



VERMONT CHAPTER
PO Box 302
Williston, Vt. 05495



Green Mountain Specifier

December 2001

NEXT EVENT:

THURSDAY, DECEMBER 6, 2001
11:15 AM – 1:45 PM

**LUNCHEON SEMINAR WITH
TABLETOPS, ON**

DIVISION 17: COMMUNICATIONS
IMPACT ON VT CONSTRUCTION

SPEAKERS

Michael Kirick, CSI, PE, *Kirick Engineering Associates*
Jim O'Reilly, *Archi-Technology*
Andy Montroll, *Riser Management*
Jerry Johnson, *VT Telecom Advancement*

TIME

Thursday, December 6, 2001
11:15 AM – 1:45 PM

LOCATION

The Burlington Sheraton
Williston Road, I-89 Exit 14

CONTINUING EDUCATION CREDITS

2 direct HSW hours of Learning Units
for AIA or VT Architect members.

AGENDA

11:00 Registration & Tabletops
11:30 Introductions & Speakers
12:30 Lunch & Tabletops
12:45 Speakers resume
1:45 Seminar Ends, Tabletops resume

RSVP

By **NOON**, Monday, December 3rd to:
Jonathan Miller, Program Chairman
e-mail: campsi@earthlink.net
phone: (802) 865-4579

COSTS

CSI VT Members	\$20
Students	\$10
Non-CSI Members	\$30

Many thanks to Michael Kirick, CSI, PE and all of our speakers for getting together and coordinating their presentations. Please contact Jonathan Miller via phone or e-mail with questions.

December 6th Program

Division 17: Communications
Impact on VT Construction

Michael Kirick will give a brief discussion on various aspects of the infrastructures relating to telecom and IS/data systems and how they affect the building design process. Also, two additional speakers have confirmed for the line-up: Jim O'Reilly from Archi-Technology will present the latest update in the pending adoption of Div 17 to CSI and give an overview of its organization; and Andy Montroll, senior legal counsel of Riser Management Systems, will present a discussion on the regulatory aspects of the new de-regulated telecom market as it relates to VT, NY, and NH.

There will also be a presentation by Jerry Johnson of Vermont Telecom Advancement Center giving an overview of the evolving wireless market.

There will be tabletops to browse through as well: before, in-between, and after our speakers. Our tabletops are now Anexter, Browning Associates, Data Communication /Graybar, Dufrense Henry Engineers, HCI Craftsman, and Hubbell Premise Wiring / Integrity Communications. For reservations, e-mail Jonathan Miller at campsi@earthlink.net.

New Chapter Address

Please note our new official address:
Vermont Chapter CSI
P.O. Box 64902
Burlington VT 05046

Jonathan Moves

Please note the change in contact information on page four with the announcement of a new architectural firm, Jonathan M. Miller, Architect.

WE WANT YOU ...

...to make a contribution to the Green Mountain Specifier – ideas, articles, letters, advertising or other relevant material (if you're nice, maybe we'll even take irrelevant material). Contact:

Chris Eling, CSI, Editor
chris@pmarch.com
Peter Morris Architect, Inc.
8 Roundtree Way
Vergennes VT 05491
phone: (802) 877-3830
fax: (802) 877-3972

Making the Grade !

Congratulations to the following Vermont Chapter CSI members who participated in our excellent CDT Study Group, signed up & passed their exam at the Northeast Region Conference in October and are now Certified Document Technologists !

Leo Carl Berliner, CSI, CDT

Stephanie J. Conrad, CSI, CDT, AIA

Kevin Grenier, CSI, CDT

Further congratulations are deserved by VT (NH home) chapter member

Robert D. McEachern, CSI, CDT

Editor on Vacation

Editor's note: There will be no January issue of the **Green Mountain Specifier** – my difficult artistic temperament has taken hold, and I'm taking a month off in accordance with the 10-issues-per-year publishing schedule. The newsletter will return in February – program notices will continue to be sent out over e-mail in the meantime. You can also look at our updated Events Schedule on the last page for info on the VT Chapter's programs in January and February. Have a good holiday and see you in the new year...

NEXT MONTH:

JANUARY PROGRAM

Afternoon Seminar/Luncheon on:
“Construction Management”
Benefits and Pitfalls

SPEAKER

William Alexander “Sandy” Feed, Esq.
Paul, Frank & Collins Attorneys at Law

TIME/LOCATION

Thursday, January 10, 2002
11:00 AM – 1:45 PM
At the Burlington Sheraton

CREDITS

2 direct hours of AIA/CES HSW
Learning Units for Architect attendees.

Sandy Feed is a well known Burlington lawyer specializing in construction law. He successfully presented for us on the AIA General Conditions of the Contract, A-201 a few years ago. Our January program with Sandy will focus on the Construction Management process, the benefits and the pitfalls while reviewing the Standard Form of Agreement AIA A-121CMc / AGC Document 565.

FEBRUARY PROGRAM

The Vermont Chapter CSI is a co-sponsor of the **Building Solutions 2002 Conference** being held at the Burlington Sheraton on **February 13th & 14th**. Energy Efficiency Vermont along with support from the VT Dept. of Public services and the US Dept of Energy have put together a series of seminars and a product fair focused around energy efficiency and new changes to the Act 250 energy requirements....a must see. Look for us there and then at the CSI booth !

AIA/CEU Continuing Education SPECIAL ANNOUNCEMENT

Those AIA members who stayed and participated in the November 12th Program discussion on “Concrete & Construction Methods” will receive 1 ½ hrs. of HSW credits filed by the Vermont Chapter. The previous announcement asking to self-report is not necessary....Jonathan

The President’s Corner

by Peter D. Morris CSI, RA

Peace on Earth

Yuletide is in the air and, as I am a little depressed by the early darkness, I find some cheer in my knowledge that soon the days will start to get longer again. In that, and a greater appreciation of fellowship and camaraderie that carry the best wishes of the season.

Mark 6 December on your Calendar

The Vermont CSI Chapter is presenting a seminar on "DIVISION 17", Communications Impact on Construction in Vermont, on Thursday, December 6, 2001 from 11:00am - 1:45pm at the Sheraton in Burlington.

The idea that an additional specification division is needed has generated a lot of discussion, and some really heated reactions. Come judge for your self. This promises to be a very informative program. Archi-Technology is a strategic partner of the Northeast Region of CSI and this program is one of the ways the Vermont Chapter is supporting that partnership.

See more detailed information elsewhere in the newsletter.

A History of CSI

Part Two of the history of CSI as related by Walter E. Damuck, AIA, CSI, Member Emeritus and Charter Member of the Hartford Chapter (057) and the Housatonic Chapter (110) and edited by yours truly appears in this issue.

A Call for Volunteers

The Board meets for lunch once a month in the Burlington area. We discuss our outreach and future programs. If you can spare the time for lunch once a month you can help. Contact me at pm@pmarch.com, and we will include you at our next meeting.

New Memberships

The Vermont Chapter is always seeking new members. If you know someone in the industry who should be on our e-mailing list and invited to our programs, please let Jonathan Miller know at campesi@earthlink.net.

ESSEX Industries

William Lawliss, CSI, CDT - Architectural Representative

Phone: 978-388-8593 Fax: 978-388-4689

E-mail: wlawliss@essexopenings.com

HM and Wood Door Specifications Hardware Specifications

AIA/CES Classes Assistance and Support

"your total opening consultant"

THIS SPACE FOR RENT

Our VT chapter Newsletter is published monthly and distributed to over 150 local contractors, architects, product reps, engineers, and other CSI members.

Rates: for 10 issues, full-size ad (1.5"x3.8") \$80; half-size ad \$50

For more information contact The Editor.

LAST MONTH:

NOVEMBER PROGRAM:
SEMINAR AND MINI-TRADE-SHOW

CONCRETE & CONSTRUCTION METHODS

PANELISTS

Bruce Jacobs, CSI, Don-Vac, Inc.
John Kamencik, Don-Vac, Inc.
Nigel Mucklow, New England Floor
Covering
Jonathan Miller, CSI, AIA

TIME & LOCATION

Monday, November 12, 2001
1:00 PM – 3:00 PM
The Burlington Sheraton

CONTINUING EDUCATION CREDITS

1½ direct HSW hours of Learning Units
for AIA or VT Architect members.

SUMMARY

Last month's program was scheduled as a seminar, given by Herman G. Protze III, ACI, ASTM, AAA, ASCE, ICRI; and Peter Craig. Unfortunately, Mr. Protze suffered complications resulting from a surgical procedure, and was not able to attend.

But the show must go on, and we made do. The tabletops were set up and browsed through, and instead of a seminar a question-answer session was held. Attendees brought up specific questions and issues, and a panel made up of various people in the industry teamed up to offer their answers and experiences. It was decided that questions better answered by our scheduled speaker would be transcribed and delivered to Mr. Protze in his hospital bed. He did give permission for us to do this – although he may have been under the influence of some powerful “anesthetics” at the time...

Herman has now recovered sufficiently to respond to the questions we had for him. A list of these questions and answers is included in this newsletter on page 7.

Thank you to our tabletop presenters, to Herman Protze, and to our distinguished guest panelists who were gracious enough to fill in on a moment's notice. Please note that the program was still worth 1½ Learning Units for AIA or VT Architect attendees.

The “Pencil And Paper” Mentality

Part 4 –Using Drawing Blocks

By Thomas E. Irvin, CCS, CSI, Architect In Private Practice

In a previous article on shedding the “Pencil And Paper” (P & P) mentality *Try A New Approach*, drawing blocks were briefly mentioned as one of the more powerful features CADD software offers to the user. CADD drawing blocks were compared with stick-on standard details that were sometimes used in the P & P (pencil and paper) era. This really isn't a good analogy because CADD drawing blocks are much more powerful and useful than their pencil and paper predecessors, but I couldn't think of any other good comparison.

Stick-on details (sticky-backs) were used to avoid having to draw the same image over and over again. Sometimes they were also used as a quality control measure or to save time drawing complex objects. CADD drawing blocks are used for the same reasons but there are more compelling reasons for using them beyond those mentioned above. The previous article urged using drawing blocks because it keeps file sizes smaller, along with mentioning some of the advantages of smaller file sizes. Other CADD programs might treat drawing blocks differently but in AutoCad®, blocks are counted as a single entity – the same as any drawn entity such as a line. Even if the block is composed of multiple lines, its “value” size-wise is still one entity. This is why a drawing file which is composed mostly of blocks is significantly (up to 50 or 60 percent) smaller than an identical drawing composed entirely of individually drawn lines, or “entities”.

Unlike sticky-backs, CADD drawing blocks can be electronically updated. Suppose you've risen above the P & P mentality at the beginning of design development on a project and created blocks for repetitive elements on plans, elevations or wall sections instead of drawing them the traditional way – line by line. As these elements are refined, redefined or changed, you simply change the *original* drawing block and reinsert it in the drawing. The software will update every occurrence of the drawing block in the drawing with the changes made to the original; the entire process might take up to a minute if there are a lot of blocks and you're using a slow computer. Laboring under the P & P mentality, you could spend hours making changes to individual lines and still miss one or two. Aren't there are better ways to spend your CADD time?

A previous article quoted a rule to follow: “*If you find yourself drawing the same image more than once, make it into a drawing block.*” We need to amend that rule to say: “...make it into a *full size* drawing block” as was mentioned in the article: *Drawing Full Size*. Think about all elements used in a drawing that qualify under this rule: Dimension lumber, concrete masonry units (CMU), modular and utility brick, all rolled structural steel shapes, metal studs and tracks, and metal decking profiles just to mention a few. In addition, many building product manufacturers have their products and details available as CADD drawings which, after some electronic massaging, can be inserted in your drawings to more accurately depict the true conditions in a detail or wall section.

There are more opportunities to use drawing blocks in sections and details than on plans and elevations but there are reasons to use them in plans and elevations as well. Following the “rule,” you can use drawing blocks for windows, doors and frames or other repetitive elements on building elevations. The *same* drawing blocks used on building elevations can be

continued on next page

**CSI Vermont Chapter:
FY2002 Officers**

**Mr. Peter D. Morris, CSI, RA
Chapter President**

Peter Morris Architect
8 Roundtree Way
Vergennes, VT 05491
802-877-3830; 802-877-3972 Fax
pm@pmarch.com

**Mr. Jonathan M. Miller, CSI, CCS, CCCA, AIA
Chapter Secretary / VT Region Director
Region Technical Chairman / Chapter
Technical, Program & Membership Chairs**

Jonathan M. Miller, Architect
510 St. Paul Street
Burlington, VT 05401
802-865-4579
jmilleriaia@earthlink.net

**Mr. Robert H. Rand, CSI
Chapter Treasurer**

87 Cedar Street
Brandon, VT 05733
802-247-3729
bobhrand@aol.com

**Mr. John Gant, CSI
Chapter Vice President**

HCI Craftsman
30 Tigan Street, P.O. Box 37
Winooski, VT 05404
802-655-2621; 802-655-4267 Fax
jgant@pleasants.com

**Mr. Gene Pawlikowski, CSI
Chapter Vice President
Awards Chairman, Assistant Program Chairman**

Trowel Trades Supply Inc.
71 Troy Avenue
Colchester, VT 05446
802-264-1073; 802-655-5841 Fax
gpawlikowski@troweltradesupply.com

**Mr. Adam F. Bortz, CSI, CCS, SCIP
Certification & Education Chairs, Academic Liaison**

P.O. Box 65117
Burlington, VT 05406
802-864-5953
adambortz@aol.com

**Mr. Christopher M. Eling, CSI
Newsletter Editor / Electronic Comm.**

Peter Morris Architect, Inc.
8 Roundtree Way
Vergennes, VT 05491
802-877-3830; 802-877-3972 Fax
chris@pmarch.com

Drawing Blocks

continued from page 3

used as drawings for detailing those items as well. Following this procedure, elements appearing on building elevations and will always agree with details in content and appearance – no need to mention that it doesn't have to be drawn twice!

Many offices use blocks for toilet fixtures on floor plans, but for unknown reasons, don't use blocks for doors. Maybe they think doors are easier to draw than water closets and that's true – until you're faced with drawing a hundred of them then it gets tedious. Keep in mind that all those doors, drawn one at a time or drawn once and copied 99 times will increase the drawing file size 5 and 6 times more than if they are inserted as blocks.

Using drawing blocks for repetitive elements in a drawing ensures better quality control. Most offices strive for an overall level of consistency and uniform appearance in their drawings. Along with consistent appearance, it's also important that drawings are accurate. If everyone uses the same drawing blocks, it's easier to realize both goals. If "original" pre-drawn blocks are accurate, then drawings created with these blocks will be more accurate – much more so than leaving the creation of these elements to uncertainty that results from varying levels of experience and skill of the individual CADD drafter. The accuracy and appearance that can be "built in" to drawing blocks ensures a higher level of quality control and consistency in the drawings.

Some P & P types resist using drawing blocks, fearing that using them limits creativity and freedom to design as they wish. More likely, the real reason is that they don't understand – or are unwilling to explore how using blocks can make their CADD tasks easier. If they stopped to think about it, drawing blocks represent materials *actually* used in a building project. Isn't it logical to use them to "build" their drawings the same way contractors use the real components to "build" the project? Designers should welcome the idea that less time spent drawing ordinary materials makes more time available to actually *design* the project. Don't make using CADD more difficult or tedious than it has to be; use drawing blocks.

tei

*©2001, tei Architect, Specifications Consultant,
teiarich@chorus.net*



The Undisputed World Leader of tile and stone installation systems, floor covering adhesives, and surface preparation systems for over 60 years.

Your local representative for over 10 years
Rich Citro, CSI 888-300-4422 x2003

CSI History

By Walter E. Damuck, AIA, CSI
Edited by Peter Morris, RA, CSI

The Story So Far:

At the suggestion of the U.S. government, the Construction Specifications Institute was formed in September of 1947 to bring order out of the post World War II chaos in construction communication.

Part Two: CSI grows:

The first President of CSI wanted CSI to be a clearing house where members could send Specification ideas they were willing to share with other members.

The goals were:

1. Better Specification writing;
2. Simpler Specifications;
3. Standardization of building codes and specifications for public works by all levels of government; and
4. Study of new materials and processes developed during WW II to fit them into the construction picture, at that time, as substitutes or improvements on costlier and scarce materials. ["Or Equals" were noble then but anathema today.]

A \$ 5.00 fee was all that was needed to establish membership in CSI.

That was the only income CSI had which didn't begin to cover the expenses for what they wanted to do. So in May of 1953 dues were raised to \$ 10.00 for Active Members. Most of this money went to publishing and distributing the magazine. The new infant CSI needed a lot of volunteerism.

No single person did more for this Organization than HARRY C. PLUMMER. From Board Member in July of 1950 to Secretary/Treasurer and Executive Director, without pay until June 1962. His interest and enthusiasm for CSI spurred its development to 45 Chapters. The May 1950 CONSTRUCTION SPECIFIER carried an article stating: "If the intent of the founders is to be realized and each member is to benefit accordingly, the formation of chapters should begin now!" New York City [Chapter 001] was chartered on 22 May 1951; 3-1/2 years after the Institute's first meeting. Because Washington, D.C. was CSI's Headquarters the need of a local chapter was not evident. Then the difference between running a clearinghouse, publishing and planning growth plus the nitty-gritty work of what was planned for chapters was realized. In November 1952, 23 members met submitting a formal application for a Chapter charter, it was granted in April 1953 to DC Metro [Chapter 002]. The same day a charter for Chicago [003] was also

continued on page 6

Mark Your Calendars !

Northeast Region CSI FY 2003 Conference

Next Year's Conference is being Hosted by the Rhode Island Chapter CSI, September 19-22, 2002 at The Westin Providence. Industry members may want to check out booth opportunities at the Renaissance Faire Exhibition. Now is the time for 2002 budget planning! Get a Sponsorship Brochure from Jonathan Miller and/or give Co-Chairman Mark Weiner, CSI a call at (781) 933-0027 ext 104 or e-mail mark.t.weiner@sherwin.com.

Special Request Announcement

We are looking for a few good people to take some of the burden from overextended members like Jonathan, who is doing too much and needs your help....give him a call !



Lori A. Greene
AHC/CDC, CCPR
lori_greene@irco.com

Shelley Hudson, CCPR
shelley_hudson@irco.com

Ingersoll-Rand Security & Safety
Consultants of New England
77 Wexford Street, PO Box 801
Needham Heights, MA 02494
Phone: 781-449-2860 ~ Fax: 781-449-5734

Schlage Von Duprin LCN Steelcraft
Glynn-Johnson Recognition Systems Locknetics
Falcon Monarch Dor-O-Matic Ives

**Division 8
Specifications
& Consulting**

**"We take the
hard
out of
hardware!"**

WHY ARE WE HERE?

The Construction Specifications Institute's core purpose is:
To improve the process of creating and sustaining the built environment.

Though we are just a ragtag bunch of amateurs, we have an

EDITORIAL POLICY:

The Green Mountain Specifier is published as the official newsletter of the Vermont Chapter of the Construction Specifications Institute. Neither the Editor nor the Chapter assumes responsibility for any alleged errors, and opinions stated are not necessarily those of the Editor, the Chapter's members or leadership, or the Institute.

Contributions to the newsletter are welcome, and should be submitted to the editor by the 24th of the month in order to be included in the next issue. Contributions may need to be edited for, among other things, clarity, filesize, and length.

issued. Four months later Los Angeles joined the group [004], they are credited with producing CSI's first technical program on "Lathing and Plastering", a major contributor to finalizing the CSI Format. The chapter was also responsible for the first CSI Academic Program as a regular credit course in specification writing at Pasadena City College. Now CSI was growing from coast to coast!

Thirteen months later San Diego [005] and Sacramento [006] joined. Exactly a year later San Francisco became [007], followed in 2 months by Metro Detroit [008]. Boston [009] came in February 1956 with 126 Charter Members making it the largest in the country for some time; being followed 4 months later by Cleveland [010]. Today the Institute has 142 chapters and over 18,000 members across the 50 states, Puerto Rico and Mexico. Vermont is Chapter #103.

The first issue of the CONSTRUCTION SPECIFIER became the catalyst for CSI's Technical Programs. The First issue of CONSTRUCTION SPECIFIER [10/50] started a series of articles entitled "Specifications Clinic". In the "Clinic" articles a specification by an anonymous writer was presented. A committee reviewed the document, commenting on its merits, offering criticism on areas needing improvement. The first attempt at information exchange became the embryo for CSI's Technical Program. On a very small scale (due to lack of funds) they were sent out to architects, engineers and other professionals in related fields.

Despite the initial thrust to function as a national body, the first technical programs were for local use. Chapters developed specifications based on materials, processes, trade practices and codes reflecting their own geographical surroundings and subordinated to local codes and practices.

Technical activity at the national level began for CSI when a National Technical Documents Committee was created. This grew out of a Technical Research Committee of the San Francisco chapter whose work symbolized what CSI was looking for from its members: initiative, involvement and dedication.

In October 1956 a report listed five objectives for the National Committee. The objectives were:

1. To promote leadership by the CSI in all matters pertaining to specifications and improve specification practices in construction and allied industries;
2. To provide samples to organizations for the evaluation and editing of Chapter Committee technical work;

3. To provide liaison with national professional societies, trade and manufacturing groups, and others interested in the development of specification writing, new techniques, methods and standards;
4. To collect and disseminate chapter information of laws pertaining to bidding procedures, on decisions of labor groups relative to jurisdictional matters and on court decisions affecting the construction and allied work.

The report noted. "To properly carry out the work of the Technical Committee a small permanent, paid staff, of competent persons located in the National Headquarters will be required. It is recognized, however, that presently this is not possible. In the meantime, the work must be carried on by a volunteer group working through the medium of correspondence." This committee was in the process of writing today's Narrow and Broad scope of Guide Specifications.

The primary objective of CSI was, and is, to advance construction technology [application of knowledge to achieve practical results in the assembly of components] **through communication** [exchange of information], **education** [imparting knowledge and skill], **research** [fact finding inquiry and investigation] **and service** [providing benefit to others]. *(In fact somewhere around 1970 there was consideration of renaming CSI to THE CONSTRUCTION COMMUNICATION INSTITUTE – obviously it didn't fly.)*

Unlike other trade oriented organizations the CONSTRUCTION SPECIFICATIONS INSTITUTE is horizontally, not vertically structured. It draws its memberships from anyone who prepares, uses, interprets, or is interested in specifications for work including Owners, Developers, Property managers, Plant Engineers, Attorneys, Architects, Engineers, Specialized Consultants, Specifiers, Testing Lab employees, Contractors, Construction Managers, Sub and Specialty Contractors, Estimators, Product Manufacturers, Manufacturer' Reps – and oh yes! Governmental Agencies; isn't this where it all started?

Coming next Month: **Part 3 – The Regions**



ARCHI-TECHNOLOGY, LLC

Building plans for the future

James J. O'Reilly
Marketing

3445 Winton Place, Suite 222A • Rochester, NY 14623
(716)424-1952, x32 • Fax (716)424-4239 • Cell (716)314-2567
jimo@archi-technology.com • www.archi-technology.com

Herman Protze Speaks

Questions & Answers from November's Program

Though he was not able to attend the November program due to an emergency room visit, Mr. Protze did volunteer to answer whatever questions arose out of the round-table discussion. Here are the questions that we supplied, and the answers that he and his colleague Peter Craig supplied.

1. Do you recommend pouring concrete slabs on a sand layer over a vapor barrier, or directly onto the vapor barrier?

I always recommend placing concrete directly on a qualified vapor retarder ("barrier") ONLY IF the slab is going to receive flooring materials (e.g. wood, VCT, carpet, epoxy, urethane, etc.). Although placing and finishing the concrete may be a bit more tedious using a vapor retarder (primarily due the increase in bleeding caused by the vapor retarder), it's one of the important factors in achieving a zero-problem floor covering system.

Placing the concrete on a sand layer over the vapor retarder is NOT RECOMMENDED by me, and is no longer recommended by ACI (American Concrete Institute). The sand layer (better to think compacted granular fill layer), of necessity, contains moisture (generally 6%, sometimes up to 12%). This moisture needs to dry out just like the overlaying concrete needs to dry before installing a floor covering. The compacted fill layer usually contains as much, or greater, free water than the concrete. Because the fill layer is deeper, the total dry time will be up to 3 times as long as the concrete alone. With the concrete on the vapor retarder, there is no additional depth of water needed to evaporate out of the system.

In addition, if the fill layer is above the vapor retarder, and then becomes inundated with water (such as rain, joint cutting water, curing water), the drying will be inordinately long.

The use of vapor retarders will increase the total shrinkage of the concrete and thereby exacerbate curling of the slab. Shrinkage cracks in conventional concrete slab construction is best avoided by installing enough control, or contraction, joints.

2. Is there a way to know if a calcium-carbonate test is valid?

I believe you are referring to the calcium chloride test to evaluate moisture vapor emission rate (MVER). (Ironically, calcium carbonate is used to evaluate moisture contents of aggregates for concrete, but is not germane to measuring MVER).

continued next page



Above, below: Sixty-nine attendees browse through the 11 tabletops at last month's Concrete program.



The four panelists who led the question-and-answer discussion on concrete and moisture problems for the fifty-four attendees who stayed. Again, thanks to John Kamencik, of Don-Vac; Jonathan Miller, CSI, AIA; Bruce Jacobs, CSI of Don-Vac; and Nigel Mucklow of New England Floor Covering.

Questions & Answers *continued from page 7*

I believe a calcium chloride test would be considered valid if it meets the criteria established in ASTM Test Method F 1869. These include venting the surface of the concrete for 24 hours before initiating the test, and, most importantly, performing the test in the same ambient conditions (temperature and relative humidity) as the floor will function during use. I believe the temperature and the relative humidity should be constantly recorded during the test 'incubation' period to help lead to a meaningful interpretation of the results.

However, I have heard "horror stories" of technicians carry the dishes of calcium chloride in rain storms to a local drug store for weighing, of moisture domes not hermetically sealed to the concrete slab, of sloppy weighing techniques, etc. which certainly invalidates a MVER test. The real difficulty is measuring or validating the competency and integrity of the individual performing the test.

All that said, I'm concerned with what the test is actually measuring. Some learned folks believe the calcium chloride test is only measuring the MVER in the top 1" or so of the concrete. Thus, it's instructive to measure not only the MVER, but as well, the internal relative humidity of the concrete at three or four depths. Some other learned folks are concerned that an open concrete floor that shows low MVER's may act differently to moisture movements once the entire slab receives a floor covering. In this case, it may be meaningful to tape a 5 ft. by 5 ft. sheet of polyethylene film to the concrete slab in several locations, and performing the MVER test in a cut out area in the center of the polyethylene sheeting.

One final note, I do not agree with the ASTM 1869 requirement of subtracting the area of the petri dish, which mathematically increases the MVER by a significant amount. My reasoning is since the 1950's the industry has not been subtracting the dish area, and the flooring manufacturers have rated their products accordingly. We need to continue measuring apples vs. apples, not apples vs. pomegranates.

3. How long of a curing / acclimation period is needed before the calcium-carbonate test? Are there ASTM rules on this?

The calcium chloride test may be performed any time after the concrete has been cured (which for water curing, normally is a period of up to 7 days). There are no ASTM requirements for the timing. Early in it's drying life, the concrete will show a very high MVER (I have measured as high as 20 lbs./1,000 sq.ft./24 hours within 7 days after removing water curing). As the concrete dries, the MVER decreases. I have found it helpful and more economical to monitor the internal relative humidity of the concrete during the drying period to better adjudge the point in time when to perform the calcium chloride tests. There is not a

definitive time period, inasmuch as drying time is a function of slab thickness, ambient temperature and relative humidity, air movement, strength classification of the concrete (actually water-to-cementitious ratio), the rating of the floor covering (and, at times I think drying time is function of the phase of the moon). It's not unusual for a 4000 psi strength classification concrete in an active construction environment to take over 5 months to dry to a MVER of 3 lbs./1,000 sq.ft./24 hours. The quick answer is there are many variables that influence drying time of concrete.

4. Is there any movement towards using more invasive tests than the calcium-carbonate test? What about a movement towards required testing by an independent agency, rather than by the GC or others?

There is consensus amongst some knowledgeable flooring consultants that the internal relative humidity tests are an important adjunct to the calcium chloride MVER tests (see #3 above). The invasive portion of the test involves drilling several 5/8" diameter holes into the concrete. At the conclusion of the invasive internal relative humidity test, the holes should be filled with a dry pack non-shrink cementitious grout (which will have permeability characteristics far less than the parent concrete).

Another important test that may be considered slightly invasive is performing a meaningful pH test for alkalinity of the concrete surface. The pH test should be performed by lightly abrading the surface of the concrete with #100 grit emery cloth, then soaking the resulting powder with distilled water for a period of 60 seconds before measuring the pH. It's best to use an electronic pH meter, primarily due to the difficulty in adjudging the actual green to deep purple color of standard pH indicating paper. I am being somewhat sarcastic when I call this an invasive test, inasmuch as we're removing less than 0.01" of a 3" long scar on the concrete.

For the second part of the question, the flooring industry recently released a 'white paper' recommending the moisture tests only be performed by an independent agency (testing firm). No matter who performs the test, it is critical that the person performing the test has a high degree of competency and integrity to properly perform the test. In addition, it is of paramount importance that the individual interpreting the test has a high level of knowledge regarding moisture conditions of concrete and flooring requirements.

5. Is there a recommended moisture content for the sand layer? Minimum / maximum allowed moisture? What is the compaction standard for the sand / cushion layer? Silt content standard?

The recommended amount of moisture in the sand layer is the optimum moisture content to provide 95% compaction. For sand, that may approach 10% by mass (weight); it

continued next page

Questions & Answers *continued from page 8*

actually would be better to use granular fill whose optimum moisture content may be around 6%. Even at 5% moisture, there is more water in the cushion layer than the concrete itself. Again, as in the first question, my counsel is **DO NOT USE A CUSHION LAYER; CAST THE CONCRETE DIRECTLY ONTO THE VAPOR RETARDER.**

6. Are there more reliable non-destructive tests than the calcium carbonate test?

I've not heard of any. The "mat test" is not fail safe and is only a qualitative test, compared to the calcium chloride test which is quantitative. I continue to believe an important adjunct to the calcium chloride tests are the invasive relative humidity tests taken at various levels within the cross section of the slab.

7. What are the best ways to avoid potential problems, i.e. what risky methods or procedures should be avoided if it's practical? (for example, winter pours w/forced drying).

Casting of concrete during cold weather may be successfully performed if the cold weather recommendations of ACI are followed. You are correct that caution must be exercised in the use of forced hot air heaters as to generation of excess carbon dioxide (as well as carbon monoxide). Other propane or gasoline burning engines may also produce excess carbon dioxide. The actual level of carbon dioxide (as well as carbon dioxide) needs to be monitored (measured) during the course of concrete construction. The problem with excess carbon dioxide is its influence in causing carbonation of the surface of the concrete, which will result in dusting. Of course, carbon monoxide will cause death.

Other factors during casting of concrete during cold weather include items such as concrete temperature, the difference in the concrete temperature compared to the substrate, and the difference in concrete temperature and the ambient air temperature. Although curing of concrete is always considered a critical step by me, extra attention often needs to be paid to details of curing during cold weather conditions.

Some of the same concerns, except for carbonation, apply to casting concrete in hot weather. Again, ACI has excellent guidelines to properly accomplish concrete casting during hot weather.

8. Is it true as a general rule of thumb that higher-strength concrete mixes will dry faster?

Yes. That's because more of the water added to the concrete is consumed by higher cementitious contents for hydration of the cement and thus the water is not available for evaporation (or drying). However, higher strength concretes are more prone to early stiffening, hardening, shrinkage, cracking, difficulty in finishing, etc. Judicious

choice of materials and proportions are critical for producing 'quick dry' concrete.

9. What are some recommended vapor barriers?

Peter Craig helps with this one:

There are presently three materials we recommend for critically sensitive flooring applications. They are:

1. Premoulded Membrane with Plasmatic Core, by W.R. Meadows
2. Stego Wrap (15 mil), by Stego Industries
3. Vaporguard, by Reef Industries

All of these materials are of low enough permeance to be considered as a vapor barrier, not just a retarder.

One has a bit more tolerance with VCT installations. However because of the problems we see, we are hesitant to compromise on the level of protection. There is but one opportunity to select the level of protection below a concrete slab and that is before it is built. That said, in addition to those materials listed above there are several other vapor-proofing materials that can be considered for VCT installations.

Materials that we recommend for use beneath with VCT installations today are:

1. Rufco 3000B, by Raven Industries
2. Stego Wrap (10mil), by Stego Industries

To comply with present and future ACI Committee 302 recommendations the vapor retarder material itself must be at least 10 mils thick. A puncture resistance study supporting the ACI recommendation has recently been published in the July issue of Concrete Construction Magazine.

I personally prefer vaporproofing materials where the physical properties are consistent across the entire body of material. I prefer a homogeneous sheeting that does not use string, fiber or fabric as reinforcement. Current ASTM standards do not test for puncture resistance between the reinforcing strands. When one does, the values drop dramatically. I also prefer virgin quality materials. The long-term resistance to decay of reprocessed material is quite suspect.

Based on manufacturer's published data, here is a comparison of the permeance properties for many of the popular vapor barrier and retarder materials available today:

Barrier Materials	Manufacturer	Water Vapor Transmission Rate (WVTR)
Premolded Membrane	W.R. Meadows	0.00 grains/sf/hr
VaporGuard	Griffolyn(Reef Ind.)	0.00 grains/sf/hr
15 mil Stego Wrap	Stego Industries	0.006 gr/sf/hr

continued next page

VCT suitable vapor retarders that also comply with ACI 302 thickness recommendations:

10mil Stego Wrap	Stego Industries	0.016 perms
Rufco 3000B	Raven Industries	0.020 perms
Griffolyn T-105	Reef Industries	0.021 perms
Griffolyn T-85	Reef Industries	0.027 perms
Rufco D16WB	Raven Industries	0.040 perms

Retarder materials where the vapor retarder thickness itself is less than 10 mils:

Griffolyn T- 65 (c: 8mil)	Reef Ind.	0.037 perms
Griffolyn T-65G *	Reef Industries	0.037 perms
Rufco 400 (4 mil)	Raven Industries	0.045 perms
Moistop Plus *	Fortifiber	0.100 perms

10. What causes high alkalinity in test results, and how can it be remedied / avoided?

Portland cement concrete, by its very nature, is of high pH (high alkalinity); else it wouldn't do its thing. A method of reducing long term high alkalinity is by judicious choice of low alkali cements, as well as the use of cement enhancers, such as fly ash or granulated ground blast furnace slag (and maybe silica fume) which are used to replace some of the Portland cement while maintaining the other desired properties (strength, permeability, etc.). A vinegar wash is a method of reducing the pH (acid-base neutralization). It's too bad someone can't 'build a molecule' and provide floor-covering adhesives that are high pH tolerant.

11. If it's necessary to force-dry the slab, are there ways to keep that from causing a problem?

Problems may include drying of installed wooden casework to the point of cracking the wood. If forced drying is necessary, it's best to build a tent close to the floor and blow arid air across the slab (which avoids the casework problem, and is more economical from a total drying time point of view.

12. How does sealing the slab (for purposes of laying down the floor sooner) affect the vapor pressure for the slab as it continues to cure?

Sealing of the slab with known/approved methods of mitigating water vapor emissions provide a lowering of water vapor emissions. As the concrete continues to cure under the sealing system, the hydration process continues to consume more and more of the evaporable water.

There you have it: a huge thanks to Herman Protze and Peter Craig for providing all this information, and we hope Herman is feeling better.

From the Editor:

First of all, I realize that this issue is 11 pages, and may be a little much to digest. I didn't anticipate how much Herman Protze would have to say in response to our questions...I'll be trying to limit the length in the future, starting in January when the length will be zero pages.

At any rate, with a little space left to fill, I thought I'd briefly remark on my daytrip to New York this weekend. I didn't do as much as I'd hoped – I forgot to take into account the fact that the sun sets at about 4:00 pm these days – but I saw a couple of interesting sights...

At the Guggenheim Museum currently are two exhibitions. In the main space is Brazil: Body & Soul, and in the annex is Norman Rockwell. Norman Rockwell is always interesting, and the exhibit is a solid one. However, for the Brazilian exhibit the museum has blocked off the skylights, dimmed and colored the lighting, and painted the entire interior flat black. In the center of the museum's infamous spiraling ramp is a four or five-story high Rococo church altar, from a small city in Brazil, that has undergone a restoration and will be reinstalled in its proper home after the exhibit. What's really interesting is the three-dimensionality of it: the supporting framework of scaffolding and guy wires upon which the altar has been assembled can be seen as you walk around it on the spiral ramp. Quite a thing to see the Guggenheim transformed (or not see – it was really dark in there).

I used up most of the daylight in the museum and walking the city. I'd wanted to walk over the Brooklyn Bridge to witness Manhattan's altered skyline, but I settled for a quick walk-by of the World Trade Center site and then halfway over the bridge. Here's where I'd put in my obligatory photo of the wreckage – but it wouldn't mean any more than the television images and magazine photos we're all familiar with at this point. I thought I was prepared for the height and scale of the ruin, but it overwhelmed me anyway. It's an experience.

I missed the relatively new planetarium at the Museum of Natural History, though I did walk by. One of many things for next time.

So that was The City – I needed more than four hours of daylight. Thanks for indulging me. - cme

**Scan a business card !
Create your own graphic design !**

Remember that our smaller banner is roughly half the cost of this one, but you'll have to use smaller type like this and what kind of an impression will you make on your potential customers if they get an eyestrain headache from reading your ad? (this ad idea from The Original Audacious WorcesterShare Source, Worcester CSI chapter newsletter; Ted "Ol' Argyle" Healy, editor.)

2001 Vermont Chapter CSI Events

- March 15** “CSI Certifications” at the Windjammer
Jonathan Miller, CSI, CDT, CCS, AIA
- April 12** “Paint and Coating Systems”
With tabletops at the Clarion Hotel
Sponsored by Sherwin-Williams Co.
Shance Burchill, CSI, ASID
- May 9** “Fireproofing and Firestopping”
Sponsored by W.R. Grace Co.
Bob Walsh and George Guanci
- June 6** Joint ASHRAE/CSI Awards Banquet
“Luau on the Lake” boat cruise on the ‘Spirit of
Ethan Allen II’ and with Hawaiian Cuisine
- July 12** “Doors, Frames & Door Hardware”
Basic & Electronic Hardware
William D. Lawliss, CSI, CDT – Essex Industries
- August 9** “Vermont Brick - Factory Tour” Highgate, VT
Sponsored by Vermont Brick & Trowel Trades
- September 12** “Codes & Door Hardware for Schools”
Burlington Sheraton – 11:15 AM to 1:30 PM
Shelley Hudson, CSI, CCPR – Ingersoll-Rand Co.
- October 12** North East Region CSI Conference – Oct. 11-14
Basin Harbor Club, Ferrisburgh, VT
“Green and Sustainable in Vermont”
Friday Technical Theme [Open to Non-Members]
Up to 8 hours of HSW Learning Units offered.
Jonathan M. Miller, CSI, CCS, AIA
NERCSI Conference Co-Chair
- November 12** Concrete & Construction Methods
Herman G. Protze, III, ASTM, ASCE, ICRA
- December 6** *Division 17 – Communications; and its Impact on
Vermont Construction, Burlington Sheraton
Michael P. Kirick, CSI, PE, Kirick Eng. Assoc.
Jim O’Reilly, Archi-Technology
Andy Montroll, Riser Management
Jerry Johnson, VT Telecom Advancement Center*
- January 10** “Construction Management...Benefits & Pitfalls”
William Alexander “Sandy” Feed, Esq.
- February 13-14** Building Solutions 2002 Conference
Efficiency Vermont & VT Dept. of Public Safety
Co-sponsored by the Vermont Chapter CSI

New Members Welcome !

The Vermont Chapter CSI welcomes Marty Helley back as a Vermont Chapter member and the following new 2001 members:

October 2001

Steven Benjamin, CSI
Wilsonart/ CT Plywood Corp.
Gordon Clements, CSI
Gordon’s Window Decor
Daniel Maxon, CSI
Energy Efficiency Vermont
Sandra Vitzthum, CSI, AIA
Vitzthum Studio

August 2001

Kevin Grenier, CSI
E.H. Danson & Associates

July 2001

Jerry Wolff, CSI
Parex, Inc.

June 2001

Michael Lancione, Student Member
McGill University, Montreal, Canada

May 2001

Mitchell Weinberger, CSI
Acrymax / New England
Robert Labraccio, CSI
R K Miles
Robert O. McEachem Jr., CSI
Intersource Roofing Sales
Bryant Bouchard, CSI
Schluter Systems, Inc.

Interested in Joining CSI ?

Contact any of the chapter officers and we will put you on the road that can connect you to the rest of the construction industry and explain the benefits of chapter membership. You can also check out the institute’s website at www.csinet.org and the region’s website at www.neregioncsi.org for information, links and much more.

Take advantage of the institute’s program to reward each new member that another member sponsors with a \$25 CSI Buck Certificate. CSI Bucks are applicable to any institute publication or event. Contact Membership Chairman, Jonathan Miller, for more information.