



Knowledge for Creating
and Sustaining
the Built Environment



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Portland Chapter - The Construction Specifications Institute

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BEST PRACTICES TO AVOID & RESOLVE CHANGES, DELAYS, CLAIMS

Tuesday, March 14, 2006

Changes, delays, and claims present serious problems for the design and construction industry. They affect the bottom line for all parties and are a source of grief for everyone. But, they can be largely avoided, and resolved without claims, with Best Practices.

The presentation will look at Best Practices that project owners, designers, and contractors can use to minimize these problems and to avoid and resolve disputes that may result. It will be based on a survey that Pinnell/Busch conducted in early 2005, the results of which were presented at the annual conference of the Project Management Institute College of Scheduling in May05. An expanded survey will be presented at the Association for the Advancement of Cost Engineering (AACE) International conference in Jun06.

Specific topics to be covered include:

1. A summary of the survey results and the current status of the new survey.
 2. A discussion of how to minimize changes and largely eliminate claims.
 3. Review of a new Master Specification for construction scheduling, with detailed guidelines on why certain clauses are needed and how to adopt them for different types and sizes of projects.
 4. Recommended practices for owner representatives and contractors for preparation and review of schedules.
- Tools for analyzing time extension requests and determining reasonable compensation for the cost of delays, acceleration, and impact.

The Princeton building Ballroom
614 SW 11th Avenue
Social at 5:30 PM
Dinner and Program 6:30

Cost: \$30.00 per person with pre-paid reservations by March 9, 2006

Sponsor a table for 8 for just \$230

Assure your spot for this special event!

Late reservations – and walk-ins (as available): \$40.00 per person

Assure your spot for this special event! See enclosed Event Reservation

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PRESIDENT'S MESSAGE

By *Dennet Latham, CSI, CDT*



Refabricating Specifications

A few days ago a designer in our office gave me a brief overview of Autodesk® Revit®, one example of the next step in design software that approaches design not by simply drawing lines with mouse and keystrokes but, by entering attributes about different building components, or in graphic terms “parametric objects”, in a process of creating a 3D model of a building, commonly known as “BIM”,

building information model. Apparently, these graphic objects are in a way intelligent as they, through a set of predefined rules, or user-defined rules, are able to understand how to relate to and integrate with other objects in the building model. For example, if one defines a wall to extend to the next higher floor or the roof, and there is a change in the elevation or layout of the floor or roof above, the wall below will automatically change to continue to extend up to the revised floor location; saving considerable time in drawing revisions. In a similar integrated association, door schedules are developed automatically by defining attributes of door objects in the model. Then, when the dimensions of a door are changed in the model, the schedule is automatically updated and, in reverse, if the door dimensions are changed in the door schedule, the building model is updated automatically. Having a virtual model of a design that is able to revise different components automatically as more information is added to the model should save designers tremendous amounts of coordination time and lead to more complete and well coordinated documents.

In “Refabricating Architecture: How Manufacturing Methodologies Are Poised to Transform Building Construction” by Stephen Kieran, FAIA, and James Timberlake, FAIA, McGraw-Hill, 2004, the authors investigate whether it is feasible for the traditional build-it-in-place construction industry to learn new fabrication techniques from the current manufacturing trends in the automobile, ship building, and airplane industries. In attempt to work more efficiently, add value to the end product, shorten the manufacturing schedule, and lower the overall manufacturing cost of the product, all three industries have essentially retooled their traditional fabrication methods of building products in place, or in assembly line fashion, to move toward manufacturing modular components for much of the end product at offsite factories, and in many cases by outside subcontractors. Then those components are shipped to the final point of assembly and the modules are “joined” together very quickly.

Since the final assembly requires parts from various suppliers, the interconnecting components must be totally compatible so the joints mesh exactly during final assembly. This manufacturing

process has led to a rethinking of the design process and requires early participation and intricate coordination between the product designer, manufacturer, and component subcontractors to ensure that the components will come together successfully during final assembly – an interdisciplinary and integrated design and manufacturing process. Sophisticated “BIM” type design software has also helped these industries make the integrated approach successful.

Along with these new manufacturing processes there have been new design solutions to help make the assembled products more efficient in use of materials, reduce the number of different parts, use new lighter, stronger materials to replace traditional materials and improve layout of materials to help make the end product more cost efficient, safe, and of higher value to the consumer. An example of this is the “cockpit” component of an automobile manufactured by Delphi Corporation that includes a fiber-reinforced plastic support frame, instead of steel. This support frame acts as the backbone of the cockpit off which other components are supported, provides structural protection for occupants of the car interior, weighs less helping to reduce overall weight of the car and also, being tubular in shape, acts as ductwork for the car’s interior air circulation system. This creative, integrated approach to automobile design has helped make the end product have higher value while using fewer resources, essentially, doing more with less. (Kieran Timberlake, page 35-37).

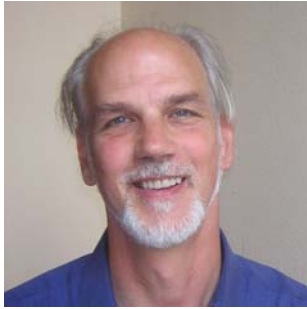
New enhancements to the commercial master guide specifications, like Arcom Masterspec® with the Lynx® program, e-Specs® with an automatic drawing keynote interface with project specifications, and SpecLink™’s integration between different sections in project specifications, between different parts of an individual section, and between MasterFormat™ 1995 and 2004, are also working toward a more integrated and efficient way to develop construction documents.

At the National Convention this year in Las Vegas, along with 120 other education seminars, there is a keynote presentation by Gehry Associates about BIM and a seminar entitled “BIM: How does the emerging Building Information Model Concept Relate to Specs?” There is much to learn about these enhancements and how they may be incorporated into the office, factory, and construction site working environment. Electronic integration of drawings and specifications and a more integrated construction industry involving early and close networking among Owners, designers, material manufacturers, and contractors seem inevitable.

Embrace the future and and enjoy the journey.

WHAT DO YOU SAY? .. News and views from the Specifiers Share Group

By: Fred Herbold, CSI, CCS



Skylight and Canopy Systems - Section 08 63 00 – Aluminum-Framed Skylights

In January the Share Group enjoyed a presentation on skylights and canopies by Jody Moore, CSI CDT and Michael Muhle, CSI CDT from DeaMor Associates.

Jody and Michael enlightened us with tips on daylighting and design, strengthened our understanding of aluminum framing structures, and cleared up our vision of transparent glass.

Daylighting and Design Considerations

Too much daylight or too much glare are common problems, if skylights don't get enough attention during the design process. Designers should always remember that daylight has two components: sunlight and skylight. The first is dramatic, intense, a point source, high energy (heat) and warm color. The second is subtle, diffuse, low energy and cool color.

Skylight orientation, size, shape, location and glazing can all be used to achieve the desired effects. The best method to assure these effects is to test a model. Here in Portland we can use the Better Bricks Daylighting Lab operated by the University of Oregon; www.betterbricks.com.

Functional considerations to remember: self-cleaning glazing needs to slope at least 30 degrees to keep the glass clear with limited maintenance; water-tight glazing needs a slope of 1:12 or greater.

Skylight and Canopy System Types

Manufacturers of metal-framed skylights offer standard, pre-engineered systems with standard parts. These are more economical than custom-designed skylights and canopies. However, some manufacturer's like DeaMor offer complete design-build service for custom designs as well as pre-engineered systems.

Many standard shapes and configurations of aluminum-framed skylights are available. It is wise to consult with the "basis of design" manufacturer to establish the size and span limitations. Coordinating skylight framing with the building framing can save time, money and construction effort.

Pre-engineered skylight units with automated vents are now available. They address the double challenge of natural lighting and natural ventilation for more sustainable buildings.

Jody and Michael showed three glazing methods. Captured glazing holds the glass to the frame using a covercap with gaskets or seals. Structural glazing uses a structurally rated sealant-adhesive between the frame and glass and joints are filled with sealant. Point-supported glazing uses a device that either grips or penetrates the glass leaving the glass edges open.

Details are Important

Captured glazing works well for the ridge and rafters. Horizontal joints in glass over cross framing should have a continuous silicon sealant joint flush with the glass surface to prevent water damming. Glass must be held from slipping by a mechanical restraint at the eave. The preferred eave glazing detail is a block or plate that is flush with the top surface of the glass so no watered is dammed.

Canopies with projecting or cantilevered eaves need to have the glass held from slipping as well. An aluminum edge can restrain the glass and protect the otherwise exposed inner layer of laminated glass.

Skylights with insulating glass units can condense water. The framing system must have an interior gutter system. The gutters of cross framing members should cascade their condensate into the rafter gutters. A weep system with a baffle at the eave framing and flashing must drain condensate outside.

Glazing Possibilities and Considerations

Short of adding blinds or shades below skylights, the designer's last chance to control light and heat is selecting the glass or its performance characteristics.

Solar control coatings, low-E and reflective, can increase shading and decrease interior heat loss with limited affect on visible light transmission. There is a good variety of coatings available and more-better coming soon.

Tinted and heat absorbing glass controls light and heat. However, the aesthetic affect to the tint on interiors should be considered.

Fritted patterns on glass can shade and provide aesthetic benefits. Powdered glass frit is applied to the glass and then fired to a durable finish. Frits are available in black, white and several colors. There are standard patterns of dots, squares and lines, but custom patterns and designs are possible.

Remember Safety: Laminated safety glass protects people from possible glass breakage. The laminated glass must always be toward the people in an insulation unit.

(cont pg 6)

PERKY'S NOTES

By: Perky Kilbourn, CSI



First Note: - Sustainable Land Use.

The January 2006 *Water and Wastes Digest* contained a discussion by Curtis J. Sparks, P.E., which is worth reporting. Respect for the land is sometimes easier said than done. Regulators and Developers are expected to maintain natural features but also create livable communities.

There is a demand for residential growth which includes, among other things, a desire for open space and an adequate waste water systems. It makes economic sense to employ plants and microorganisms to provide a "green" choice for wastewater treatment. A subsurface flow wetland is ideal for residential sewage treatment because the liquid flows horizontally through a gravel bed planted with wetland plants. No liquid is exposed during the treatment process so there is no place for mosquitoes to reproduce and there is no odor. There are also vertical flow processes which can be insulated and work well in cold climates. In conclusion, by engineering wetlands, one can create an open space for human recreation and still preserve the wildlife habitat.

Second Note: - Misuse of Biological Research

The January 15, 2006 issue of *Genetic Engineering News (GEN)* included an article by Filippa Corneliussen, Ph.D. about the adoption of codes of conduct for bio-scientists. The two areas which seem to be of the most concern are first the enhancement of virulence of a pathogen and second how to render a vaccine ineffective. The conclusion is that scientists should not perform research to turn microorganisms into biological weapons or into weapons for bio-terrorism.

Third Note: - Pay and Peanut Butter

The *Firsthand View* by Dale Daulen in the January, 2006 issue of *CAP Today (College of American Pathologists)* caught my eye. My family has been using peanut butter for peanut butter and jam sandwiches for years. Chunky peanut butter, (peanut butter with peanut pieces) does not spread as evenly as creamy peanut butter (without peanut pieces). Human resources people call the "Peanut Butter Method" when pay raises are spread around evenly. Alternately, this article suggested that paying people for performance will motivate people. People will perform better to obtain more money (peanuts) which will result in the raises (peanut butter spread) not being even. Pay is pure motivation and many people will respond to it.

Fourth Note: - Evolution versus Intelligent Design

An article written by Pat Shipman in the November/December 2005 issue of *American Scientist* had an interesting title about scientists being stalked by intelligent design. Many non-scientists may not know that there currently is a debate going on between those that explain the world around us on the basis of the theory of evolution and those that believe in intelligent design. On October 18, 2004 the school board in Dover, Pennsylvania changed it's official curriculum, mandating that

"Students will be made aware of gaps/problems in Darwin's theory and of other theories of evolution including, but not limited to intelligent design. Note: Origins of life will not be taught."

Seven biology teachers in Dover refused to comply and risked their jobs by writing a powerful letter to the superintendent of schools. In their letter the teachers wrote that intelligent design is not science, is not biology and is not an accepted scientific theory. Those people who believe in intelligent design do so because they believe that the living organisms on Earth are so complex and so intricately constructed that they cannot have arisen through the unguided action of natural selection and thus there must be an intelligent designer. The intelligent designer could be God or an alien. In at least 40 states, intelligent design is being considered as an addition to the required science curriculum in public schools. Some teachers are so intimidated by the threat of parental complaints that they skip material dealing with evolution in their classes. The intelligent design movement is more than an attack on biology because evolutionary theory unifies the life and earth sciences with physics and chemistry. Intelligent Design is really religious prejudice masked as intellectual freedom.

Fifth Note – Current Hypothesis on Beginning of Life.

In the January/February 2006 issue of *American Scientist* was a discussion by Michael Russell of the beginning of life. Geochemists who study the ancient Earth are making and testing hypotheses based on their knowledge of the early conditions of the earth.. Microorganisms are at the bottom of the food chain and use hydrogen and carbon dioxide to synthesize organic compounds. All other life forms rely on, exploit and consume those cells that combine hydrogen and carbon dioxide. As early as 1988 it was suggested that the warm, alkaline (basic) springs at the bottom of the acidic ocean could have provided the conditions that resulted in the emergence of life. In 2000 oceanographers found structures 800 meters below the ocean surface that were similar to the structures these authors had predicted in 1988. These structures are hollow and could have provided pockets which would trap and concentrate organic molecules (simple proteins). Scientist have not yet created nucleic acids (primitive nucleus) though the reactive components for ribonucleic acid were readily available in the primordial soup. The optimal position for this synthesis of nucleic acid to occur is a position which is deep enough to be protected from harmful solar rays but shallow enough to use radiation at longer wave length to make organic molecules from carbon dioxide. In conclusion understanding how life started and how it works has encouraged scientists to be responsible for good housekeeping on this planet.

Grand conclusion from these five notes Consuming natural resources as fast as humanly possible may be convenient but sustainability really makes more sense. One should be rewarded for thinking outside the box with regard to environmental sensitivity. Could Portland Chapter CSI create an award for someone who has demonstrated environmental sensitivity long before it became popular to do so? One example would be Margie Largent's environmentally sensitive house, which she designed and helped build in the 1940's.

FEBRUARY MEETING RECAP

By: Perky Kilbourn, CSI

LEED® started more than 5 years ago and seems to be of interest to Portland Chapter CSI Members and people in the construction industry. This interest was demonstrated by the 120 people making reservations.

Melissa Marton introduced the moderator and panel. Alan Scott, CSI, LEED AP, AIA, who is with Green Building Services (GBS) moderated the panel composed of Brandon Smith of the Cascadia Chapter of U.S. Green Building Council, Greg Acker, AIA, from the City of Portland, and Alexander Lungershausen, CSI, LEED AP, AIA, who is with Thomas Hacker Architects.

Alan Scott started by telling a story about the interrelationship between energy and design. When a lady was told that her windows would pay for themselves in a year, she did not realize that didn't mean she did not have to pay for them at all..

Alan began by discussing the various currently existing versions of LEED's, including

- LEED for New Construction version 2.2
- LEED for Commercial Interiors
- LEED for Existing Buildings
- LEED Application Guides

There are other versions of LEED's being developed, namely

- LEED for Foreign Construction
- LEED for Homes (Residential)
- LEED for Commercial Buildings – Core and Shell
- LEED for Health Care Facilities
- LEED is also being adopted and modified in other countries.

There has been some frustrations with the existing LEED for New Construction (v2.2) and a revised version of LEED for New Construction was recently issued. Customer complaints which are being addressed include

1. Documentation
2. Improving Product Interpretation
3. Management
4. A more trusting rather than policing process
5. Trying to preserve the integrity of the LEED

The specific goals are to improve the clarity and objectivity of LEED, but not to add credits. U. S. Green Building Council (USGBC) wants to make the requirements for LEED Documentation easier to understand and submit. Currently there is no feedback as to whether what is being constructed will qualify for LEED credits until after the construction is completed. The USGBC has started a new process where the project team is able

to have a dialogue with USGBC LEED reviewers as the building is being designed. This dialogue may include interpretations that can be included as documentation for the LEED Certificate. There is a new fee structure with a reduced flat fee for initial project registration followed by design phase and construction phase certification review fees based on project square footage.

There is growing interest in LEED for Existing Buildings (LEED-EB). This rating system focuses on facility management practices and actual building performance measures including energy and water use. Tracking for 3 months to a year is required to document performance for LEED credits. With LEED-EB, the USGBC is just beginning to evaluate how a building performs relative to how the building was built to perform. [For example an owner may want a plaque stating the LEED Certification level of the building when the building is first occupied. Unfortunately, the LEED Certification level may not be available when the building is first occupied.] *[not sure I understand this example relative to LEED-E. You could say the following]* There is a tremendous latent demand for LEED-EB considering the growing number of building owners who may want to differentiate their property but are not going to initiate a major renovation. There is also increasing interest among businesses to locate in certified green buildings, but a limited number of new LEED commercial buildings being built, while there are many existing buildings that become LEED-EB certified..

There was some discussion of various products (new soy-based resins replacing urea-formaldehyde resins) and USGBC interest in establishing LEED credits that more fully account for the environmental impacts of products. Product manufacturers may be able to help establish a common environmental performance metric on which to base LEED requirements for products. Some LEED credits are based on the potential health impacts of products used on site (interior) but do not address the potential health impacts during manufacturing. The government wants LEED certifications for its buildings and LEED for Existing Buildings may help bring older buildings up to code.

The closing remarks by the panel members included statements about sustainable urban planning. LEED can be used to make a building more sustainable which effects the real estate market. The financial community needs to understand the value of the LEED Certification Program and its place in the marketplace.

WHAT DO YOU SAY (CONTINUED)

Finally, the structural performance (strength and thickness) of glass should be part of the design-build requirement in Section 08 63 00. It's not a bad idea to specify minimum glass thickness.

Considering Specifications

Did you say "design-build"? Right. Even pre-engineered skylight systems should be specified as design-build products. It's most important to include the structural loads in the specification or on the drawings. Fall protection loading should also be required when maintenance people could accidentally fall onto the skylight.

Performance standards are ASTM E 330 (structural performance 1.5 times wind design load); ASTM E 331 (no water penetration) specify 20% wind design load or specify 10 psf; ASTM E283 (air leakage) specify 0.06 cfm/sf at 1.57 psf or at 6.24 psf.

A more stringent and expensive factory test for water leakage is AAMA 501.1 test under dynamic pressure. Specify 20% wind load or up to 12 psf.

Field quality control testing should be performed by Owner's testing agent. AAMA 501.2 is the more economical water spray test. ASTM E 1105 is the expensive test employing pressure and water. Make sure the Owner needs and desires this test. You have to specify some options also. Specify that either of these tests shall be performed before interior finishes are installed.

LEED Credit Assistance

Credit MR 5, Regional Materials: skylights, framing and insulating glass units can be fabricated within 500 miles of Portland.

Credit MR 4, Recycled Content: both aluminum and glass should contain recycled material. Expect 20% or higher.

EQ 4.1, Sealant VOC: Silicone sealant and adhesive should be well within the limit.

You miss the great photographic examples and personal presentation when you're not at our Specifiers' Share Group meetings. However, you can tour some fine examples at DeaMor's web site, www.deamor.com.

NW REGION CONFERENCE

Last years region conference in Spokane was titled "The Journey" in reference to Lewis and Clark's historic journey. September 2006 is the bicentennial of Lewis and Clark's return to St Louis. October 2006, "The Journey" continues in Portland as we take "CSI to the MAX" to explore what's new in Portland and the wealth of fun and diversions that Portland has to offer.

The long awaited conference agenda is near completion with a host of activities that is certain to have something for everyone. Over a year in it's planning the line up of continuing education offers a wide variety of opportunities also certain to have something for everyone. The best conference ever is about to become available on line. Don't miss it. Space is limited and will fill up fast. Sponsorship opportunities are already limited and going fast. "CSI to the MAX" don't miss the train, call Jane, and make your reservation today!

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PPSF ANNOUNCEMENT

32nd Portland Products AND SERVICES Fair
Presented to you by CSI, IIDA, AIA, AGC and IFMA
strong team of construction related associations.

Date: Tuesday, May 2, 2006

Time: 1:00 pm - 7:00 pm

Location: The Oregon Convention Center
777 NE Martin Luther King Jr. Blvd.
Portland, OR 97212 Exhibit Hall 'A'.

Questions about general vendor and booth information:

Cherie McNabb ~ Cell: 360-281-1918 ~

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Fax: 360-571-8834 ~ Email: cheriemcnabb@comcast.net

Questions about general info:

Jane Phifer ~ Phone: 503-805-2500

Email: jane@portlandcsi.org

Education seminars available through out the day

Credits available

Keynote Speaker ~ 7:00pm

John Patkau – Patkau Architects - Vancouver BC

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NORTHWEST REGION CHAPTER MEETINGS

Cook Inlet, Anchorage, AK (Third Tuesday)

Dan Graham, CSI, CDT.....907-261-9203

Puget Sound, Seattle, WA (Second Tuesday)

Andrew Estep, CSI.....206-382-3393

Mt. Rainier, Tacoma, WA (First Thursday)

Jerry Litwin, CSI,CCCA.....253-584-5207

Spokane, WA (Second Thursday)

Eric Rieckers, CSI..... (509) 535-0301

Portland, OR (Second Tuesday)

Jane Phifer, CSI.....503-805-2500

Capital, Salem, OR (Third Thursday)

LaVone Clausen, CSI.....503-371-2070

Willamette Valley, Eugene, OR (Last Thursday)

Rodd Hansen, CSI-I.....541-687-9600

Idaho, Boise, ID (First Tuesday)

Jon Farren, PE, CSI, CDT.....208-429-1307

March 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2	3	4
5	6	7	8	9	10	11
12	13	14	15	16	17	18
19	20	21	22	23	24	25
26	27	28	29	30	31	

- 3/6 CSI Education Committee Mtg, *Noon, Blue Moon Tavern*
- 3/7 CSI Board Meeting, *Noon, AIA Office*
- 3/9 CSI Specifiers Share Group Meeting, *Noon, ZGF*
- 3/14 **CSI Chapter Meeting**, *Best practices to avoid & resolve, changes, delay & claims*
- 3/14 CSI Membership Committee Meeting, *Noon, Russell Street BBQ*
- 3/23 CSI Specifiers Share Group Meeting, *Noon, ZGF*
- 3/28 - 4/1 CSI 50th Anniversary CSI Show and Convention, *Las Vegas*

April 2006

Sun	Mon	Tue	Wed	Thu	Fri	Sat
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30						

- 4/3 CSI Education Committee Mtg, *Noon, Blue Moon Tavern*
- 4/4 CSI Board Meeting, *Noon, AIA Office*
- 4/11 **CSI Chapter Meeting**,
- 4/13 CSI Specifiers Share Group Meeting, *Noon, ZGF*
- 4/17 CSI Membership Committee Meeting, *Noon, Russell Street BBQ*
- 4/27 CSI Specifiers Share Group Meeting, *Noon, ZGF*



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NOTE CHAPTER MEETING IS ON FIRST TUESDAY!!