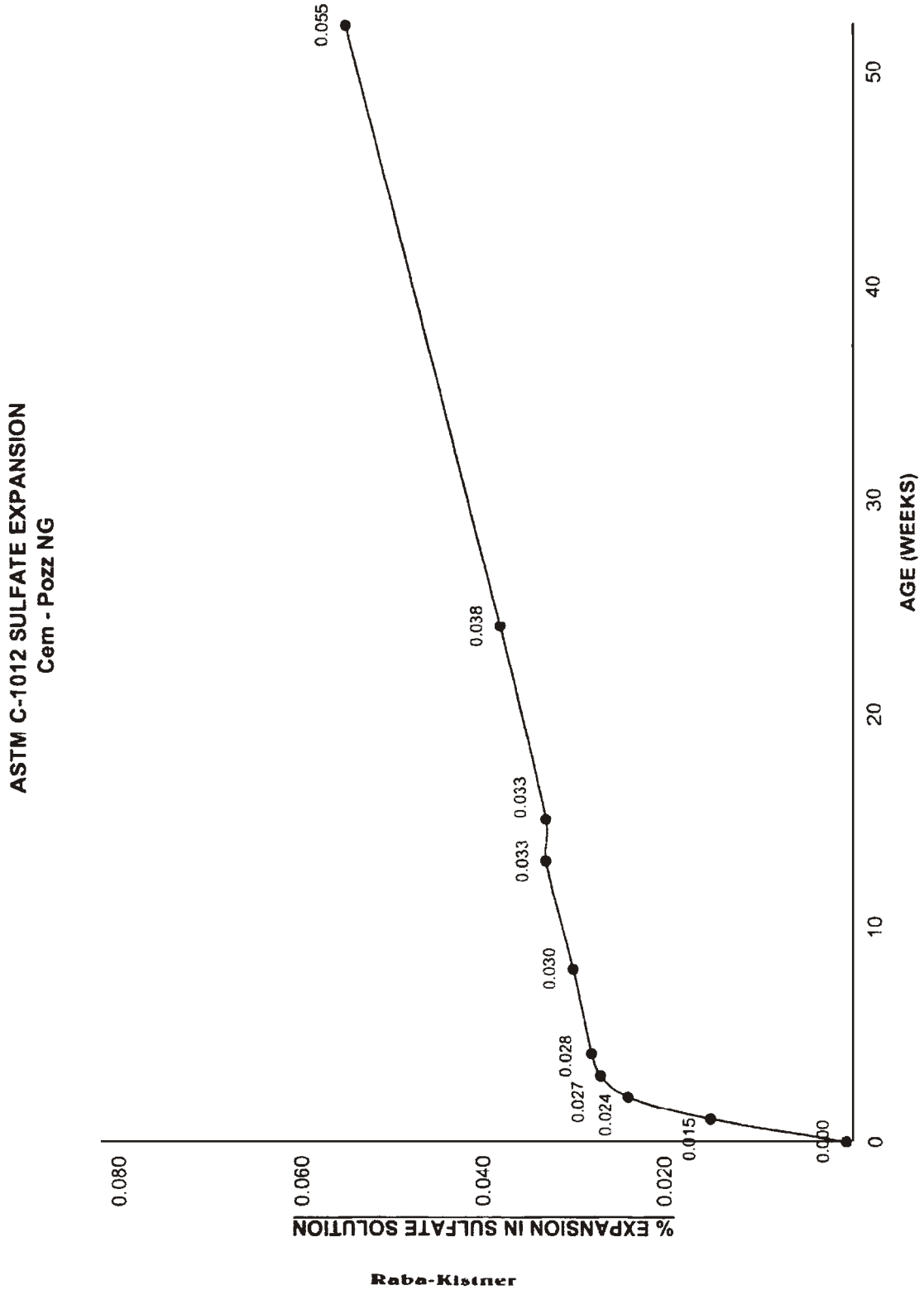
RABA-KISTNER CONSULTANTS, INC.

BY: K.W. Marquardt 7/24/07





**Sulfate Resistance, ASTM C 1012**  
(cont'd)



Summary of CemPozz® (FA) Performance in Concrete

Resistance to Chloride Penetration, ASTM C 1202

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Project No. ASD04-198-01  
Assignment No. S06-038168  
October 18, 2006 (\* Corrected Copy 04/30/2007)

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Mr. Tom Murphy  
Texas EMC Projects, Ltd.

**RE: Chloride Ion Penetrability of Concrete  
\* Cem-Pozz NG vs. Class F Fly Ash  
(Final Report)**

Dear Mr. Murphy:

Attached as Figure 1, is the Initial Chloride Ion Penetrability test data on the concrete specimens cast by Texas EMC and delivered to our San Antonio, Texas laboratory facility. For reference and comparison purposes, the one cubic yard mix proportions, plastic & hardened properties of Mix A (with Cem-Pozz NG), and Mix B (with Class F Fly Ash) as provided to **Raba-Kistner Consultants, Inc. (R-K)** by Texas EMC are also shown.

Based on the 28 & 90 day chloride penetrability data, the mix with Cem-Pozz NG has a significantly lower chloride penetration rate. The rate at which chloride ions migrate through the concrete and attack reinforcing steel can play an important role in the concrete structure's performance over time.

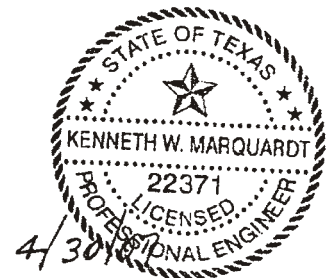
We appreciate the opportunity to be of technical service to you on this project. If we may be of additional assistance, please do not hesitate to call.

Very truly yours,

**RABA-KISTNER CONSULTANTS, INC.**

  
David P. Darnell  
Senior Materials Consultant

  
Kenneth W. Marquardt, P.E.  
Project Engineer



Attachment

Summary of CemPozz® (FA) Performance in Concrete

**Resistance to Chloride Penetration, ASTM C 1202**  
(cont'd)

**Mix Design Proportions & Concrete Test Data Summary**  
\* Cem-Pozz NG vs. Class F Fly Ash

Mix I.D.:	A	B
<b>1 Cubic Yard Weights (lbs.)</b>		
Type I, Portland Cement:	235	352
Cem-Pozz NG:	235	---
Class F Fly Ash:	---	118
Local Limestone:	1809	1809
Local Sand:	1458	1458
DARACEM 65 (oz):	20.0	20.0
Air Entraining Agent (oz):	2.0	2.0
Water (lbs):	216	216
<b>Plastic Properties:</b>		
Slump (inches):	4.5	3.5
Air Content (%):	2.5	2.6
<b>Hardened Properties:</b>		
<b>Average Compressive Strength (psi):</b>		
7-days:	2540	3050
28-days:	4390	4400
<b>Rapid Chloride Ion Penetrability (ASTM C 1202) Average Coulombs:</b>		
28-days:	1519 (Low)	2108 (Moderate)
90-days:	512 (Very Low)	1166 (Low)

Note: Chloride Ion Penetrability test performed by R-K. All other tests performed by TX EMC.

Project No. ASD04-198-01  
Assignment No. S06-038168  
October 18, 2006 (Corrected Copy 04/30/2007)

FIGURE 1

**Summary of CemPozz® (FA) Performance in Concrete**

**Drying shrinkage measurements, ASTM C 157**

**REPORT OF CONCRETE DESIGN**

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TO: Texas EMC Products, Ltd.

PROJECT NO.: ASD04-198-01  
 ASSIGNMENT NO.: S06-037757  
 DATE: 05-31-06

PROJECT NAME: Cem-Pozz NG Drying Shrinkage

SPECIFICATIONS: 3,000 psi Structural with Type I Portland, Cem-Pozz NG, 1-inch Crushed Limestone, River Sand, DARACEM 65 & DARAVAIR 1000

	RIVER SAND	1-INCH CRUSHED LIMESTONE	SIEVE ANALYSIS				
			Fine			Coarse	
			% Passing	MFG.	SILICA	% Passing	CsLs
DECANTATION, %	---	---	No. 4	N	P	2"	N P
WEIGHT/CU.FT. DRY AND LOOSE	---	---	No. 8	O	R	1 1/2"	O R
WEIGHT/CU.FT. DRY AND RODDED	---	---	No. 16	T	O	1"	T O
PERCENT VOIDS DRY AND LOOSE	---	---	No. 30		V	3/4"	V
FINENESS MODULUS	---	---	No. 50		I	1/2"	I
PERCENT MOISTURE	5.2	2.7	No. 100		D	3/8"	D
PERCENT ABSORPTION	0.9	2.5	Passing 100		E	No. 4	E
SPECIFIC GRAVITY	2.61	2.58			D		D

DESIGN VERIFIED BY:	David P. Darnell	WATER RATIO:	0.57	NO. CYL. CAST:	1 set of 6
MAXIMUM NOMINAL SIZE COARSE AGGREGATE:	57	BRAND CEMENT USED:	Portland Cement Type I		
	1-inch	BRAND FLY ASH USED:	Cem-Pozz NG 100		

SSD MATERIALS PER CUBIC YARD (lbs.)				SOURCE OF AGGREGATES	
CEMENT:	220	ASTM C 494:	(ozs)	SAND:	Martin Marietta Materials
CEM-POZZ NG 100:	220	Type "A" (Winter):	---	COARSE:	Martin Marietta Materials
COARSE:	1,850	Type "D" (Summer):	---	CONCRETE TEMPERATURE, (°F):	80
SAND:	1,436	Type "F" (MRWR):	16.0	MEASURED UNIT WEIGHT, (pcf):	144.3
		ASTM C 260 A.E.A.:	2.0	MEASURED AIR CONTENT, (%):	2.3
SSD MIXING WATER:	252			LABORATORY YIELD, (cu.ft.):	27.57

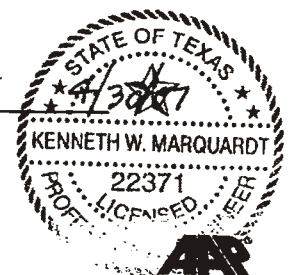
NOTE: This design is based on materials as shown. Variations in materials or the condition specified above, may materially affect the results obtained. Field inspection by a technician who is qualified to judge the affect of such variations is strongly recommended.

CONFORMATION CYLINDERS						
Cylinder Mark	Slump (inch)	Date Cast	Date Tested	Age (days)	Total Load (lbs.)	Lbs. per Square Inch
1	4.0	05-24-06	05-26-06	3	17,080	1,360
2	"	"	"	3	16,370	1,300
3	"	"	05-31-06	7	27,940	2,220
4	"	"	"	7	28,410	2,260
5	"	"	06-21-06	28	42,200	3,360
6	"	"	"	28	47,090	3,750
* % DRYING SHRINKAGE IN AIR						
Drying Shrinkage (ASTM C 157):		4 days	7 days	14 days	28 days	
Average Shrinkage (%):		-0.009	-0.010	-0.010	-0.013	

\* These specimens cured in moist room 14 days prior to start of test.

RABA-KISTNER CONSULTANTS, INC.

BY: *K.W. Marquardt*



***Resistance to Alkali-Silica Reaction (ASR), ASTM C 1567***

Test results from the SH 6 job. Your company is producing the concrete for this job with 50% cement replacement with Cem-Pozz NG. ASR tests performed by TX DOT Cedar Park Lab in Austin.

----- Original Message -----

Subject: ASR testing for WW Webber materials - SH 6 Brazos Co

From: "Terry Paholek"

Date: Wed, April 11, 2007 3:03 pm

Please find the completed test results for the coarse aggregate from Hanson Aggregates New Braunfels pit. Below is a summary of the results.

Lab # A07330025

50% of cement replaced with Cem-Pozz NG

Expansion test: 0.0000%

Lab # A07330037

control tests, straight cement

Expansion test: 0.0810%

Attached find the completed test results for the fine aggregate from Boyd Sand and Gravel. Below is a summary of results.

Lab # A07330024

50% of cement replaced with Cem-Pozz NG

two tests ran

Expansion first test: 0.014%

Expansion second test: 0.009%

Lab # A07330038

control tests, straight cement

two tests ran

Expansion first test: 0.216%

Expansion second test: 0.228%

Test results from the latest projects related to Texas Dept. of Transportation

PAVING PROJECTS WITH AVERAGE BREAKS

CONTRACTOR	PROJECT & CSJ#	Cem-Pozz %	DESIGN sks. Cmt	COMPRESSION OR FLEXURAL	AVERAGE 7 day PSI	AVERAGE 28 day PSI	SPECIFICATION PSI 7 day	SPECIFICATION PSI 28 day
CONTRACTOR	PROJECT & CSJ #	Cem-Pozz %	DESIGN sks. Cmt	COMPRESSION OR FLEXURAL	AVERAGE 7 day PSI	AVERAGE 28 day PSI	SPECIFICATION PSI 7 day	SPECIFICATION PSI 28 day
W.W. Webber TXI cement Hanson aggr.	SH 6 Brazos Cty. 0050-02-055	50% Class P	5.2 sk.	cylinders 1.25" slump, 3.5% air	3020		3500	4400
		50% Class P	6 sk hand	cylinders 4.5" slump, 4.3% air	3560	***JOB COMPLETED 2009***		
W.W. Webber "Pass through toll project"	FM 1488 EAST Class A	50%	5 SK	all cylinders 2.75" slump, 4.4% air 6.5" slump, 6% air	2595 psi 2500 psi	4470 psi 4060 psi		3000 3000
(Two cements & two tests)	Class B	50%	3.9 SK	1.75" slump, 5.5% air 1.5" slump, 5.3% air	2220 psi 1855 psi	3590 psi 3935 psi		2000 2000
Cemex cements	Class C	50%	5.8 SK	4" slump, 5.4% air 5" slump, 5.5% air	3535 psi 2870 psi	5075 psi 4495 psi		3600 3600
Martin-Marietta aggregates	Class P	50%	5.2 SK	1" slump, 4.5% air 2" slump, 5.1% air	3860 psi 3340 psi	5505 psi 4955 psi	3500 3500	4400 4400
	Class P	50%	4.7 SK	3" slump, 5.4% air 3" slump, 5.4% air	3060 psi 2540 psi	4895 psi 5725 psi	3500 3500	4400 4400
WW Webber FM 1314 pass through toll project	PTF 2007(405) 1986-01-023	Class P 50%	5.2 sk	cylinders 4.6% air, 2" slump	3545 psi		3500	4400
Cemex cement Martin/Marietta agg Quality sand		Class P Hand 50% Class A 50%	5.8 sk 4.8 sk	5.4% air, 6" slump 5.1% air, 6.25" slump	3093 psi 2243 psi			4400 3000
				***JOB COMPLETED 2010***				



Test results from the latest projects related to Texas Dept. of Transportation  
(cont'd)

PAVING PROJECTS WITH AVERAGE BREAKS

CONTRACTOR	PROJECT & CSJ #	Cem-Pozz %	DESIGN skt. Cnt	COMPRESSION OR FLEXURAL	AVERAGE 7 day PSI	AVERAGE 28 day PSI	SPECIFICATION PSI 7 day	SPECIFICATION PSI 28 day		
Pace Services Harris County Holcim Cement Vulcan Aggs.	IH 10 0508-01-292 .5 w/c .46 w/c .43 w/c .43 w/c .41 w/c .42 w/c	Class A 50% Class B 50% Class C 50% Class S 50% Class P 50% Class P 50%	4.5 SK	all cylinders 3.5%air, 4.5" slump	3100 psi	5470 psi		3000 psi		
			3.9 SK	4.8% air, 2.5" slump	1550 psi	3400 psi		2000 psi		
			5.4 SK	4.5% air, 6" slump	3720 psi	6110 psi		3600 psi		
			6.1 SK	4% air, 4.5" slump	4540 psi	6590 psi		4000 psi		
			4.7 SK	4.8% air, 2.5" slump	2650 psi	4990 psi	3500 psi	4400 psi		
			5.2 SK	4% air, 3.25" slump	3680 psi	5730 psi	3500 psi	4400 psi		
			***JOB COMPLETED 2010***							
			Texas Sterling Pass through toll project  Vulcan Brownwood Coarse agg. Trinity Cleveland conc. Sand	FM 1484 job 0815	Class P 50%  Class P 50%  Class P 50%	4.9 sk	cylinders 3.5% air, 1.25" slump 68 F conc. Temp	4795 psi	7045 psi	3500 psi
5.0 sk	6% air, 1.25" slump 69 F conc. Temp	3910 psi				6420 psi	3500	4400 psi		
5.2 sk	4% air, 1.75" slump 70 F conc. Temp	5225 psi				8015 psi	3500	4400 psi		
***JOB COMPLETED 2010***										
VW Webber  Pass Through Toll Project	FM 1488 West	Class P 50%  Class P 50%  Class P Hand Pour 50%  Fast Track 30%	4.7 sk	Cylinders Air 3.5% - 4.5% Slump - 1.5"	3960 psi	5010 psi	3500 psi	4400 psi		
			5.2 sk	Cylinders Air 4.5% to 5.5% Slump - 1.25" to 1.75"	4404 psi	5862 psi	3500	4400 psi		
			5.5 sk	Cylinders Air 4.5% to 5.5% Slump - 4.5" to 5.5"	5528 psi	5680 psi	3500 psi	4400 psi		
			7 sk	Flexural (16 hrs)	577 psi avg	425 psi	in 16 hours			

Test results from the latest projects related to Texas Dept. of Transportation  
(cont'd)

PAVING PROJECTS WITH AVERAGE BREAKS

CONTRACTOR	PROJECT & CSJ #	Cem-Pozz %	DESIGN sks. Cmt	COMPRESSION OR FLEXURAL	AVERAGE 7 day PSI	AVERAGE 28 day PSI	SPECIFICATION PSI 7 day	SPECIFICATION PSI 28 day
Texas Sterling	IH 610	Class P	5 sk 50%	Slump - 2.5"	4412 psi	5181 psi	3500psi	4400 psi
TX DOT		Class P	5.4 sk 50%	1.5" slump 4.8% air Conc Temp 62F Ambient Temp -58F	4440 psi	6782 psi	3500psi	4400 psi
		Class P	6 sk 50%	6.75" slump 5.4% air	4108 psi	6317 psi	3500	4400 psi
WW Webber	IH 45	Class A	4.5 sk					
TX DOT	STP2010(647) ES	Class B	3.9 sk					
Capitol Agg		Class C	5.5 sk					
Quality Sand		Class S	5.8 sk					
TXI & Holcim Cement		Class P	4.7 sk					
Cem-Pozz NG		Class P	4.7 sk hand pour					
		Class P	5.2 sk					
		Class P	5.2 sk hand pour					
		Class P	5.4 sk					
WW Webber	IH 45							
TX DOT	NH 2011(372)							
		SAME DESIGNS AS ABOVE					approx 100,000 cy	
		SAME PLANT						

TESTING SOON (OCT 2010)  
approx 150,000 cy





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Unless stated otherwise, references to "tons" means U.S. Short tons.

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