



**GEOSCIENCES AND ENGINEERING DIVISION  
QUALITY ASSURANCE  
SURVEILLANCE REPORT**

PROJECT NO.: .06002.01.262

REPORT No.: 2006-09

Page 1 of 6

SURVEILLANCE SCOPE: Analysis of Geologic Samples by Raba Kistner

REFERENCE DOCUMENTS: QAP-004, Surveillance Control; QAP-013, Quality Planning; QAP-016, Procurement

START DATE: 05/05/2006

END DATE: 05/11/2006

QA REPRESENTATIVE:  
Mark R. Ehnstrom *MRE*

PERSONS CONDUCTING ACTIVITY: D. Darnell, R. Williams, and R. Dunn

**SATISFACTORY FINDINGS:**

Particle size analysis and size determinations were performed at the Raba Kistner facility in San Antonio, Texas.

Raba-Kistner Consultants, Inc is certified to the American Association of State Highway and Transportation Officials Accreditation Program (AASHTO, See attached certificate). Personnel performing the activities were certified for soils testing by the Texas Department of Transportation. These certificates were dated January 13, 2005 and are valid for three years.

Test method, ASTM D 422-63, Standard Test Method for Particle-Size Analysis of Soils, was the test method used for the analysis. The test method was available for reference at the time the work was performed. Stirring apparatus and sieve sizes were as specified in the test method. A Sartorius Balance, Serial Number 1625853, was used and had the required accuracy of .01 grams. The balance was certified by Recal Calibration Services with standards traceable to the National Institute of Standards and Technology.

The report from Raba-Kistner contained the grain size distribution curves for the samples provided. Additional documentation showing sample size and weight distribution used in the generation of the curves was provided.

UNSATISFACTORY FINDINGS: None

NCR NO.: N/A

CAR NO.: N/A

ATTACHMENTS: ASHTO Certification; Certificate of Calibration for the Sartorius Balance; grain size distribution curves; and the Laboratory Testing Reports.

RECOMMENDATIONS/ACTIONS: None

APPROVED: *[Signature]*

DATE: *5/22/2006*

DISTRIBUTION:  
ORIGINAL—QA RECORDS  
DIRECTOR, QA  
ASSISTANT DIRECTOR: *S. Mohanty W. Hanger*  
MANAGER *N/A (W. Hanger)*  
PRINCIPAL INVESTIGATOR: C. Manepally

# American Association of State Highway and Transportation Officials AASHTO Accreditation Program - Certificate of Accreditation

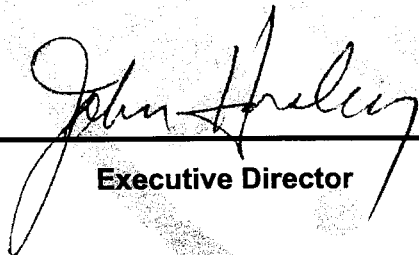
This is to signify that


**Raba-Kistner Consultants, Inc.**

San Antonio, Texas

has demonstrated proficiency for the testing of construction materials  
and has met the minimum requirements in AASHTO R18  
set forth by the AASHTO Highway Subcommittee on Materials.

The scope of accreditation can be obtained by viewing  
the AAP Directories of Accredited Laboratories ([www.nist.gov/amrl](http://www.nist.gov/amrl))  
or by contacting AMRL.

  
Executive Director

  
Chair, AASHTO Highway  
Subcommittee on Materials





Certification No.: 1426.01 ACCREDITED



# CERTIFICATE OF CALIBRATION

McEuen Enterprises, Inc. • 1003A Cresthaven Drive • Euless, TX 76040 • Phone: 817-540-0011 • Fax: 817-283-5107 • Web: recalcalibration.com

**COMPANY:**

Name: Raba-Kistner Consultants, Inc.  
 Address: 12821 West Golden Lane  
 San Antonio TX 78249  
 Phone: (210) 699-9090

**REPORT:**

Report #: 1-14801  
 Calibration Date: 10/11/05  
 Recalibration Date: 10/11/06  
 Job Site: San Antonio, TX

**EQUIPMENT CALIBRATED:**

Machine Type: Digital Balance      Max Capacity: 34,000 Grams  
 Manufacturer: Sartorius      Resolution: 0.10  
 Model: CP 34001 S      Serial #: 16250853

WEIGHTS READING	MACHINE READING	MACHINE ERROR		WEIGHTS READING	MACHINE READING	MACHINE ERROR	
		Diff.	% Diff.			Diff.	% Diff.
0.10	0.10	0.00	0.000	500.00	500.00	0.00	0.000
0.20	0.20	0.00	0.000	1,000.00	1,000.00	0.00	0.000
0.50	0.50	0.00	0.000	2,000.00	2,000.00	0.00	0.000
1.00	1.00	0.00	0.000	5,000.00	4,999.90	0.10	-0.002
2.00	2.00	0.00	0.000	10,000.00	10,000.10	0.10	0.001
5.00	5.00	0.00	0.000	15,000.00	15,000.00	0.00	0.000
10.00	10.00	0.00	0.000	20,000.00	19,999.90	0.10	0.000
20.00	20.00	0.00	0.000	30,000.00	29,999.70	0.30	-0.001
50.00	50.00	0.00	0.000				
100.00	100.00	0.00	0.000				
200.00	200.00	0.00	0.000				

Calibrated in accordance with procedure QAP14/2 based on NIST Handbook 44.  
 Indicator returned to zero after loading/unloading balance.  
 Meets precision requirements for maintenance tolerances of laboratory scales/balances.

**CALIBRATION APPARATUS USED: Dead Weights**

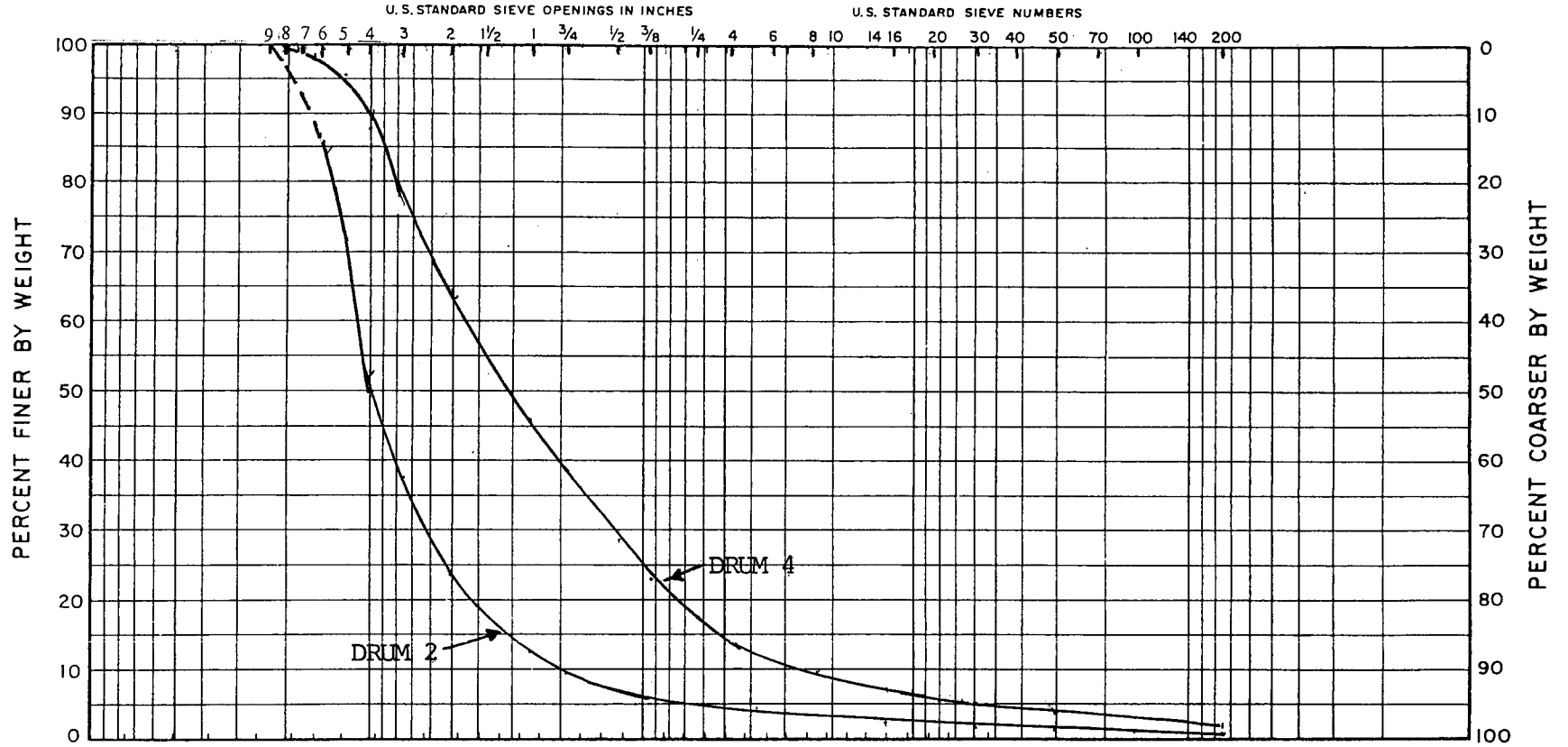
Manufacturer	Serial #	Description	NIST #	Class	Cal Lab	Date Calibrated
Troemner/RL	R2	Weight Set (g)	03-0859/0861/0876	4	Aldinger	6/24/04

*Kara McEuen-Powell*  
 Q.A. Manager: Kara McEuen-Powell

*Mikel A. Kendrick*  
 Technician: Mikel A. Kendrick

The values of the above document are traceable to NIST.  
 This report shall not be reproduced, except in full, without the written approval of Recal Calibration Services.

# GRAIN SIZE CURVES



Raba-Kistner

Project No. ASD06-102-00  
Assignment No. S06-037672

4 of 6

# LABORATORY TESTING REPORT

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

PROJECT NO.: ASD06-102-00 ASSIGNMENT NO.: S06-037672  
 PROJECT NAME: Grain Size District of Aggregates  
 DATE RECEIVED: 04-24-06 SAMPLED BY: Client  
 DATE PREPARED: 05-04-06 PREPARED BY: Robert Dunn  
 DATE TESTED: 05-05-06 TESTED BY: Robert Dunn & Ray Williams  
 SAMPLE I.D.: ESF ECRB, Station 16+69, Right Rib Large Fraction Drum 2

### SIEVE ANALYSIS (ASTM D 422)

SIEVE SIZE	WET WT (lbs)	DRY WT (lbs)	% RETAINED	% PASSING
6-inch	---	79.573	* 14.6	85.4
5-inch	---	72.555	13.3	72.1
4-inch	---	116.429	21.3	50.8
3-inch	---	72.493	13.3	37.5
2-inch	---	76.306	14.0	23.4
1-inch	---	60.762	11.1	12.4
3/4-inch	---	15.628	2.9	9.5
1/2-inch	---	14.966	2.7	6.8
3/8-inch	---	5.824	1.1	5.7
No. 4	---	9.035	1.7	4.0
- No. 4	21.910	21.833	4.0	No. 8 3.0
TOTAL	---	545.404	100.0	No. 16 2.3
				No. 30 1.8
				No. 50 1.4
				No. 100 1.0
				No. 200 0.7

MOISTURE CORRECTION	
MINUS NO. 4	
TARE:	1805.0 g
WET WT:	9426.1 g
DRY WT:	9396.4 g
LOSS:	29.7 g
% M/C:	0.4 g

Notes: \* Comprised of five (5) stones ranging in size of 9 to 14 inches.

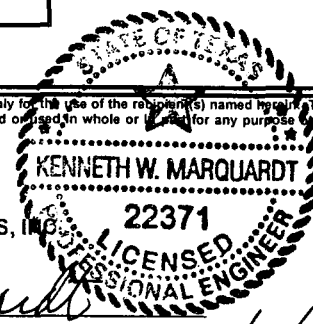
- No. 4 WASH				
	SIEVE SIZE	WT. RETAINED(g)	% RETAINED	% PASSING
WET WT:	844.6	No. 8 219.2	26.0	74.0
		No. 16 134.3	16.0	58.0
		No. 30 106.7	12.7	45.3
DRY WT:	841.2	No. 50 85.7	10.2	35.1
		No. 100 80.9	9.6	25.5
		No. 200 62.4	7.4	18.1
		- No. 200 152.0	18.1	---
		TOTAL 841.2	100.0	---

NOTICE: Raba-Kistner Consultants, Inc. considers the data and information contained in this report to be proprietary. This information is intended only for the use of the recipient(s) named herein. Test results presented herein relate only to those items tested. This document and any information contained herein shall not be disclosed and shall not be duplicated or used in whole or in part for any purpose other than to evaluate test results without written approval from Raba-Kistner Consultants, Inc.

COPIES TO: Above (1)

RABA-KISTNER CONSULTANTS, INC.

BY: *K.W. Marquardt*



/dgp 05-09-06

W:\Active Projects\San Antonio\2006\ASD06-102-00 (SwRI)\Letters\S06-037672.doc



Austin • Brownsville • El Paso • Houston • McAllen • Mexico • San Antonio



# LABORATORY TESTING REPORT



**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

PROJCT NO.: ASD06-102-00 ASSIGNMENT NO.: S06-037672  
 PROJECT NAME: Grain Size District of Aggregates  
 DATE RECEIVED: 04-24-06 SAMPLED BY: Client  
 DATE PREPARED: 05-04-06 PREPARED BY: Robert Dunn  
 DATE TESTED: 05-05-06 TESTED BY: Robert Dunn & Ray Williams  
 SAMPLE I.D.: ESF ECRB, Station 16+69, Right Rib Mixed Fraction Drum 4

### SIEVE ANALYSIS (ASTM D 422)

SIEVE SIZE	WET WT (lbs)	DRY WT (lbs)	% RETAINED	% PASSING
6-inch	---	13.084	* 2.3	97.7
5-inch	---	14.119	2.5	95.2
4-inch	---	42.631	7.6	87.6
3-inch	---	61.664	11.0	76.6
2-inch	---	69.318	12.4	64.2
1-inch	---	101.238	18.2	46.0
3/4-inch	---	44.667	8.0	38.0
1/2-inch	---	55.948	10.0	28.0
3/8-inch	---	27.565	5.0	23.0
No. 4	---	50.657	9.1	13.9
- No. 4	77.808	77.267	13.9	No. 8 9.5
TOTAL	---	558.158	---	No. 16 6.8
				No. 30 5.0
				No. 50 3.8
				No. 100 2.7
				No. 200 1.9

MOISTURE CORRECTION	
MINUS NO. 4	
TARE:	336.7 g
WET WT:	1467.8 g
DRY WT:	1459.6 g
LOSS:	8.2 g
% M/C:	0.7 g

Notes: \* Comprised of one (1) stone, 8-inches.

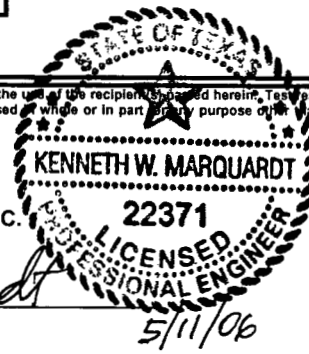
- No. 4 WASH				
	SIEVE SIZE	WT. RETAINED(g)	% RETAINED	% PASSING
WET WT:	721.4	No. 8 226.5	31.6	68.4
		No. 16 141.5	19.8	48.6
		No. 30 92.3	12.9	35.7
DRY WT:	716.4	No. 50 61.7	8.6	27.1
		No. 100 54.0	7.5	19.6
		No. 200 42.3	5.9	13.7
		- No. 200 98.1	13.7	---
		TOTAL 716.4	100.0	---

NOTICE: Raba-Kistner Consultants, Inc. considers the data and information contained in this report to be proprietary. This information is intended only for the use of the recipient named herein. Test results presented herein relate only to those items tested. This document and any information contained herein shall not be disclosed and shall not be duplicated or used in whole or in part for any purpose other than to evaluate test results without written approval from Raba-Kistner Consultants, Inc.

COPIES TO: Above (1)

RABA-KISTNER CONSULTANTS, INC.

BY: *K.W. Marquardt*



/dgp 05-09-06

W:\Active Projects\San Antonio\2006\ASD06-102-00 (SwRI)\Letters\S06-037672.doc

