



THE TEST REPORT

A Newsletter of the California Council of Testing and Inspection Agencies

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PRESIDENT'S CORNER – By David Chippero

With the end of 2005 approaching it's time to reflect on the past year and look forward to new opportunities and challenges. It has been a productive year for the Testing and Inspection industry as a whole. There are some issues, however, that could affect our industry's performance in the future.

In Northern California the Special Inspection Committee has suspended the publication of its Recognized Special Inspection & Testing Agencies list. It is uncertain at this time how the local jurisdictions will ultimately approve Special Inspection Agencies. It is possible that individual cities will implement their own approval plan or require all firms to obtain an IAS Certification. CCTIA has created its own program called the Competency Advisory Program (CAP). We have already started to review and approve Special Inspection Agencies and we intend to post a list of approved firms on our website by January 1, 2006. It is



our sincere hope that the local building officials of the Monterey Bay, East Bay, and Peninsula Chapters will accept our CAP program and would be willing to participate as active members on our approval board. To learn more about the CAP program please visit CCTIA's website at www.cctia.org.

DSA is also going through some major changes for the New Year as they begin the process of repealing the entire 2001 CBC code and creating a new IBC-based building code. This will be our chance to give input on all codes that relate specifically to the Testing and Inspection industry. Many of our members have already been selected to be part of the stakeholder committee. However, if you would like more information regarding the upcoming changes or would like to sign up as a stakeholder please visit DSA's web site at www.dsa.dgs.ca.gov.

The New Year also means it is once again time for CCTIA's Annual Business Meeting. On January 20-21, 2006 our ABM will be held at Bally's Hotel and Casino in Las Vegas, NV. We are very excited about the program that we

have scheduled. Along with our normal business events we are going to have a round table discussion with 5 representatives from 3 inspection agencies in Las Vegas who have gone through the new IAS certification program. This will be your chance to have all your questions concerning obtaining an IAS Certification answered by industry representatives. Finally at our awards dinner on Saturday night we will be honoring Merl Issak for his many years of service to our industry as he retired this year.

If you need more information on how to sign up for the ABM please check CCTIA's website or e-mail Elizabeth Levi at elevi@bskinc.com

To reserve your room please call Bally's Hotel directly at 1-800-722-5597, and tell them you are there for the CCTIA conference. I look forward to seeing you all this January in Las Vegas.

7 Day Concrete Strength Is A % Of What? By Terry Egland

Q: Our testing laboratory routinely supplies our customers with 7-day concrete break results. At what percentage of the specified strength should we state there might be a problem with the final result?

A: Different concrete mixtures will gain strength at different rates, so there is no universally applicable rule about what a 7-day strength versus 28-day strength ratio will be. This is also true because of the numerous types and brands of cement, and the hundreds of different admixtures routinely used in concrete today. But as a general rule of thumb for normal-weight concrete that does not contain unusual ingredients, 7-day strengths that are less than 65% of

the required 28-day strength should warrant close attention. (Note: If the concrete mix contains fly ash, especially large amounts of fly ash, strength gain will be slower than mixes that do not contain fly ash.)

Jeffry Cannon is the Laboratory Manager for Kleinfelder Inc.'s Sacramento office and is the Laboratory Program Manager for all Kleinfelder offices. He can be reached at JCannon@kleinfelder.com.

Got a question? Send it to Q&A, CCTIA, 2811 Teagarden St. San Leandro, Ca. 94577 or email terry@testing-engineers.com

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

CCRL Statistics

By Terry Egland

After reviewing your CCRL inspection report, do you ever ponder the question, "How do I compare to everyone else?" Well I don't have that comparison but I will share these statistics with you;

57% of the labs had deficiencies related to equipment and equipment calibration.

34% of the labs did not meet the calibration frequency for all items.

4% of the labs had at least one missing verification report.

19% of the labs did not include all criteria listed in 9.2.2 for verification reports of equipment.

17 % were missing written calibration procedures

5% had missing or deficient equipment.

47% had deficiencies related to certification and other personnel requirements.

Laboratory Supervisor

3% had no certification

30% were certified but not for all relevant tests.

Laboratory Technician

4% had no certification.

FAQ: Curing Room– Thermometer

By Terry Egland

Q: In ASTM C511-04 it talks about calibration of the recording thermometer then continues to discuss how to perform verification of the recording thermometer. If the recording thermometer is calibrated every six months what logic says we have to perform verification. This seems redundant; can you give us a little insight of logic?

Excerpt from Section 5.1 ASTM C511 *Standard Specification for Mixing Rooms, Moist Cabinets, Moist Rooms, and Water Storage Tanks Used in the Testing of Hydraulic Cements and Concrete*

"The recording thermometer shall be **calibrated** at least every six months or whenever there is a question of accuracy.

Perform the verification of the recording thermometer by comparing the temperature reading of the recording thermometer with the temperature reading of a reference thermometer during the normal operation of the moist cabinet or moist room. The thermometer used as the reference thermometer must be accurate and readable to 0.5°C".

A: I posed this question to the ASTM staff member in charge of C 511 who asked Mr. Ray Kolos of CCRL to respond. Mr. Kolos stated that the intent of the standard is that verification of the recording thermometer will be conducted every six months using a reference thermometer. Section 5.1 uses the term "calibrated" even though verification is intended. Mr. Kolos will ask the chairman of the ASTM committee C1.95, Mr. Dave Norris, to consider a modification to correct the error.

Terry Egland is a principal at Testing Engineers, Inc. and a registered engineer in California. He can be reached at Terry@Testing-Engineers.com

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33% were certified but not for all relevant tests.

Field Supervisor

1% had no certification.

3% were certified but not for all relevant tests.

Field Technician

2% had no certification.

1% were certified but not for all relevant tests.

9% had deficiencies related to records for laboratory personnel.

3% had deficiencies related to description of training and performance evaluations.

4% had deficiencies related to the requirements for the laboratory manager (fulltime professional engineer with 5 years experience in construction material testing).

The preceding information was supplied by CCRL on June 14, 2005 and covers 224 CCRL concrete inspections during a six-month period. My understanding is that the preceding information included Tours, mainly from the Mississippi River and east.



Curing Room Thermometer

Please Contact Issam Makdissy at Terrasearch Inc. By Phone At (408) 362-4920 or Email at: issamm@terrasearchinc.com or fax at (408) 362-4926 with Any Articles Or Questions Regarding This Newsletter Or The Upcoming Newsletter.



CASH Response Letter

By Dave Chippero

The following letter was in response to an article that was published in the June 2005 Cash Register newsletter. If you have not seen the article or are unfamiliar with the CASH organization you can visit their website at www.cashnet.org.

Dear Ms. Johnson:

I am the president of the California Council of Testing and Inspection Agencies. We represent 32 inspection firms throughout the State of California. I am writing on behalf of our industry to express our disappointment and shock concerning the article recently published in the June 2005 issue of the CASH Register. The article is entitled "Ultrasonic Testing, Was it really inspected?" by Clay Salzman of Willdan. This article is a misrepresentation of the testing and inspection industry as a whole. Mr. Salzman implies in his article that it is standard industry practice to submit falsified reports and/or invoice clients for work that was not performed. The member firms of CCTIA, many of which are also members of CASH, operate reputable businesses, and would never intentionally submit fraudulent reports or bill for work that was not performed. As third-party quality assurance agencies, our reputations are governed by the integrity, accuracy, and validity of our laboratory and field reports. It is more likely that an employee found intentionally falsifying reports would be fired immediately.

While no one can guarantee the ethical practice of every special inspector and/or testing agency operating in California, it is unprofessional for your organization to publish such a gross misrepresentation of the industry. If Mr. Salzman actually encountered some of the scenarios he portrayed in his article, as an Assistant Project Inspector, it was his duty to report that firm to the proper governing authority. In the case of school projects, Eric France, the manager of the Laboratory Evaluation and Accreditation Program for DSA, would be the correct contact. Mr. France is responsible for auditing and accrediting testing agencies.

FAQ: Shotcrete Core Diameter

By Terry Eglund

Q: What is the diameter for a shotcrete core tested in compression?

A: UBC Section 1924.10 states that shotcrete with maximum nominal aggregate larger than 3/8-inch shall be tested using 3-inch diameter cores or 3-inch cubes. Shotcrete with maximum nominal aggregate of 3/8-inch or smaller shall be tested using 2-inch diameter cores or 2-inch cubes.

ASTM C 1140 requires shotcrete be tested as drilled cores or sawed cubes, and references C 42 and C 513, respectively, for obtaining the specimens. Cores shall be at least 3.70-inches in diameter for load bearing structural shotcrete. Cores for non-load bearing concrete, or when it is impossible to obtain cores with length-diameter ratios greater than or equal to 1, are not prohibited. Cubes shall be 2-inches to 4-inches in size, with no size

requirement based on aggregate size.

COMMENTS

ASTM Subcommittee C09.46 who has jurisdiction over C1140 will be replacing the requirements of C42 with a new ASTM designated as C1604-05 *Standard Test Method for Obtaining and Testing Drilled Cores of Shotcrete*. This new standard has the following requirements:

8. CORES FOR COMPRESSIVE STRENGTH

8.1 *Diameter*—The diameter of core specimens for the determination of compressive strength in load bearing structural members shall be at least 3.0 in. [75 mm] (see Note 4).

Core diameters less than 3.0 in. [75 mm] shall be permitted as directed by the specifier of the tests.

NOTE 4—The compressive strengths of 2-in [50-

mm] diameter cores are known to be somewhat lower and more variable than those of 3-in. [75-mm] diameter cores. In addition, smaller diameter cores appear to be more sensitive to the effect of the length-diameter ratio.

This new standard will bring us into better alignment with IBC, UBC, & CBC.

Our industry is inspected and/or audited by numerous authorities to verify we provide accurate field inspections and laboratory test results. Our labs and inspectors are certified by one or more (if not all) of the following agencies: CCRL, DSA, Caltrans, AASHTO, ICC, ACI, AWS, NICET, and AMRL. In addition to the mandatory laboratory inspections, our firms also participate in random laboratory proficiency programs to confirm that our test results and procedures are within the typical standard of deviation range within the industry. Our reputation is paramount to our success, and we work hard to assure that we comply with all current building codes and regulations. It is the goal of each CCTIA member firm to make sure the veracity of its inspection reports and laboratory test results are unquestioned.

We believe it was irresponsible for your organization to print an article in its newsletter making claims our entire industry is conducting fraudulent activities. The damage caused by the publication of Mr. Salzman's article cannot be erased. Although we would prefer CASH print a full retraction, we request, at the very least, CCTIA be allowed to submit a rebuttal in the next issue of the CASH Register.

I look forward to hearing from your organization shortly.
davide@terrasearchinc.com (408) 362-4920 X215

Respectfully Submitted,
David Chippero
CCTIA President

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FAQ: Free Falling Concrete

By Terry Egland

Q: Where in the UBC does it state the maximum drop height of concrete? The closest code sections I can find is 1905.10 that just states to deposit the concrete as close as possible to final position.

A: The short answer to your questions is that there is no UBC limitation on the maximum drop height of concrete during placement. Although factually there is no UBC requirement to limit concrete drop height, there are implied practical limits. The Code refers to the issue of concrete segregation during conveying and depositing of concrete. In referencing UBC Section 1905.10, you correctly cited the Code but left out an important element of the Code provision. Section 1905.10 states "Concrete shall be deposited as nearly as practical in its final position to avoid segregation (emphasis added) due to rehandling or flowing." Section 1905.9.2 states, "Conveying equipment shall be capable of providing a supply of concrete at site of placement without separation of ingredients..." These two provisions show intent to maintain concrete quality to the point of final deposit by preventing or avoiding separation of materials. Experience has shown that free falling of concrete through close spaces with obstructions, such as reinforcing steel and embeds, can cause segregation of concrete. Based on this experience and the absence of specific limits on free-fall drop heights in the UBC, a specific provision was added to Title 24 of the California Building Code. CBC Section 1905A.10.9 states " In depositing concrete in columns, walls or thin sections of considerable height, concrete shall be placed in a manner that will prevent segregation... unless otherwise approved by the enforcement agency, the unconfined vertical drop of

concrete ... to the placement surface shall not be greater than 6 feet (1829 mm)." The American Concrete Institute also addresses placement of concrete in several publications, including ACI 304R-00. ACI 304R-00 states that "if forms are sufficiently open and clear so that concrete is not disturbed in a vertical fall into place, direct discharge without the use of hoppers, trunks, or chutes is favorable." In summary, though not specifically limited, drop height has been shown to have practical limits based on the conditions where the concrete is being placed. The drop height should be limited to that where concrete quality can be maintained and segregation is prevented.

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COMMENTS

Historically, drop heights of 10-20 feet have been referenced as the maximum allowable. Studies of the impacts of free-fall placement of concrete in large diameter drilled cast-in-place piers (also referred to as cast-in-drilled-hole caissons) up to 150 feet deep indicate concrete can free fall great distances without appreciable problems. Because of this, reference to maximum drop heights has been removed from many current specifications, including those of the Federal Highway Administration (FHWA). The trend towards removal of controlling concrete drop height based on these studies and the advocacy of less control on concrete placement techniques by contractor-based organizations may not be well founded for concrete placement in structures other than large un-congested structural elements. It should be understood that the studies conducted involved large diameter piers or caissons, which allowed for

minimal impact with reinforcing steel. Though the FHWA has been quoted as stating that "the general expectation that (concrete) striking of the rebar cage will cause segregation or weakening of the concrete is invalid," it is important to recognize that the dynamics of the concrete falling into place, even when striking rebar in a large diameter caisson, are very different than in a close space, such as a wall, thin section or small diameter column. The studies cited by contractor-based organizations, such as the American Society of Concrete Contractors, advocating unrestricted fall heights for concrete, are all based on large diameter caissons. They do not refer to studies of more restrictive structural elements, such as walls and smaller diameter caissons or columns, though they are advocates of applying the unrestricted free-fall practice to other structural elements, including walls and columns.

The reader may wish to closely examine position paper #17 from American Society of Concrete Contractors, which does note that "Concrete placing operations are often planned to allow for the free fall of concrete. This planning must also consider any segregation that might occur when the concrete free falls into place." The paper can be viewed at www.ccagc.org/tech_info.php or purchased online at www.asconline.org.

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This is the author's opinion, not necessarily that of CCTIA