Knowledge for Creating and Sustaining the Built Environment

The Predicator

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Portland Chapter - The Construction Specifications Institute

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TEN THOUSAND VILLAGES

Tuesday, December 11, 2007

5:30 to 8:00 PM

TEN THOUSAND VILLAGES®




Ten Thousand Villages
914 NW Everett St.
Portland, OR 97209

Street car access is easy as well as parking along the park blocks.

The Portland Chapter of CSI is hosting a holiday get together at the Ten Thousand Villages store on 9th and Everett, Tuesday, December 11th. Many of our members have expressed a desire to have more of a social event in December instead of a meeting.

The CSI Board and Program Committee hope you will take some time that evening for some shopping, appetizers and beverages in this unique store that provides vital, fair income to Third World people by marketing their handicrafts and telling their stories in North America. Your purchases help provide dignity, sustainability, education and hope for villages in more than 30 countries around the world.

Read more about Ten Thousand Villages at
www.tenthousandvillages.com

Cost:
$30.00 per person with pre-paid reservations by December 7, 2007
Non-CSI Member Fee $40.00
Late reservations – and walk-ins (as available): $40.00 per person

Register at: www.portlandcsi.org

Questions or problems contact Jane Phifer 503-805-2500 or jane@portlandcsi.org

By: Fred Herbold, CSI, CCS

Insulating Glass Units - IGU

This month is the last in series about glass. The information is based in large part on Bill Coady, CSI presentations to the Portland Chapter CSI Share Group. We'll examine how IGUs can solve various problems while transmitting daylight light.

Let's start with the recent history of glass relative to IGUs. Remember that people have been making glass for over 4,000 years and have probably been using glass architecturally for more than 1,400 years. IGUs have been around for less than 100 years.

History

1930: "Thermopane" is invented in the US by C. D. Haven. It consists of two sheets of plate glass separated by a spacer that encloses and seals dry gas or air. This is a simple description of an IGU. Thermopane® is now a trademark of a German window manufacturer. (The history of the trademark eludes me)

1940: Heat absorbing tinted glass is available. PPG introduces Solex® (now Solexia®) light green tint that significantly increase solar shading efficiency. By 1990 all basic glass manufacturers will have a moderate array of tinted glass.

1945: PPG introduces Twindow® IGU.

1959: Pilkington introduces flat glass manufactured by the float process. It was Alastair Pilkington's idea in 1952 to float a ribbon of molten glass on a bath of molten tin. It required a substantial investment by the firm. By 1967 Pilkington stops making polished plate glass.

1962: PPG is the first US firm licensed to produce float glass. Today all architectural flat glass in the US is produced by the float glass process.

1977: Cardinal introduces triple pane IGU.

1978: Cardinal introduces dual sealed IGU using silicone for the secondary seal.

1981: Heat Mirror® high performance IGU is introduced. After government funded research to improve IGUs, the Southwall firm is established and develops transparent polyester film with low-E coating which is suspended inside the IGU, thus creating 2 separate cells.

1983: The first Low-E glass (e.g. PPG Sungate® 100) is introduced using the pyrolytic, or hard-coat method. The coating is applied by chemical vapor to the hot glass near the end of the float line.

1987: Experimenting with fill gasses leads to use of Argon, an inert noble gas, for better thermal performance.

1990: Southwall's Superglass® is introduced. It has double Heat Mirror® films, and is krypton gas filled. Mid-glass U-value is 0.08.

1993: Several manufacturers introduce warm-edge spacers to reduce thermal transmission at the IGU edges.

1995: PPG introduces Sungate® 1000 (now Solarban® 60) nearly invisible, high performance low-E coating. Other manufacturers quickly follow with similar products. The coating is applied by the vacuum deposition, or soft-coat, process. Although the process had been used for other low-E and reflective coatings, this is the first truly high performance, transparent coating.

2001+/-: Ultra-Clear low iron glass becomes available.

2006: Another generation of soft-coat low-E coatings by several manufacturers provide high visibility and very low solar heat gain coefficient.

ASTM E 2190 Standard for IGU

This year a new harmonized standard for IGUs in both the US and Canada was issued. ASTM E 2190 is the "Standard Specification for Insulating Glass Unit Performance & Evaluation". Also SIGMA in the US and IGMAC in Canada merged to form IGMA, the Insulating Glass Manufacturers Alliance. Specifiers should drop ASTM E 774 CBA and replace it with ASTM E 2190 for double sealed IGUs.

You may also require the fabricator be certified for the type of IGU specified. Certification is listed by the Insulating Glass Certification Council (IGCC). You should check to assure that your basis of design fabricator is certified. The standard is relatively new. Check www.IGCC.org\ for the current list.

If coated glass like low-E is specified, it is recommended that the fabricator is certified by the glass coating manufacturer. This requirement should be standard.

Another quality assurance specification item is the IGU fabricator's warranty. A 10-year warranty is standard for double-sealed units. Only units in severe environments like swimming pools may not be warranted; you should check with regional fabricators for those instances.

IGU by Component

Saving the glass for last, here's some of idea of the selection and control specifiers can accomplish.

(continued on page 3)

What Do You Say
(continued from page 2)

Spacer: Size of space, aluminum or stainless steel metal, warm-edge composite or foams, color.

Sealers: I hesitate to say more than, rely on ASTM E 2190, and require the sealers are compatible with the glazing. For example, structural silicone glazing require compatible silicone sealant.

Gas: Dry air; argon improves insulation; krypton and xenon are more expensive, improve insulation more, but are best in ¼ inch wide space; sulfur hexafluoride helps reduce sound transmission. The use of gas instead of air implies faith that the seals will prevent nature's drive to equilibrium.

Desiccant: To remain dry and prevent internal condensation or fog, all IGU include desiccant in the spacer. Silicon gel or molecular or combination.

Selecting the Glass or Specifying the Performance

Most IGU specifications will be a combination of specifying characteristics of the glass and performance of the IGU.

Selecting the glass, clear or ultra-clear or tinted, may be for aesthetics or performance. Selecting laminated glass may also be for aesthetics as well as all the performance advantages discussed in the previous article.

Coatings for vision glass include low-E, reflective, and opaque patterns. New very high performing low-E coatings tread the boundary with reflective coatings. Samples should be visually evaluated at the most common or most important viewing angles.

Additional layers or panes can be used to increase thermal performance. These include glass and transparent plastic films.

Performance Requirements

Structural Design: Comply with ASTM E 1300 and the building code. You may reference design parameters indicated elsewhere.

U-Factors (Summer / Winter): Center-of-glazing values, according to NFRC 100 and based on LBL's WINDOW 5.2 computer program, expressed as Btu/ sq. ft. x h x deg F.

Solar Heat-Gain Coefficient and Visible Transmittance and Ultraviolet Transmittance: Center-of-glazing values, according to NFRC 200 and based on LBL's WINDOW 5.2 computer program.

Visible Reflectance: Center-of-glazing values, according to NFRC 300.

Sound Transmission Class, STC-[ ] when tested per ASTM E 90 (there is probably a better method for glazing).

Safety Glass: 16 CFR 1201 for Category II.

Windborne-Debris-Impact Resistance: Basic or Enhanced per ASTM E 1996 for Wind Zone [ ] when tested per ASTM E 1886.

Specifying the right IGU is probably the most effective way to conserve energy, harvest daylight, and enhance the interior and outside experience of your building.

Method for Selecting Glass:

Determine Life Safety Requirements:
- Safety glazing for hazardous location,
- Fire rating,
- Blast resistance,
- Bullet resistance (ballistic).

Determine Energy Requirements (Gain vs. Loss):
- Insulating value or U-value,
- Solar heat gain.

PERKY'S NOTES

By: Perky Kilbourn, CSI

Note #1

After I prepared my notes on the October meeting of Portland Chapter of CSI, I realized that some people might not understand BIM and it might be worthwhile to do a short explanation. Here is the way I understand BIM.

BIM stands for "Building Information Modeling" BIM involves taking a set of 2-dimensional CAD drawings and converting them into a three dimensional model. Each CAD drawing is two dimensional (length and width) and BIM layers these 2-D CAD drawings (one on top of another) which gives the height to the model of the building (the layering gives the third dimension - height). This layering of drawings will result in a "Model" which "Model" shows the finished building.

Note #2

Lee and I support Friends Committee on National Legislation (FCNL). I was pleased to read in the September 2007 FCNL Washington Newsletter that the U..S. Green Building Council (USGBC) certified that FCNL's building on Capitol Hill meets the requirements to be designated a green building. FCNL's building was awarded a "silver" LEED (Leadership in Energy and Environmental Design) certification.

Note #3

In May, 2007 one of the hottest problems in agriculture was reported in SCIENCE, the magazine of the American Association for the Advancement of Science (AAAS). The discussion states that "Honey bees worldwide are abandoning their hives, and scientists aren't sure whether to blame pathogens, pesticides, or the artificial diets fed to the bees. It is not even clear if the phenomenon is new." According to the article, in 1897 a similar healthy hive collapse occurred.

Note #4

The newsletter FOODFIRST of the Institute for Food and Development Policy had an interesting article in the Summer 2007 issue which article was entitled "Biofuels: Myths of the Agro-fuels Transition" by Eric Holt-Gimenez. Five Myths were presented and discussed #1 Agro-fuels are clean and green - not necessarily if consider their "life-cycle" from land clearing to plant the crops compared to the benefits the original forest provided before they were removed. #2 Agro-fuels will not result in deforestation - Unfortunately when companies want more fuel crops these fuel crops have to be planted somewhere which means the forests are removed and fuel crops planted instead. #3 Agro-fuels will bring rural development - Small family farms generate more jobs than large corporate farms where machinery does a lot of the work and fewer people are involved. #4 Agro-fuels will not cause hunger - Food and fuel crops are competing for land and water. The higher food prices may cause higher fuel prices - the question for the poor is do we eat or keep warm? #5 Better "second generation" agro-fuels are just around the corner - Not necessarily - Industry is working on genetically engineered cellulosic agro-fuel crops that break down easily to liberate sugars which are fermented to biofuels. These cellulosic ethanols may not demonstrate any carbon savings. This article concludes by suggesting that scientists should work on improving existing solar, wind or conservation technologies because even an agro-fuel transition may not produce enough fuel to offset the yearly increase in global oil demand.

Note #5

On Friday, October 12, I was pleased to learn that I have now heard two gentlemen speak who later received the Nobel Peace Prize. As a teenager, I heard Linus Pauling give a talk at Willamette University on his genetic research. This was before scientists had figured out the composition of genes and through the years, it has been fun to read the science behind our current understanding of how genes work. A year or so ago, I heard Al Gore speak at the annual meeting of AAAS. Gore seemed to know what he was talking about with regard to global warming. There has even been some effort to tie the decrease in honey bees to the decrease in wildflowers and less nectar because of the dryer climate - please see previous Note #3.

YOUR PERSONAL EDGE

What sets you apart?

By: Jody Moore, DeaMor Skylights

CSI Construction Technologist Training Jan to March 2008
Creating your own opportunities with knowledge and understanding

In the competitive world of construction, the unique skills and knowledge that you bring to the table define your personal edge.

Whatever you are seeking in your career—salary, position, prestige, satisfaction — all are measures and rewards of the capabilities you possess. Together with diligence, discipline and drive, the specific abilities you develop put you in the best position to take advantage of opportunities presented on your path.

Portland CSI is presenting a series of classes to support your competitive advantage and prepare you for a certification of your knowledge: the Construction Documents Technologist. The CDT initials after your name give credibility to a level of professional knowledge and discipline that you have achieved through your own effort and drive.
The class covers critical information you need to be the best in your field:

- Project development from concept to construction
- How design develops into documents
- Bidding, negotiating and purchasing
- Agreements between the parties
- Your Rights -- as well as Responsibilities
- Changes, pricing and getting paid

Gaining the advantage for your career is in your hands.

Join the dynamic group of professionals meeting on Thursdays, January 31 to March 20 and get the information, then go for certification to show the world you've got the knowledge and you know how to use it!

You can register for the class, or the class and Certification, or just Certification.

It's up to you! Logistics: Construction Document Technologist Class

Location: Port of Portland Building, 121 NW Everett St., Portland, OR 97209.
First floor conference room

Reference Materials: Project Resource Manual
AIA 201-2007 Agreement for Construction Contract
CDT Study Guide

Sign up today!
Call Jane Phifer at the CSI office (503) 805-2500.

REMEMBERING MIKE GRANT, CSI

Remembering Mike Grant, CSI

From AWI NewsBriefs November 2007 issue; the Newsletter of the Architectural Woodwork Institute:

Longtime AWI Member Passes Away

AWI volunteer Michael Grant passed away October 8, 2007, after his fight with lung cancer. He will be missed for his generosity, kindness, dedication to our industry, and vast woodworking knowledge.
Michael, with his father Charles, was a longtime member of AWI, first through the Charles A. Grant Company in fine woodwork manufacturing, and then through Brooklyn Hardware/Panelclip Company as a supplier of Panelclip® nationwide. Both firms were based in Portland, OR.
Michael served AWI through active participation in the Quality Standards Board of Review for over 15 years; as a Quality Certification Program representative in the Northwest; and as a sought-after presenter of programs on fine woodworking for the design community.
Michael's contributions to the Quality Standards Illustrated (QSI) over the years are particularly noteworthy. Since the early 1990s, he carefully reviewed sections of the QSI, wrote thoughtful critiques and editorials, and added to the body of knowledge on veneers, paneling, stile and rail doors, and much more. His contributions and long-term commitment to the work of the QSI committees are his enduring legacy.

NOVEMBER MEETING RECAP

By: Lowell Jenson, CSI, CDT

Our tour of the **RiverEast Center** facility highlighted diverse skills and teamwork needed by each of our disciplines to produce an award winning project. Architects, engineers, general contractor, subcontractors, manufacturer representatives and the owners with their co-workers all worked together as one unit. The building Owners also worked with the Portland Development Commission, City of Portland building officials and representatives serving in the Central Eastside Industrial District toward shared community redevelopment goals. A Gold LEED certification of this historical building was the crown of accomplishment. Good, better, best, never let it rest until our good city of Portland becomes better and the better becomes best!

Tour

The project began as a design competition to renovate a historic warehouse built in 1951 and put it back on the tax rolls. It had a railroad spur inside the East end of the building for moving goods for C & H Sugar, Quaker Oats, and Coca-Cola and was condemned about 40 years ago to make way for the unrealized Mt. Hood highway. Jay Haladay, the president and chief executive officer of software developer, Coaxis Inc., and Jeff Reeves, President of Group MacKenzie, an engineering and architecture firm, took a step of faith and vision to purchase the building from the Portland Development Commission. The building was in "nasty condition with rats and bats in it". Seven Group MacKenzie architects set out to renovate it into a showpiece office of post-industrial chick. The facility now houses about 250 people, seven businesses and two non-profit organizations.

Group MacKenzie, with 130 staff, occupies 25,000 SF of the first floor and mezzanine area on the south end of the facility. A public boat house occupies the other main portion of the ground floor space and provides river access for paddlers and a rowers club. Coaxis Inc. has 120 staff in this office and utilizes 45,000 SF of the facility on the second floor and upper north mezzanine include training classrooms for their construction software clients and staff. Their video teleconferencing capabilities are awesome and include one T-3 and two T-2 cables. A deli is scheduled to be installed in the SE corner of the building. The boat house has an adjacent dock and the east river walk/park has a continuous parade of cyclists, joggers and roller bladders. The Hawthorne Bridge has pedestrian access to the West side river greenway parks and makes RiverEast Center a work/play environment, not to mention an incredible view of the Willamette River and downtown Portland building-scape.

The project manager for Howard S. Wright, Travis Lawson, the general contractor, estimated that the LEED documentation time required about 300 to 400 hours beyond their documentation for a non-LEED certified project. Regular meetings were scheduled and part of that was to review how various decisions during construction effect LEED points and related impact to the schedule. To get LEED Points they embraced the existing structure and added seismic bracing and shear walls. Energy calculations and energy efficiency were closely evaluated and the type of window initially targeted for use was changed. Recycling concrete wall window cutouts were used as art features on the site. Triple glazed acoustical windows were utilized for sound and energy conservation. Other LEED criteria established to achieve a sustainable building included no PVC's in the carpets, utilizing low VOC materials and some work stations were re-used from their previous office.

All of these decisions, among other factors noted earlier, helped qualify the project for Gold LEED certification. It is considerably more difficult to achieve this rating in a historical renovation then if building a new building.

Final analysis: The finished facility is a shining example of deficient property development that resulted in a world class project for world class employees. Meeting LEED green construction standards are one of the markets that both Owners serve. Rather than wait and continue the dialogue, they chose to whole heartedly jump forward on the fast track, including the painful decision process, with the goal of doing it right the first time! Jay noted that it is great to see their staff and the general public put on rollerblades or go jogging by as they head down the East Waterfront Esplanade and the rowing club members hiking back and forth to their boats or, to see staff bring their out of town guests to show off their facility on the weekend. There is an exciting pioneer vibe about the place! It will serve as a model for the rest of the inner east side industrial area and for "green" buildings in Portland, the northwest and throughout the country.

Thank you Coaxis, Group Mackenzie. And Howard S Wright for a wonderful tour of the RiverEast Center.

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vacant

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Marc Chavez, RA,CSI, CCS 206-521-3492

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Cook Inlet, Anchorage, AK *(Third Tuesday)*
Mark Hughes, CSI…….....907-267-5163

Puget Sound, Seattle, WA *(Second Tuesday)*
Andrew Estep, CSI.....206-382-3393

Mt. Rainier, Tacoma, WA *(First Thursday)*
Bob Kenworthy, FCSI, CCS, CCCA..253-931-4904
Dennis Kabba, CSI, CDT …….. 253-627-5599

Spokane, WA *(Second Thursday)*
Thoms Gerard, PE, CSI, LEED-AP. 509– 328-2771

Portland, OR *(Second Tuesday)*
Jane Phifer, CSI.....503-805-2500

Capital, Salem, OR *(Third Thursday)*
Chris Veit, CSI, CCS.....503-390-0291

Willamette Valley, Eugene, OR *(Last Thursday)*
Melanie Wittkop-Fort, CSI 541-485-0922

Idaho, Boise, ID *(First Tuesday)*
Karen Morris, CSI …….....208-343-3620

Big Sky, MT
Jan O'Brien, CSI……406-245-6363

December 2007

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12/4 CSI Board Meeting, *Noon, AMAA*
12/11 **CSI Chapter Meeting -** *Ten Thousand Villages*
12/13 CSI Specifiers Share Group Meeting, *Noon, ZGF*
The EJ Equation - Specifications, Installation & Verification
12/17 CSI Membership committee, *noon Macadam's Bar & Grill*
12/18 CSI Program committee, *7:30 am, Nancy's Kitchen—16th & Glisan*
12/25 **MERRY CHIRSTMAS**
12/27 CSI Specifiers Share Group Meeting, *Noon, ZGF*

January 2008

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1/8 CSI Board Meeting, *Noon, TBA*
1/8 **CSI Chapter Meeting -** *Kermit Baker, Governor Hotel Ballroom*
1/10 CSI Specifiers Share Group Meeting, *Noon, ZGF*
Sustainable Design with Masonry
1/21 CSI Membership committee, *noon Macadam's Bar & Grill*
1/24 CSI Specifiers Share Group Meeting, *Noon, ZGF*
Div 01 Round Table Continued
1/29 Program committee, *7:30 am, Nancy's Kitchen—16th & Glisan*
1/31 CSI CDT study group, *Port of Portland Building*

February 2008

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2/5 CSI Board Meeting, *Noon, TBA*
2/7 CSI CDT study group, *Port of Portland Building*
2/12 **CSI Chapter Meeting -** *TriMet, Bridgeport brew pub*
2/14 CSI CDT study group, *Port of Portland Building*
2/14 CSI Specifiers Share Group Meeting, *Noon, ZGF*
2/18 CSI Membership committee, *noon Macadam's Bar & Grill*
2/21 CSI CDT study group, *Port of Portland Building*
2 /27 Program committee, *7:30 am, Nancy's Kitchen—16th & Glisan*
2/28 CSI Specifiers Share Group Meeting, *Noon, ZGF*
2/28 CSI CDT study group, *Port of Portland Building*