



THE TEST REPORT

A Newsletter of the California Council of Testing and Inspection Agencies

Summer 2008

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President's Message

By Rick Van Horn

Over half of the year has gone by and CCTIA members have been active on several initiatives: having our monthly meeting throughout the state, offering education classes, information exchange, and ASFE RO participation.

Monthly Meetings- We're Having Them, With A Little Attendance Issue

Before becoming President, I heard several members say that we had too many meetings in Pleasanton, making it difficult to attend. To respond to those concerns, for 2008 we scheduled meetings throughout the state to encourage participation for members that cannot make it to our usual Pleasant meeting. Half of our scheduled meetings are out side of Pleasanton: Sacramento (two meetings), Modesto, Riverside, Anaheim, and San Diego. Unfortunately we have not had the attendance that we had hoped for; however, with meetings scheduled for Sacramento and San Diego we are hopeful of more participation from our members.

Education- We Are Providing It

The first of several education classes for special inspectors and testing personnel was held in Sacramento recently. Reports from folks that attended

stated the class was very good and would attend another class. We anticipate another session in Southern California in September or October. Watch for our announcement.

These classes serve three purposes, provide education to our technical staff, provide valuable PDH or CEUs for certification renewals and raise money for CCTIA projects such as ASFE RO program. My personal thanks to Jeffery Cannon, John Byerly and Elizabeth Levi for making a successful program!

Speakers- We Got Them! Let Us Know Who Else You Want!

ASFE. We are looking for speakers for upcoming meetings. Your input for speakers and topics is essential. Please contact anyone on the Board and we will do our best!

Information dissemination- It's Out There And You're Getting It!

One of the things that CCTIA does well is disseminate information to other members. Can you imagine the cost to our members trying to attend all of the hearing and meetings that we report on each month? I am amazed at the information that is sent out and shared.

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Spellerberg Retires From CCRL, Lenker Becomes New Manager

Peter Spellerberg, general manager of CCRL, retired on April 25. CCRL is a research association program under the sponsorship of ASTM International, located at the National Institute of Standards and Technology in Gaithersburg, MD.

Spellerberg began his career as an ASTM Employee, where he spent more than six years inspecting laboratories for both ASSHTO and CCRL. He also managed AMRL proficiency sample programs. Following this, Spellerberg spent 29 years as an employee of ASSHTO. At his retirement, Spellerberg managed AMRL and CCRL for the final three years of his career.

Steven Lenker has become the new CCRL director. Lenker comes to NIST after serving as Vice President of engineering and operations at the National Stone, Sand and Gravel Assoc. where he was responsible for administration and technical activities. Lenker spent two years as the director of the Construction Materials Group of Fugro South. A registered professional engineer, Lenker received a bachelor of science degree in materials engineering from Virginia Polytechnic Institute and State University.



Spellerberg



Lenker

We're on the Web!
[http://
www.cctia.org](http://www.cctia.org)

Compliance with f'_m

Concrete Masonry Association of California and Nevada's (CMACN) recent educational efforts with owners, designers, specifiers and inspectors have been focused on optimizing the use of concrete masonry products. Green building initiatives and efforts require that we optimize the use of all construction materials used in our new buildings. One method of optimizing the use of materials in concrete masonry construction is in the selection of the method by which f'_m is determined.

The 2007 California Building Code (CBC), based on the 2006 International Building Code (IBC), provides two methods for determining the compressive strength of a masonry assemblage. Those methods are outlined in Section 2105 – Quality Assurance in both the CBC and the IBC.

Unit Strength Method for concrete masonry is detailed in Section 2105.2.2.1.2. The compressive strength of masonry is based on the strength of the concrete masonry unit and the type of mortar specified for the project. The concrete masonry units must conform to ASTM C55 or ASTM C90, and sampled and tested in accordance with ASTM C140; the thickness of bed joints cannot exceed 5/8 of an inch; and, for grouted masonry, the grout must conform to ASTM C476 Table 1; or the grout must have a minimum compressive strength of at least the specified f'_m , but not less than 2,000 psi when tested in accordance with ASTM C1019. To determine the required compressive strength of the concrete masonry unit, we refer to Table 2105.2.2.1.2. For example; for a project requiring an f'_m of 2,000 psi, using Type S mortar, the concrete masonry unit must have a compressive strength of at least 2,800 psi.

Prism Test Method is outlined in Section 2105.2.2.2. The compressive strength of concrete masonry is determined by the prism test method when: The prism test method is specified in the construction documents, or where the masonry does not meet the requirements for application of the unit strength method. It should be noted that the prism test method does not require a minimum compressive strength of concrete masonry units, or grout greater than those found in the ASTM Standards; nor is the prism test method dependant on type of mortar used.

The code requires that compliance with f'_m be determined by compressive strength. The compressive strength is determined by the unit strength method or prism test method, not both. It is common to see in project specifications both methods outlined and specified. This is not appropriate. One method should be selected for the project by the design professional.

In California and Nevada, the majority of structural concrete masonry walls are fully grouted. In an eight-inch thick wall, the CMU is approximately half of the gross area of the wall, and grout contributes the other half of the gross area. In ten, twelve, and sixteen-inch thick walls, grout contributes to well over half of the gross area of the wall. It is easy to see that in fully grouted walls, the compressive strength of the grout contributes at least half of the total compressive strength required to meet the specified f'_m . The code requires that the compressive strength of the grout equals or exceeds f'_m , but not be less than 2,000 psi. Field mixed grout generally conforms to ASTM C476 Table 1 (Table 1). Ready-mix grout constituents are of-

ten batched by weight (not by volume) and test records are maintained by the supplier offering a statistical record of the compressive strength of each mix design. The majority of all grout used in fully grouted walls is supplied by off-site ready-mix plants. Any mix design from a ready-mix supplier submitted to the design professional must equal or exceed the required f'_m . Experience has shown that grout mixes in most of California and Nevada can well exceed 3,000 psi.

Concrete masonry units that meet the requirements of ASTM C90 must have a minimum compressive strength of 1,900 psi. When a design professional uses an f'_m of 1,500 psi to design a wall, a CMU meeting the requirements of ASTM C90 used in conjunction with Type S mortar, and grout with a compressive strength of at least 2,000 psi fulfills the requirements of the unit strength method of determining f'_m . But, in an eight-inch wall, half the gross area is CMU, and half the area is grout. Using the minimum 1,900 psi CMU, and the minimum 2,000 psi grout, the compressive strength of the assemblage would be near 1,950 psi.

It is common that concrete masonry units produced in California and Nevada exceed the minimum strength required by ASTM C90, and that field and ready-mixed grout exceed the minimum requirement of 2,000 psi.

A producer that commonly provides a CMU with compressive strength of 2,500 psi can only provide those CMU's to a project with f'_m of 1,500 psi when compliance with f'_m is determined by unit strength method.

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(President's Message cont'd from page 1)

Economic Downturn- Let's Hope The Experts Are Right!

As I sit here in my office writing this article and I have been reading past Test Reports for inspiration. Does this sound familiar?

"....was a very tough year for many companies in the Testing and Inspection industry. Business was down and many state and federally funded projects fell victim to budget cuts. However will be a much better year for our industry. With the presidential elections now behind us I believe our economy will begin to stabilize. This will allow businesses in the private and public sector as well as consumers to feel comfortable spending some of their disposable income once again. I see an increase in school and hospital projects, private sector work on the rise and a new housing market that continues to grow despite all expert opinions to the contrary."

The above is an excerpt from David Chippero's *President's Message* in our **Test Report Newsletter, July 2005, Volume 6, Issue 2**. So ever the optimist, I believe we can take David's message as appropriate for 2008 and 2009. We are facing tough economic times, but, the experts are telling us late 2009 should be better. Here's hoping the experts are right.

New members- Welcome!

I want to welcome our two new members to our fold; Leighton Consulting and Inland Foundation Engineering

ABM- See You There!

I would like to close by reminding everyone to pencil in your calendar the dates for our Annual Business Meeting here in Las Vegas.



**SAVE THE DATE and WATCH
FOR FURTHER INFORMATION**

**JANUARY 23 & 24, 2009
CCTIA ANNUAL BUSINESS MEETING**

**TREASURE ISLAND
HOTEL & CASINO**

**GREAT SPEAKERS, INDUSTRY MEETING,
GOOD FOOD, FUN & MORE**

ASFE and The RO Program: Benefits to CCTIA

In 2003, ASFE started its "Regional Outreach" (RO) program to help address issues confronting regional organizations, such as CCTIA. The philosophy was issues that affect one region would probably affect other regions.

We believe an affiliation with ASFE expands the benefits and resources available to an RO's members, and facilitates better communication than otherwise would exist. Affiliation helps identify and become involved with emerging regional issues and trends (PEGG, Local 150, STD OF Care, State Boards – South Carolina), and regional groups can benefit from better awareness of national developments that could affect their members (ASTM E1527, Third Party Reliance).

Stay tuned for more valuable ASFE information to come!

UPCOMING MEETINGS

August 28, 2008 at 3pm
Hilton Pleasanton at the Club
7050 Johnson Drive
Pleasanton, CA

September 25, 2008 at 2pm
TBD
Sacramento, CA

October 2, 3, 4, 2008
ASFE Fall Meeting
Palace Hotel — San Francisco, CA



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Current Members

Applied Materials & Engineering, Inc.	ES Geotechnologies	Ninyo & Moore, Inc.
BSK Associates	Engeo, Inc.	Professional Service Industries, Inc.
BTC Laboratories	Fugro West, Inc.	Reliant Testing Engineers
Blackburn Consulting	GeoCon Consultants Inc.	RES Engineers, Inc.
Brown & Mills, Inc.	Geotek, Inc.	Raney Geotechnical
John R. Byerly, Inc.	HP Inspections	Signet Testing Laboratories
CHJ, Inc.	Heider Engineering	Smith Emery Company
Carlton Engineering, Inc.	Holdrege & Kull	Southern CA Soil & Testing, Inc.
Condor Earth Technologies	Inland Foundation Engineering, Inc.	Terracon Consulting Engineers & Scientists
Consolidated Engineering Laboratories	Inspection Consultants, Inc.	Terrasearch, Inc.
Construction Materials Testing, Inc.	Inspection Services, Inc.	Testing Engineers, Inc.
Construction Testing and Engineering, Inc.	KC Engineering Co.	Testing Engineers-San Diego, Inc.
Construction Testing Services	Kleinfelder, Inc.	Twining Laboratories of Southern CA

(Compliance with f'_m cont'd from
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But if the prism method were used to determine compliance with f'_m , that same 2,500 psi CMU could be combined with a grout specified with a minimum compressive strength of 2,500 psi and meet the f'_m design requirement of 2,500 psi. In this example, a premium CMU would not be required to meet the job required f'_m 2,500 psi. For a large job, this could be a considerable cost savings to the project with a very small increase in the cost of material testing.

Occasionally, due to a variety of reasons which may include anomalies in testing procedures, improper sampling, curing or handling of CMU's, grout, or prisms, the Unit Strength Method and Prism Test Method may not accurately represent the masonry assemblage conformance with the required f'_m . Section 2105.3 of the IBC and Section 2105A.3 of the CBC outline provisions for testing prisms from constructed masonry. This is a destructive test method requiring repair of the concrete masonry. This destructive test method should be employed before rejecting a completed masonry wall, which may in fact be structurally sound.

f'_m and Essential Services Buildings

Establishing f'_m for essential services buildings (schools, hospitals, etc.) in California differs from non-essential structures.

CBC section 2105A.2.1 adds additional language to CBC section 2105.2.1. Section 2105A.2.1 states that "*The specified compressive strength, f'_m assumed in design shall be 1,500 psi for all masonry construction using materials and details of construction required herein.*" We know that all essential services buildings are not designed with an f'_m compressive strength of 1,500 psi. How does the designer use an f'_m greater than 1,500 psi when designing an essential services building? Section 2105A.2.1 offers an exception that will allow use of concrete masonry with a designed f'_m greater than 1,500 psi. The exception states "*.... Higher values of f'_m may be used in the design of reinforced grouted masonry and reinforced hollow-unit masonry. The approval shall be based on prism test results submitted by the architect or engineer, which demonstrate the ability of the proposed construction to meet prescribed performance criteria for strength and stiffness...In no case*

shall the f'_m assumed in design exceed 2,500 psi."

When design values greater than f'_m 1,500 psi are used for an essential services building, compliance with f'_m cannot be by unit strength method. Prism method of compliance is required by the CBC for essential services buildings. Compliance with f'_m based on prism method may allow use of concrete masonry units that do not meet the higher strength requirements of the unit strength method. This may allow the use of standard strength units in essential services buildings with a design f'_m strength in excess of 1,500 psi.

CMACN is working with owners, designers, specifiers and inspectors to better optimize the use of concrete masonry products. Concrete masonry is economical, beautiful, earth quake resistant, fire resistant, and safe and sound.

This article is reprinted from the CMACN Spring 2008 edition of Masonry Chronicles, and was written by Kurtis K. Siggard, Executive Director, Concrete Masonry Association of California and Nevada