BC LOG & TIMBER
BUILDING INDUSTRY

BC Logbuilders & Timberframers News

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Life Cycle Analysis - Results

By Rob Pickett, April 2012

The log and timber building industry has a rich heritage in British Columbia and the members of the BC Log & Timber Building Industry (BC LTBI) have a firm belief that they produce earth-friendly building systems. Log and timber builders in BC are blessed with sustainably managed forests filled with high quality timber and very low-impact hydroelectric power to use in manufacturing products. It would appear that claims of environmental benefits would be a "no-brainer".

In light of the swift and comprehensive changes that are currently happening worldwide that require ever-greater energy performance and lower global warming impacts, the sustainability of buildings must now be measured to be believed. The BC LTBI is responding by generating in-depth knowledge base regarding the thermal performance solid wood walls, including some full-scale testing.

The industry has also chosen to study the area that perhaps best exemplifies the low impacts of log and timber building, the overall low life cycle impacts of the materials themselves. To this end, the BC LTBI commissioned the Athena Institute, the consensus leader in North America for building life cycle assessment (LCA), to complete a study on log and timber building in BC. The study carried out by Athena considered the global warming impact, fossil fuel use, acidification, ozone depletion, and resource depletion caused by the entire life cycle of log and timber buildings. Athena then integrated this data into their building LCA tool called the Athena EcoCalculator. The EcoCalculator allows the side-by-side comparison of various wall types.

What is LCA?

Life cycle assessment is an analytical tool used to comprehensively quantify and interpret the energy and material flows to and from the environment over the entire life cycle of a product. Environmental flows include emissions to air, water, and land, as well as the consumption of energy andmaterial resources. By including the impacts throughout the product life cycle, LCA provides a comprehensive view of the environmental aspects of the product and a more accurate picture of the true environmental trade-offs in product selection. LCA is growing as a tool to evaluate building products because of the availability of data for the various building materials (steel, concrete, wood, plastics) that make possible the comparison of different configuration The study completed by Athena fills a major information gap for log and timber products and now allows side-by-side comparison that include these materials.

Life Cycle *Continued on pg. 4*

In This Issue:

Draft 2012 National Building Code - Update

On behalf of the BC LTBIA, Dalibor Houdek attended the public review sessions for the new 2012 National Building Code that is still under development. Dalibor proposed several key changes to the new code and has been able to influence the code committee in the following areas:

1) Thermal values for wood species proposed in the original draft were substantially lower than a number of other sources. We managed to get the code committee to recognize higher thermal values for wood species.
2) The new code will reference ICC400 methodology for calculating R-Value of log walls.
3) Log walls were not recognized as an air barrier. Based on the testing recently conducted at Cascadia in British Columbia in cooperation with the BC LTBIA, the properly sealed log wall will meet the standards. The new code will establish that log/timber wall where log joints are properly sealed by a system that accommodates shrinking and settling of log walls will form an effective air barrier.

The inclusion of these provisions in the new draft was significant for the code. It changed the methodology for R-value calculation of log walls, included new thermal values for wood species and introduced new standards to NBC. The changes had implications on other parts of the code, e.g. the changes in the thermal values for wood species and changes the effective R-values for light frame wall assemblies that were calculated using the originally proposed values.

Courses & Workshops of Interest

Island School of Building Arts

3199 Coast Road, Gabriola, BC
Tel: 250.247.8922

Fall 2012 courses:
*Building with Logs-September 3-28, 2012
*Timber Frame Post & Beam-Oct 1-26, 2012
*Timber Frame Bents-Oct 29-Nov 23, 2012

New Short Courses:
*Custom Door Making-July 23-27, 2012
*Concrete Counter tops and Sketchup - stay tuned to our website www.isba.ca for additional information on these new short courses.

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Do you have a story to tell or information to pass on? Please contact the BC LTBIA office. We are interested in your experiences in massive wood construction, announcements, and classifieds

We can also help you reach all the BC Log and Timber Builders. Advertise in our September 2012 issue. Contact us at info@logbuilders.net for rates and details.

BC LOG & TIMBER
BUILDING INDUSTRY

My-Ti-Con Timber Connectors: Dai goes to the source

Part of an exchange Dai had with Max Closen, of My-Ti-Con Timber Connectors

"Hi Max, at December's CWC engineer workshop in Kelowna, I was surprised by your placing of anchor screws from the main posts. I would always insert screws from the floor beam side, like a spike, but your method makes more sense. I believe others think as I do. Can you explain for my readers why it's better to send the anchor screw in from the main post that receives the floor beam?"—Dai

Max says,
Here's why. Fig. 1 shows a typical joist-to-beam connection with ASSY structural wood screws installed at an angle. Installing screws on an angle uses their strongest property: **withdrawal resistance**.

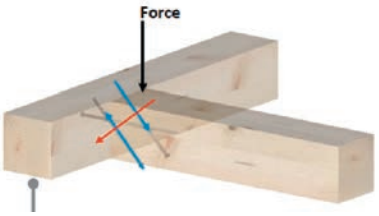


Fig. 1. Insertion, at angles, of ASSY wood screws.

Commonly, screw-type fasteners are not driven into the wood on an angle but instead positioned perpendicular to a member's surface. In perpendicular insertion, the weakest property of a screw-type fastener, its dowel action, is in force. A simple experiment can explain the difference.

Experiment:

1. Take a ¼ x 4-in. wood screw and drive half of its length into the wood. Now bend the screw over. Notice how easy it was to bend the screw.
2. Take a second screw and drive it into the wood under the same conditions. Now try to pull that screw out. As you saw, the screw didn't want to come out from the wood. The same principle applies for the connection shown in Fig. 1, where the screw is driven in on an angle to the wood grain of the joist.

The **two blue arrows** in Fig. 1 indicate the correct direction for screw installation in order to maximize its capacity in this connection. The starting point of installation—whether from the top of the beam or the bottom of the joist—is up to the installer.
The **red arrow** indicates the least efficient installation direction. Installing the fastener as shown in **red** will not put the screw in tension and therefore will not use the screw's high withdrawal resistance.

The range of the installation angle α between the wood grain of the joist member and the screw axis is typically $30° \le \alpha \le 45°$ (Fig. 2).

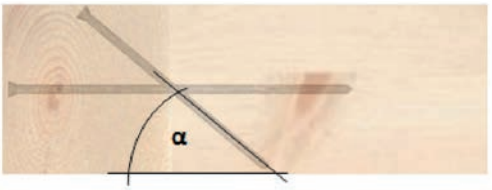


Fig. 2. Definition of angle α.

Here you see an application of the basic trigonometric functions we all learned in high school ($a^2 + b^2 = c^2$).

I caution against installing screws at angles smaller than 30°. As the angle decreases between the wood grain and the fastener axis, end grain application occurs and reduced capacities must be considered.—Max

ASSY structural wood screws are made in Germany by SWG Production, a member of the WURTH Group.

Statements made here are to the best knowledge and understanding of the author and shall be confirmed by the structural engineer of record of the project. My-Ti-Con Timber Connectors Inc. and its owners assume no liability.

Athena's depiction of the life cycle of building products in Figure 1 notes that the life cycle includes resource extraction, manufacturing, construction, occupancy, demolition, and recycling, reuse, or disposal in a landfill. The study they completed includes all of these elements.

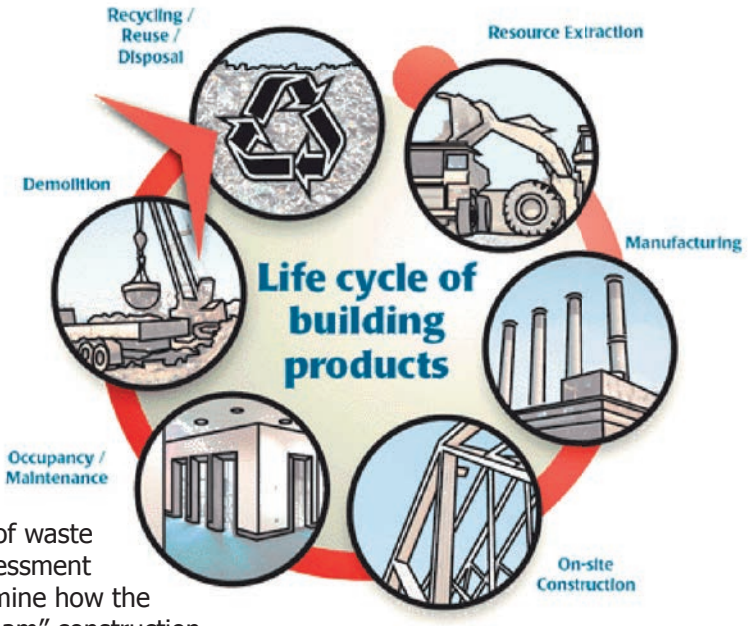


Figure 1 -LCA is used to assess building materials from extraction and processing through manufacturing, transportation, use, maintenance and disposal or recycling.

Gathering and Assessing the Data

The first step was to gather the data. Athena consulted with manufacturers across BC to develop the manufacturing profiles for handcrafted and milled profile log walls as well as heavy timbers. Each step in the process was analyzed to quantify the inputs, the amount of waste that was generated, and the output of products. The assessment looked "upstream" of the manufacturing process to determine how the raw material was extracted and processed. The "downstream" construction, maintenance, and end of life processing were also included in their modeling.

The Relevance of Forest Carbon

As trees regenerate a harvested forest, they produce oxygen through photosynthesis, depositing carbon in their cells as the tree grows. When the tree matures it enters a mature state where the growth rate declines and the carbon balance stabalizes. Sustainable forest management causes forest carbon balances to remain stable over the long term and allow the carbon contained in the product to be accounted as a credit against carbon emissions. As long as the stand remains healthy, the mature state can last for a considerable length of time. However, once the stand is subjected to fire or insect the carbon balance declines. This is currently the situation in many parts of BC that are affected by the pine bark beetle and increasingly volatile fire seasons. Understanding the growth cycle of forests is a key to appreciating how the biomass sequesters carbon.

The result of the LCA is shown in Figure 2. This data was generated by modeling the entire life cycle of the various products in the LCA software SimaPro and will be used to populate the profiles for log walls in Athena's EcoCalculator.

	Units	Handcrafted Wall System (100 Sq. Ft.)	Milled Profile Wall System (100 Sq. Ft.)	Timbers (1 mbf)
Global warming	kg CO2 eq	217.03	251.77	123.49
Acidification	H+ moles eq	58.01	61.37	31.46
Respiratory effects	g PM2.5 eq	166.18	219.61	83.05
Eutrophication	mg N eq	307442.51	303263.32	22056.96
Smog	g NOx eq	894.98	724.73	426.82
Ozone Depletion	mg CFC 11 eq	7.01	7.01	0.00
Weighted Resource Use	kg	2259.99	1120.89	1051.02
Total energy	MJ eq	4891.49	6236.96	2996.37
Fossil energy	MJ eq	4272.90	4904.92	2043.75
Nuclear energy	MJ eq	233.73	240.67	16.62
Renewable energy	MJ eq	384.86	1091.37	936.00
Carbon Sequestration	kg CO2 eq.	-1956.93	-869.75	-936.39
Carbon Footprint (net of sequestration)	kg CO2 eq.	-1739.90	-617.98	-812.90

Figure 2: LCA findings from study of British Columbia log and timber home

Figure 2 includes the results for carbon sequestration and for the total carbon footprint of the log wall systems including the sequestration effect. These results are extremely valuable in comparison to other materials and methods of construction. While other wood products would show carbon benefits, no other building system utilizes the quantity of wood that log structures do. In addition, log structures tend to use wood products elsewhere rather than alternatives --e.g., windows, floor and roof framing, cabinets, furnishings, and more.

ATHENA® EcoCalculator for assemblies

TOTAL IMPACTS BY BUILDING COMPONENT	Primary Energy (MJ) TOTAL	Weighted Resource Use (tonnes) TOTAL	GWP (tonnes CO2eq) TOTAL	Acidification Potential (moles of H+ eq) TOTAL	HH Respiratory Effects Potential (kg PM2.5 eq) TOTAL	Eutrophication Potential (g N eq) TOTAL	Ozone Depletion Potential (mg CFC-11 eq) TOTAL	Smog Potential (kg NOx eq) TOTAL
COLUMNS & BEAMS	0	0	0	0	0	0	0	0
WHOLE BUILDING TOTAL	29493	15	2	833	7	552	39	6

B. COLUMNS AND BEAMS (other assembly tabs at bottom of spreadsheet)

IN THE YELLOW CELLS BELOW, ENTER THE AMOUNT OF SQUARE FOOTAGE THAT EACH ASSEMBLY IS USED IN YOUR BUILDING

	ASSEMBLY TYPE Column / Beam	Square footage	Percentage of total	Primary Energy Consumption per ft² (MJ)	Weighted Resource Use per ft² (kg)	Global Warming Potential per ft² (kg CO2 eq)	Acidification Potential per ft² (moles of H+ eq)	HH Respiratory Effects Potential per ft² (g PM2.5 eq)	Eutrophication Potential per ft² (mg N eq)	Ozone Depletion Potential per ft² (mg CFC-11 eq)	Smog Potential per ft² (g NOx eq)
Average across all column and beam systems:				38.06	9.91	2.07	0.67	4.60	1232	0.01	6.38
METHOD 1 (ASSUMES NON-LOAD-BEARING EXTERIOR WALL)											
1	Concrete column / Concrete beam	0		68.22	38.43	6.30	2.08	15.13	2463	0.02	12.45
2	Concrete column / Glulam beam	0		64.50	19.21	3.66	1.23	8.83	2192	0.01	14.46
3	Concrete column / LVL beam	0		55.14	17.01	3.28	1.07	7.17	2225	0.03	5.95
4	Concrete column / WF beam	0		103.88	18.51	5.69	1.87	11.73	4550	0.00	5.64
5	Glulam column / Glulam beam	0		20.84	6.73	0.86	0.29	2.62	136	0.01	10.76
6	Glulam column / LVL beam	0		11.48	4.53	0.48	0.13	0.96	168	0.03	2.25
7	Glulam column / WF beam	0		60.22	6.03	2.88	0.93	5.53	2494	0.00	1.94
8	HSS column / Glulam beam	0		23.05	6.99	1.05	0.33	2.77	183	0.01	10.96
9	HSS column / LVL beam	0		13.69	4.79	0.67	0.17	1.10	215	0.03	2.45
10	HSS column / WF beam	0		62.43	6.30	3.08	0.97	5.67	2541	0.00	2.15
11	LVL column / Glulam beam	0		20.60	6.67	0.85	0.28	2.58	137	0.01	10.54
12	LVL column / LVL beam	0		11.24	4.47	0.47	0.13	0.92	169	0.03	2.03
13	Softwood column / Glulam beam	0		20.70	6.72	0.85	0.29	2.59	141	0.01	10.51
14	Softwood column / LVL beam	0		11.33	4.52	0.47	0.13	0.92	173	0.03	2.01
15	WF column / Glulam beam	0		23.23	6.84	0.98	0.33	2.82	256	0.01	10.57
16	WF column / LVL beam	0		13.87	4.64	0.59	0.17	1.16	288	0.03	2.06
17	WF column / WF beam	0		62.61	6.15	3.00	0.97	5.72	2613	0.00	1.76
18	Pre-Engineered Building System Short Span	0		15.19	1.81	0.76	0.20	1.10	600	0.00	0.47
19	Pre-Engineered Building System Long Span	0		24.21	2.88	1.21	0.32	1.79	1000	0.00	0.60

Figure 3: Athena's EcoCalculator applies LCI data to building materials used in various wall, floor and assemblies.

The EcoCalculator provides instant LCA results for hundreds of common building assemblies in residential construction, including detached, semi-detached and row houses.

The EcoCalculator was originally commissioned by the Green Building Initiative™ for integration with the Green Globes™ environmental assessment and rating system in order to make more accessible to the mainstream design community. The EcoCalculator is available free of charge, from the Athena website, www.athenaSMI.org

The EcoCalculator can be used to quantify an entire building or to isolate a specific assembly. For log homes, local building practices are typically maintained for site and foundation work. Interiors and roof systems are more often controlled by the building budget than by the log home supplier. Therefore, it is quite reasonable to isolate the exterior wall system to generate a comparison of solid wood walls to other methods and materials. While it is very common for log structures to include an interior log bearing wall and log framed upper floor and roof systems, it is more practical to focus on the exterior walls alone.

Using the EcoCalculator for Residential Assemblies for Vancouver, BC, Figure 3 was created on the basis of 100 sf of wall area. These figures paint a very attractive picture for the benefits of log walls. Because the greatest two areas of concern for policy are globalwarming impact and embodied energy, the charts provide comparisons based on these two impacts across various wall types – the alternative wall types include stick frame walls with clay brick, vinyl siding, and cedar siding over OSB and plywood sheathing. An average steel stud and insulated concrete form walls are also shown in the comparison. The comparison is shown on a normalized basiswith the log walls set to 100% and the other wall types causing 250%-400% of these impacts across the board!

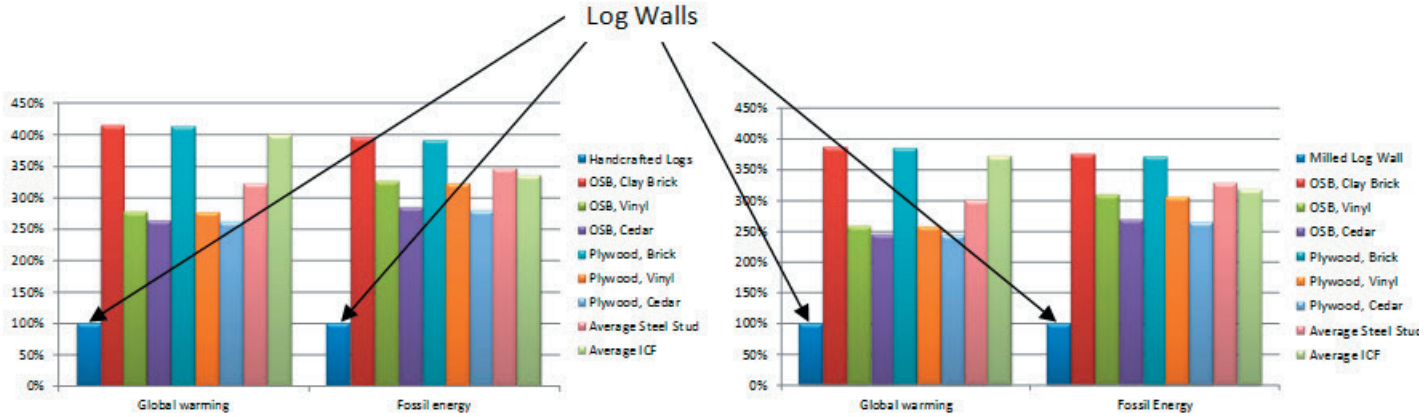


Figure 4 Comparitives of BCLTBI log walls to wall construction methods and materials available in the EcoCalculator.
LEFT: Handcrafted wall-logs RIGHT: Milled wall-logs

Life Cycle Assessment Results *continued*

The Impact of Building Site Location

It is important to recognize that the comparison above is based on a home built in BC and assumes the home is transported 200 km to the building site. There is a definite benefit to using locally-produced building materials. This represents the low impact of transportation from point of manufacture to ultimate use. Log structures are no different and in many cases are more sensitive to transportation due to the heavy weight of the walls.

What happens when the home is built outside of BC? The most typical shipment from the log yard consists of log bundles loaded on a flatbed tractor-trailer. When practical and appropriate, a shipping container may be ordered and loaded at the log yard. In each case, the goal is to maximize volume in a single shipment and utilize the least impact shipping method. For LCA impacts, it could be said that producers should look at shipping by rail for deliveries extending beyond a 500 mil ebecause truck transport of 2,500 km (typical shipment to cities like Denver) can double the overall impacts. Shipping via container on a freght ship or train causes roughly 10% of the impacts of shipping a similar distance by truck.

Conclusions

With the growing acceptance of LCA, it has been noted by experts in environmental science that LCA has the potential of becoming the baseline for analysis of building energy performance within the next 10 years. In the meantime, we can begin to understand the trade-offs between energy consumption and and the overall life cycle impacts of different building types

One useful way to consider energy consumption against the overall carbon balance of a log home is to consider the LCA results against the emissions of heating a typical home. In BC, based on a natural gas heating system, what would the CO2 emisions be for a typical heating season in a cold climate (Williams Lake) versus a mild climate (Vancouver). A 2,200 square foot home in Williams Lake emits roughly 3.9 tons of CO2 per winter season while the Vancouver home would emit roughly half a ton. This means that a handcrafted log wall system with 35.3 tons of sequestered CO2 would have a negative carbon footprint for the first nine years in Williams Lake and 70 years in Vancouver! At 21.5 tons, the milled log wall maintains remains carbon negative for the first five years in Williams Lake and 43 years in Vancovuer. These results should more than offset any potential performance differences between log walls and typical stick built construction.

Offsetting environmental benefits are currently recognized in green building and Net-Zero approaches because it is impractical to build a dwelling that is 100% efficient on its own. Combined with the use of renewable energy sources (solar, wind, hydro and geothermal systems), the goal is that every new building in 2030 will generate enough energy to power the needs of the new home without requiring additional power or fuel. The benefits of log building as shown in the BCLTBI LCA may be more beneficial in years to come than can be imagined today!

For more information on any of the points in this discussion, please contact the BC Log & Timber Building Industry via their website, http://www.bclogandtimberbuilders.com.

About the author: *Rob Pickett of RobPickett &Associates, www.robpickettandassoc.com, a housing-technology consulting firm in Hartland, Vermont, is a Certified Green Professional, Charter Member of Build Green NH Council, and has considerable experience in th eICC codes and standards development process. Rob provides technical services to the log home industry and chairs the ICC IS-LOG Committee that recently completed the 2012 update to ICC400 Standard on the Design and Construction of Log Structures. In addition to providing technical services and association work, Rob is the Vermont and W. NH District Sales Manager for Epoch Homes, Pembroke, NH, working with builders to provide high quality custom homes using modular technology.*

BC Log and Timber 2012 Conference Report

Without question, attendance at this year's BC LTBIA, AGM and Conference was one of the most informative and educational conferences ever. The internet marketing presentation by Centre for Advanced Wood Processing, was very helpful in addressing online marketing trends. As well, the updates on the new BC Log & Timber Building Industry Association website and marketing studies were very informative. We are very much looking forward to the release of these studies to the members of our Association.
Walter Bramsleven
GM, Sitka Log Homes

The BC Log & Timber Building Industry Association, 2012 Conference, held March 23 to 25 2012 was an excellent event with 49 people attending three days of training seminars and networking. The conference was specifically planned to provide information and training for BC log and timber builders to assist them in maintaining a sustainable business while they work and modify their operations to meet the requirements of: new energy codes, changing customer product demand for environmentally friendly building systems; optimization of online marketing and social media; and an aging workforce in need of attracting and training new entrants.

Conference *Continued on pg. 8*

BCLTBIA - New Website - Update

The new website is just about ready to launch. If you are a member and haven't sent us your updated information for the new site, email Patti LeFrancois at info@logbuilders.net to receive your instructions on what to send for the site. If you are not a member and want to be included on our site, join us, by completing the membership application at the end of this newsletter and fax or email it us. A partial year membership for only $175.00 plus HST. Joining us now will secure you a space on the website and ensure you receive important industry information and sales leads to December 31, 2012.

Add your voice to the BC LTBIA

Joining the BC Log and Timber Building Industry Association (LTBIA) aligns you with an organization committed to furthering opportunity, practice, and profitability in the log home and timber frame building industry.

Other Benefits of BC LTBIA Membership Include:

*Receiving breaking news and updates on issues affecting the log building industry, including changes to building codes, energy codes, and other regulatory bodies

*Being part of industry initiatives and programs involving research and development of building techniques to meet changes in building regulations

*Having a voice that is heard by government officials and regulatory bodies provincially, nationally, and internationally

*The option to attend seminars and workshops at our annual conference and AGM at a member's only rate

*The opportunity to interact with other industry members through our central messaging system – available for members only

*Assistance with challenges or questions pertaining to industry practices or regulations

Experts rely on membership with their professional associations, and clients understand this. As a professional organization of your peers, we strive to improve the industry in areas of mutual interest, including access to suitable lumber, training programs, WorkSafe practices, and advancements in technology.

Join the BC LTBIA and help us work towards a better future for our industry.

BIP Business Innovation Partnership
BC Wood • FPInnovations • CAWP

BC Log and Timber 2012 Conference Report *continued from pg. 6*

We are pleased to provide all our members and industry partners the following summary of seminar and workshop from the 2012 Conference.

Marketing

Participants received presentations on the results of a study of log and timber builder web sites and a survey of log and timber builders this past year. This study identified a need for log and timber builders to gain a better understanding of how to use their web sites and social media more effectively including how to ensure their web site is optimized to bring in potential customers.

Internet Marketing for Woodworkers - introduced simple, practical tactics for increasing the visibility of the log and timber builder business and driving new, targeted customer inquiries using low-cost web-based tools and applications. The goal to demystify the world of online search and social media and provide no-nonsense, plain-language advice that would enable wood products manufacturers to exploit new marketing opportunities, while avoiding spending hours of non-productive time in cyberspace. This workshop assisted builders to see how they could establish or improve online marketing campaigns and gain the knowledge to efficiently manage contractors such as web designers and online marketing firms.

Industry Marketing Initiative Update - The new BC Log & Timber Building Industry web-site was unveiled and detailed information was provided to builders how this new site has been designed to act as a hub for the industry as a whole to generate traffic and subsequent leads to builders' province wide. Results from the recent study completed by Westcoast CED were presented and discussed including identification of current builder web-sites components that could be improved to generate additional traffic and business and have a stronger presence in the on-line marketing platform. Over the next year it is expected that builders who attended these seminars will take advantage of the information presented and improve/enhance their online presence resulting in a stronger marketing program with improved results for enquiries, leads and subsequent sales of log and timber products.

Business Planning /Development

A key component of business planning and development is ensuring the business has a human resource plan that addresses attrition and expansion. This past year, a survey was completed with both log and timber builders and it has been found that many builders know they need more workers and want training for their workers, but do not have the plans in place to start bringing in new entrants and providing training. The industry driven log builder apprenticeship program was completed in 2011 and a need for the establishment of timber frame training is emerging.

The Industry Training Authority – held a "round table" discussion and presentation to builders that discussed the Log Builder apprenticeship program and the need to have this program reviewed and updated to better reflect the industry training needs. Discussion focused on problems identified in the current program that has resulted in the trade being classified as inactive due to a lack of registered apprentices, registered sponsor-employers, and training institutions hesitating to commit to delivering the program without solid identification of trainees. The apprenticeship program had been in development for over 13 years and due to numerous delays in completion, the industry had lost faith in the ITA's ability to provide training for the workforce. The ITA held this session specifically to identify areas that the ITA and the industry could work together to re-work the program to better meet the industry requirements.

The Residential Construction Industry Training Organization – presented options that the log and timber industry may want to consider when revising and updating the log builder apprenticeship program and developing a timber frame training program. These options included the development of modularized training components that would require less time for workers to have to be away from the work-site for technical training; streaming workers from a core skill component into specialty areas; and utilizing industry expertise and or private training facilities for delivery of program components.

LeFrancois Consulting presented the preliminary findings of the Log Builder Industry Labour Market Information and Training Needs Identification project recently completed for RCITO and the ITA. Findings of this study clearly identified the looming critical skill shortage that both log and timber building operations will be facing within the next five years. The study also identified a number of reasons why the current training program model under the ITA was not being embraced by builders and the suggestions for changes to the program from the log builders of BC.

As a result of these sessions, the BC Log and Timber Building Industry Association will be forming a sub-committee to work with both log and timber builders to develop a human resource recruitment and training plan that will include evaluation of the current programs available, enhancement and revision to the log builder curriculum and development of a timber frame program for BC.

Technical Operations, Product Range, Development or Design

Work done over the past year on various log and timber home initiatives found that many log and timber builders are ill prepared to come up with building system and solutions on their own that will adapt their product lines to meet changing energy codes, building codes, and international standards. Four workshops and seminars were held to provide builders with enhanced knowledge of technological tools available to assist in improving their building systems; solutions for meeting the new energy code; introduce them to ways to assess and monitor timber construction; provide them with new information on Life Cycle Analysis.

Assessment and Monitoring of Timber Structures: Participants were introduced to methods and tools used to assess timber structures for moisture content, strength and density. Non-destructive techniques including sonic stress waves, ultrasonic echo, x-ray, ground penetrating radar and thermograph were discussed along with semi-destructive techniques including resistance drilling, core samples and shear cores. Parameters as they relate to structural performance and continuous monitoring for moisture content was demonstrated. Practical examples provided by the facilitators assisted builders to relate how these techniques can be applied with their individual building systems and provide additional knowledge that can be used to properly assess and monitor their systems.

Connectors in Timber Construction: Timber construction connectors are continually evolving with increased effectiveness and specialty uses in timber frame construction. This seminar provided builders with a review of widely used connectors and discussed their advantages and limitations in relation to specific applications. An overview of engineered connectors and connections developed and in use in Europe was provided and other connectors such as SHERPA were discussed. Self-tapping screws were discussed and theory of how they work was explained with examples of how to use them most effectively.

Technical Panel Presentations: Life-cycle Assessment – This presentation discussed analyzing the sustainability of log and timber products over the entire life cycle. The current research being conducted to identify and document the life cycle of log and timber products is filling a major information gap on the energy efficiency of wood products and once completed will provide the industry with detailed information that has been validated to explain the positive aspects of using log and timber systems including comparably low manufacturing energy, renewability, and its ability to sequester carbon.

Study of Software Programs – Energuide 80 and Hot2000: Participants received an overview of Energuide 80 and Hot2000 and the role each of these programs may play in modeling the energy efficiency of log and timber construction. Application of these programs may be beneficial to builders in demonstrating log and timber products efficiencies that are not as easily measured as conventional construction methods.

These seminars provided builders with current information and resources to continue to develop their products using emerging systems and tools.

The BC Log and Timber Building Industry Association in partnership with CCBAC are testing horizontal log walls to obtain data to analyze the air and water penetration on log wall sections and provide reports that will provide the industry the technical data and information needed to make decisions on production processes and building systems.

Through analysis of the test results and the application and testing of building details developed to resolve the penetration issues around window and door installations, corner joinery and horizontal overlays, the program will provide log home company owners and senior management with the required data and recommendations to make changes to their production processes and systems that will prove the efficiency and suitability of solid wood as a vapour barrier.

BC Log and Timber 2012 Conference Report *continued*

Since starting the testing program, the National Building Code, in their new edition, are requiring a vapour barrier for all building systems and do not deem solid wood to be an acceptable barrier. This new code requirement could effectively shut down the horizontal log building industry if the industry is not able to prove that solid wood can be an effective and acceptable barrier.The need to prove that solid wood is a suitable vapour barrier has shifted the focus on the testing from one of providing information on a particular type of stacked wall system for individual or like building systems, to applying the results of testing to finding a solutions for the log building industry for changing their building processes systems that will reduce water and air infiltration to a level that is acceptable under the new Code requirements.

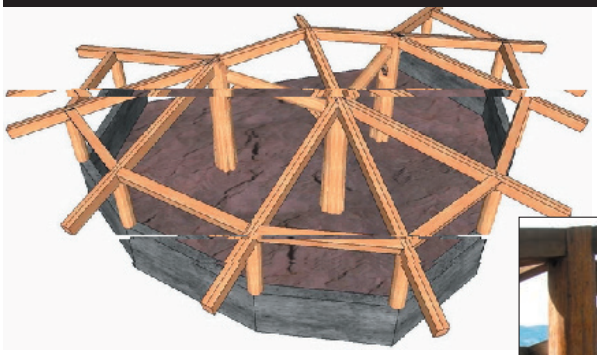
Log Wall Testing – Preliminary Results: The session discussed a number of preliminary tests that have been done to determine the best methods for achieving measurable and scientifically sound results that will be able to provide valid test results of log and timber wall sections. Early testing has been completed and performance characteristics for typical wall assembliers being constructed today are now evident as they relate to water penetration and air leakage. The next round of testing will be done to take into consideration a number of different wall systems to identify performance issues that can then be addressed through changes in assembly construction and / or detailing.

Log Wall Testing – Preparation For Next Round of Testing: Ten builders have agreed to work together to build test walls for inclusion in the study. A sample test wall was brought to the conference for builders to visually see and obtain directions on how to ensure the test wall meets the criteria required to ensure that the test wall is properly sealed in the test wall frame. Areas of concern with respect to sealing were identified and participants discussed applicable solutions. Upon completion of the visual inspection of the sample wall, participants gathered and discussed the characteristics and wall styles that would be most beneficial to test; determined like builders who will work together to build joint wall systems for testings; and developed and action plan for completion of the testing component.

The session wrapped with the facilitators discussing with the builders that their product meets code now in terms of a building system, however the industry needs to educate the governing bodies and inspectors of how the system meets the related codes and standards. This testing project, is intended to provide the industry with the scientific technical data to do this.The final disemination of data from this initiative will be shared with the industry as results become available.

Thank you to all that attended this years` conference and we look forward to seeing all of you at the 2013 AGM and Conference scheduled for February 1,2,and 3, 2013 at the Quaoot Lodge, Chase, BC.

Dietrich's Contributes

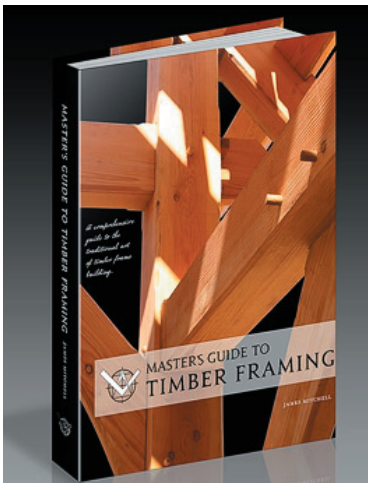


During the 2004 LTBI conference, the Kikuli at Quaaout Lodge was constructed. Then president, Peter Sperlich, designed the project using Dietrich's software, including the flared cedar posts

Higgs Murphy, Jochen Wagenblast, Andreas Fricke, Mark Carter, Phil Harrison, Wil Dancey, John Boys, Daniel Depoe, Oliver Tritten, Uwe Heyde, Chris Friedlos, David Schuler, Tomaz Stich, Markus Weiss, Peter Sperlich and Markus Duerr

Some of Dietrich's west coast clients stayed following the LTBI conference for two days of update training on the latest version of the software. This event was part of the 10th anniversary celebration of Dietrich's in North America. It was a great follow-up to the presentations during the conference. It also provided an opportunity for our clients to enjoy some social time and get to know each other better, since many of our clients already collaborate on projects and are interested in supporting each other when possible. Daniel Depoe, our west coast sales representative, lives in BC.

Previously Reviewed - Recommended Resources



Masters Guide to Timber Framing

As seasoned professional or student, journey through the fundamentals and varied complexities of timber framing in James Mitchell's new book, Masters Guide to Timber Framing.

The BC LTBIA thanks James Mitchell for his donation of copies of his book, **Masters Guide to Timber Framing** to the fundraising auction at the 2012 Conference.

For more information visit www.MastersGuideBook.com

The Illustrated Guide to Log Home Construction

This is a very unique book that focuses exclusively on converting the log shell into a finished home. It is a must-have guide for builders, general contractors and do-it yourself enthusiasts. It covers steps right from the foundations to ensure that the sill log will be tightly sealed, all the way to the installation of kitchen cabinets in a manner that will allow the logs to settle without damaging the cabinetry.

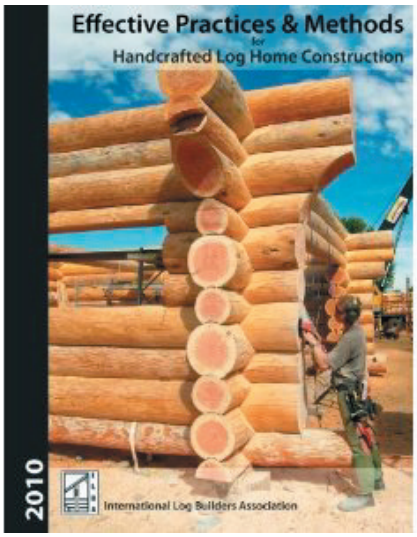
The BC LTBIA thanks Dalibor Houdek for his donation of copies of his book, **The Illustrated Guide to Log Home Construction** to the fundraising auction at the 2012 Conference.

You can order your copy through Publications Services at publications@fpinnovations.ca or through Amazon Books at www.amazon.ca.

Book In Review...

Effective Practices & Methods For Handcrafted Log Home Construction –

Reviewed by John Boys, Nicola Log Works, Merritt, British Columbia



Before I review this document I must admit a bias. I was one of many professional log builders from around the world that contributed to the long development of this excellent publication. This document has evolved over 30 years and is a consensus Effective Practices document for hand crafted scribe fit log homes.
This document and its precursor LOG BUILDING STANDARDS for Residential, Handcrafted, Interlocking, Scribe-fit Construction have guided the way our company builds log homes since 1988.
In a very concise, information packed document it captures the collected knowledge and experience of three (3) generations of professional log builders.
The document is very well put together with a clear logical layout and excellent illustrations.
Available in print from Amazon.com or as an interactive PDF from ww.logassociation.org
My preference is the interactive PDF.
For anyone considering building or living with logs, this is required reading and we refer all our leads, customers and contractors to this document.

BC LOG & TIMBER
BUILDING INDUSTRY

Membership Application/ Renewal Form

Company: _____ Contact: _____

Address: _____ City: _____ Prov: _____

Postal Code: _____ Email: _____

Ph: _____ Fax: _____ Cell: _____

Website: _____

Briefly describe your company: _____

LTBI Membership

☐ **I am a log or timber frame building company.**

Annual Membership

Building Company Membership……$350.00
plus HST……$ 42.00
Total……..$392.00

New Members Only

½ Year (joining after May 1) ……$175.00
plus HST ……..$ 21.00
Total …….$196.00

Includes

- 4 to 10 photos in online gallery with hotlink to your website;
- Online listing with hotlinks to website & email;
- Our Newsletter mailed or emailed to you;
- Use of LTBI logo in advertising;
- Access to valuable online leads.

LTBI Associate Membership

☐ **I am a supplier of materials/services to the industry.**

Associate Membership…….....350.00
plus HST……$ 42.00
Total……..$392.00

New Members Only

½ Year (joining after May 1) ……..$175.00
plus HST ……..…..$ 21.00
Total ……..…….$196.00

Includes:

- 4 to 10 photos in online gallery with hotlink to your website;
- Online listing with hotlinks to website & email;
- Our Newsletter mailed or emailed to you;
- Use of LTBI logo in advertising;
- Access to valuable online leads.;

Issues I would like the BC LTBI to address: ☐ Fibre Supply ☐ WorkSafeBC/Safety ☐ Training ☐ Marketing ☐ Insurance

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Please Read & Sign

I qualify to have voting privileges in the BC Log & Timber Building Industry Association because I own or have been working with a log building or timber framing company or associated entity for 12 consecutive months. I have also read the Privacy Policy on the LTBI website and agree to its terms.

X_____

Date: _____