



THE TEST REPORT

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PRESIDENT'S CORNER –

By Jim Backman

It has been an exciting and ever-changing year in 2002. CCTIA has formed new committees to assist our members in reviewing standard practices and involvement in the community. Along with the creation of new committees, we have maintained our past work load to include: ICBO, ASTM E-36, Membership, Pins and Honors, the



Newsletter and DSA. Each ongoing committee chair deserves our gratification and thanks for their continuing hard work throughout the year.

During 2002, CCTIA introduced a new committee who's focus is on the administering of a scholarship fund. The committee will award two grants of \$250.00 each to employees of member firms. The scholarships will be awarded based on a 500 word or less essay

depicting how continuing education will assist in the betterment of our industry. The applicant must be enrolled in some type of recognized continuing education program. The President of CCTIA will select a review board to evaluate the essays and award the scholarships to the member firm at our annual business meeting in January 2003. Essays are due no later than January 15, 2003. Please encourage your employees to submit their essay. Please e-mail their essay to:

Other committees formed this year involved the gathering of data regarding the reporting of low cylinder breaks, the creation of Internal Auditing Checklists for laboratory work and the establishment of new member facility inspection check lists. Each of these committees has done an excellent job bringing their projects to near completion.

The introduction of new while maintaining existing committees continues

to demonstrate CCTIA's commitment to the betterment of our industry. We have made some steps in the right direction this year and we should continue in that direction including bringing our organization into a state wide focus .

As this year draws to an end, we will close the year at our Annual Business Meeting (ABM) in Las Vegas. The ABM will be held on January 31 to February 2, 2003. The main topic at the ABM will be to determine a better way to include the concerns and issues for all our members in Southern, Central and Northern California in the betterment of our industry. It is important that each of our members are equally represented in CCTIA. In addition, we will enjoy a great reception on the evening of January 31 and an awards and inauguration dinner on the evening of February 1, 2003. I look forward to greeting our entire membership in Las Vegas. Happy Holidays...

Changes in weather and Concrete performance

By Gregory J. Smith

As the season turns from Summer into Fall, there is generally a cooling trend in daily temperatures that allows concrete to have less slump loss and an extended time of set.

This can help improve compressive strength and shrinkage characteristics by minimizing the water added in the field to achieve consistent workability of the concrete. It can also result in lower early strength of concrete and a resultant delay in form stripping. Furthermore, the correlation between laboratory cured compressive test specimens and structures cured in specimens and structures cured in the field becomes more compli-

cated, especially if field curing temperatures drop below the 60 to 80 degree F requirement for laboratory cured cylinders.

In order to keep our clients construction on schedule during the cooler months, it is not a bad idea to make a few extra 'field cured' cylinders if temperatures in the field are expected to drop below 60 degrees. These cylinders can be used to verify any difference between the laboratory cured cylinders and provide a better indicator of the in-situ strength of the structure. The cost for these extra cylinders is easily justifiable if

even one day can be saved instead of waiting for the concrete to gain sufficient strength for form removal or if a structures actual strength can be more accurately assessed, minimizing the likelihood of damage from premature form removal.

While our jobs as inspectors and technicians are largely to observe and report what we find against the approved contract documents, suggesting additional testing that benefits our clients with minimal added cost is what sets CCTIA member firms at the forefront of construction quality assurance.

We're on the Web!
<http://www.cctia.org>

Alkali Silica Reactions (ASR) In Concrete Ag

By Arturo G. Nisperos

Alkali silica reactivity (ASR) is a major cause of the deterioration of highway structures, pavements, bridges, and airport runways in the United States particularly in the Western States. With the increasing rarity of aggregate sources due to environmental regulations and restrictions, it is imperative to know the alternative strategies to qualify aggregate sources for different types of highway and transportation construction, both for new or changed aggregate resources with no service record, and for existing sources where detailed field service evaluations can be valuable. It is also important to know the methods and specifications that can be used to reduce or eliminate the incidence of deleterious ASR in concrete used in highway and transportation concrete.

Before I can proceed to discuss the different methods and specifications that can be used to reduce or eliminate ASR in concrete and concrete aggregates, it is important to understand the principles behind ASR such as the following:

1. Basics of Alkali Silica Reactivity (ASR)
2. How ASR deterioration develops
3. How it can damage concrete
4. How they can be identified with certainty
5. Methods of identification, mitigation and prevention of ASR

What is ASR?

ASR is a chemical reaction that occurs between alkalies contributed primarily by cement and a reactive form of silica from reactive aggregates, which form an alkali silica gel. The gel expands in the presence of moisture and produces stresses such as cracking in concrete.

History of ASR

In the late 1930's, T. Stanton of the California Division of Highways detected the phenomenon called alkali silica reactivity (ASR). In the late 1980's, research began by the state and federally funded Strategic Highway Research Program (SHRP). It was only in the 1990's under the aegis of the American Association of State Highway and Transportation Officials (AASHTO) that an ASR Technology Implementation Lead States Team was established. In the early 2000's AASHTO Lead States

developed ASR Guide Specification including the BASIC ASR Expansion Test in Concrete (ASTM C 1293).

Standards in Use for Potentially Reactive Aggregates

After the 1950's, the standards in use for potentially reactive aggregates are: (1) **ASTM C 227**, Mortar-Bar Expansion Test (MBT), a long term test using one-year expansion of mortar with crushed/pulverized aggregate, (2) **ASTM C 289**, Quick Chemical Test (QCT). By the 1980's, it was found that the mortar tests and the use of low-alkali cement did not always eliminate ASR expansion. Furthermore, the ASTM C 227 is a long term test (at least one year) and most aggregate producers cannot wait that long. The ASTM C 289 is a very lenient test and fails to identify many slowly reactive aggregates. Due to the limitations with these two methods, The **ASTM C 1260**, Rapid Mortar-Bar Expansion Test (RMBET) was developed. This test method is an accelerated (16-day test age) detection of potentially deleterious expansion of mortar bars due to ASR. The test results obtained from this method indicate only that the aggregate is potentially reactive, not that it will react deleteriously in the concrete. This test will answer the shortcomings of ASTM C 227 and C 289 in that it has successfully identified, in conformance with field observations, the deleterious nature of reactivity with the slowly reactive aggregates.

A more reliable ASTM standard for identifying potentially reactive aggregates is the **ASTM C 295**, a guide for petrographic examination of aggregates for concrete. This can be done rapidly but is somewhat subjective in nature, and depends on the experience and capabilities of the **petrographer** examining the aggregate. Its major use is for alerting the materials engineer to the presence of potentially reactive rock and mineral types and is highly recommended for use in conjunction with other tests and field performance evaluations. **ASTM C 295** together with **ASTM C 1260**, with careful examination of field performance, collectively appear to be the most reliable indicators of potential for deleterious ASR.

All the tests described above, except ASTM C 295 use mortars with crushed and pulverized aggregates before they are immersed into alkaline solution. Because of this, the tests are harsher due to the exposure of more surface areas of the aggregate to alkali solution. Hence, in the year 2001, the **ASTM C 1293**: "Determination of Length Change of Con-

crete Due to Alkali-Silica Reaction" was adopted. This method uses the aggregate in a concrete mixture and then immersed in an alkaline solution. This will give a true reactivity of the aggregate tested when used in portland cement concrete. The only disadvantage of this test is that it requires after six months before getting the initial test result and runs to a year or more. Again, most aggregate producers and users cannot wait that long. So they have the option to have the ASTM C 1260 done first and if the test result is unfavorable, then they still have the next option which is the ASTM C 1293. Other tests related to the evaluation of concrete subjected to ASR are **ASTM C 1202**: "Rapid Chloride Permeability Test," **ASTM C 1218**: "Water-Soluble Chloride in Mortar and Concrete," and **Uranyl Acetate – Ultra-violet (UV) Test**.

In **California**, most of the aggregates require around 10 to 15% of Class F fly ash replacement to arrest long-term ASR. In fact, **CALTRAN** is now specifying that aggregates be subjected to tests on both ASTM C 1260 (Limit = 0.15%) and ASTM C 1293 (Limit = 0.04%) to determine the true reactivity of the aggregate tested to ASR.

Kleinfelder's Petrographic Services Department

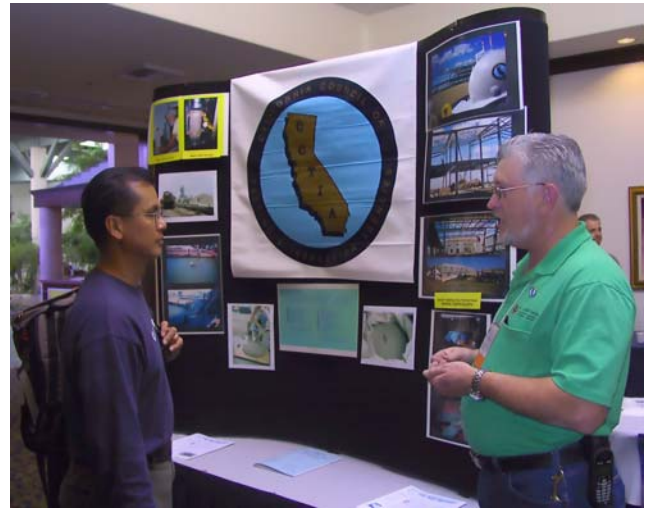
The Petrographic Services Department of Kleinfelder is equipped with the latest state-of-the-art equipment and having a world reknown petrographer with almost

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Any Articles Or Questions Re-
garding This Newsletter Or The
Upcoming Newsletter.

CALBO North Expo

By Al McManus

The California Building Official Training Institute, Northern California Education Week event took place at the Concord Sheraton Hotel the week of October 14 through October 18. CCTIA was on hand during the Exhibitor portion of the program on Tuesday and Wednesday. Our display was prominently located across from the front desk and was staffed during the event by Al McManus with Kevin Lecce from Krazan Associates participating for both days. We also had Issam Makdissy of Terrasearch and Norm Engen from Earth Systems Consultants taking a turn at the display as well. During our two days we passed out over 200 copies of "The Blue Book" and many copies of past newsletters that Issam Makdissy brought with him. The participants we spoke to seemed genuinely interested in Special Inspection Agencies and our role in the entire inspection and construction process.



Informal Survey

By Jim Backman

In March of this year, we had a very interesting meeting and discussion regarding the reporting of low cylinder breaks. The discussion was prompted by one of our members who recently completed a law suit, which involved how 7 day estimates and 28-day low breaks were reported, who was notified and how loud the notification was sounded. In cases like this, industry standard always comes into play. As members of CCTIA this is an appropriate issue for our members to deliberate. CCTIA commissioned a member survey to determine what procedures our members followed and deemed proper notification of questionable and or low concrete cylinder test results. We asked the following three questions:

1. How do you evaluate 7 day test results? When if ever you make a notification at 7 days, who do you notify and how do you notify them?
2. How do you report 28 day low test results? Do you do a special notification if the tests are low and who do you notify?
3. Do you break two cylinders or only one after a low 28 day test result?

The following presents a summary of the survey:

1. Identification of probable low 28 day compressive strength test results at 7 days ranged from 50% f'_c to 70 % f'_c . The average was 62.5 % f'_c . Refer to table 1 for notification results.
2. Refer to table 1 for notification results.
3. 70% of the respondents replied to question # 3. Of the 70%, 71% tested two cylinders at 28 days. 29% tested only one cylinder at 28 days if the cylinder failed to meet or exceed the f'_c .

Type Notification	7 Day Notification	28 Day Notification
Call Client	20 %	0 %
Call Client and Contractor	30 %	30 %
Call Client or Contractor	10 %	10 %
Call and FAX Contractor	10 %	10 %
Fax Client and Contractor	10 %	10 %
Fax Client, Contractor & Engineer	10 %	10 %
Call Contractor or Inspector	10 %	10 %
Call Client Contractor & Engineer	0 %	10 %
Call Client & FAX Engineer	0 %	10 %
Total, %	100 %	100 %



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CCTIA MEETS DSA

By Corey Dare

As part of CCTIA's ongoing effort to keep the California testing and inspection industry current with the latest (and constantly changing) inspection and reporting requirements of the California Division of the State Architect (DSA), CCTIA invited representatives of DSA to meet with members of the testing and inspection industry at our September and October 2002 monthly meetings.

Our September 26 General Meeting, held at the Holiday Inn in Oakland, featured Messrs. Jeff Enzler, SE; Eric France, and Sukomol Chakraborty of DSA. Over 45 representatives of both CCTIA member companies and non-CCTIA members engaged in testing and inspection services for public school

projects attended this meeting. Discussion topics were presented to the DSA representatives as a list of questions developed by the meeting attendees. Various topics discussed included the latest news on LEA certifications, and recertifications for expired labs; a discussion on the various reports required by DSA during the course and at the completion of a school project new required language in DSA Final Verified Reports; liability concerns for individual inspectors working on school project DSA's Special Masonry Examination; and what constitutes qualifying experience for masonry inspectors.

A follow-up to the September meeting was held during our October 24 General Meeting held at the Host Airport Hotel in Sacramento.

Messrs. Jeff Enzler and Eric France also attended this meeting to an-

Type Notification	7 Day Notification	28 Day Notification
Call Client	20 %	0 %
Call Client and Contractor	30 %	30 %
Call Client or Contractor	10 %	10 %
Call and FAX Contractor	10 %	10 %
Fax Client and Contractor	10 %	10 %
Fax Client, Contractor & Engineer	10 %	10 %
Call Contractor or Inspector	10 %	10 %
Call Client Contractor & Engineer	0 %	10 %
Call Client & FAX Engineer	0 %	10 %
Total, %	100 %	100 %



Attendees at the seminar



Jeff Enzler (right), Eric France (middle) and Sukomol Chakraborty (left)