



CINTRAFOR NEWS

THE CENTER FOR INTERNATIONAL TRADE IN FOREST PRODUCTS

MATERIAL USE WITHIN THE US DECK BUILDING INDUSTRY IN 2004

By Ivan Eastin, Director, CINTRAFOR, Indroneil Ganguly, CINTRAFOR graduate student and Joe Roos CINTRAFOR Research Associate.

The deck building industry is going through a period of rapid growth and dramatic change with respect to the types of materials available to build decks. A 2001 study by the Freedonia Group estimated that the demand for decking materials will increase by almost 20% between 2000 and 2010. Gone are the days when the deck builder simply had to choose between naturally durable wood species, treated wood and untreated wood when building a deck. Today, deck builders are confronted with new product choices almost daily, with many of these new products having only a limited history of in-service performance in decking applications. Certainly it is an interesting time to be a deck builder. To better understand material use and contractor preferences within the deck building industry, and to identify market opportunities for Alaska yellow cedar decking products, CINTRAFOR, in cooperation with the USDA Forest Service Wood Utilization Laboratory in Sitka, Alaska, recently completed a telephone survey of 368 home builders and deck builders across the US.

The deck building industry is dominated by small to medium-sized firms with over 63% of survey respondents indicating that their sales revenue was less than \$1 million in 2003. In contrast, over 11% of deck builders generated sales revenue in excess of \$5 million. The average deck builder constructed 93

decks with an average deck size of 456 square feet (Table 1). Since the average construction cost for a new deck was \$6,161, the average construction cost for a deck in the US was \$13.51 per square foot. Approximately 45% of the construction cost was attributed to the deck surface while another third was for the substructure and 21% was for accessories. Just over 40% of deck builder projects were new (first time) decks built on existing homes while 25% were new decks built on new homes and almost a third were replacement decks built on existing homes. The survey data clearly shows substantial differences in deck builder characteristics based on geographic location. For example, deck builders in the eastern US built more than twice as many decks per year as companies in the western US (126 decks vs. 52) although the average deck size was significantly larger in the west (530 square feet vs. 395 square feet). Despite this, the average construction cost was relatively similar between the regions (\$15.04 per square foot in the west vs. \$15.90 in the eastern US).

Material use in the substructure was dominated by treated lumber with a market share of over 90% (Table 2). Material use in deck surface applications was dominated by wood-plastic composite products followed by treated lumber and western red cedar. Finally, approximately 30% of deck accessories were built using wood-plastic composites and treated lumber while an additional 18% were built from western red cedar. Deck builders were also asked to indicate the relative importance of a variety of product attributes in their material specification decision (Table 3). The most

Table 1. Summary data for the deck building industry.

	Average
Average size of decks built	456 ft ²
Number of decks built in 2003	93
Average total construction cost of decks built	\$6,161
Average construction cost of deck structure	34.2% (\$2,108)
Average construction cost of deck surface	45.1% (\$2,776)
Average construction cost of deck accessories	21.2% (\$1,306)
Average % of new decks built on existing home	42.2%
Average % of new decks built on new home	25.2%
Average % of repair/replacement decks built	31.9%
Average number of years firm has been in business	17.8 years

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Director's Notes:

by Ivan Eastin

First Impressions of China

Following a recent trip to Shanghai and Beijing I thought that it might be useful to try to summarize my thoughts, if only to help me put things in perspective. My first impression of China was that it is a mix of the high technology of Japan and the rural poverty and technological backwardness of Africa. One minute you can be standing in the midst of the architecturally diverse skyscrapers of Shanghai and feel like you're in Tokyo or New York City. Then you can walk just a few blocks away into one of the nearby neighborhoods and feel like you've just gotten off the plane in Accra, Ghana. Without a doubt, China is an interesting and dynamic country.

Concerning Economic Growth

Clearly China will be facing some tremendous challenges to its economic growth in the future. The availability of clean water and reliable energy and raw material supplies poses a substantial challenge to China as does the daunting problem of air pollution. The air quality in Beijing is frequently so bad that visibility is severely reduced and it was difficult to see Chairman Mao's tomb from the street (a distance of only a couple of hundred yards). In addition, raw material shortages and an aging population threaten to undermine the continued growth of China. Younger workers, sensing the collapse of the state supported health, services and retirement programs, have been restricting their spending in favor of saving. In 1985 the savings rate in China was around 26% of annual income but by 2004 this had jumped to 43% of annual income. As a result, Chinese economic growth has become unbalanced, with exports making up the lions share of growth with domestic consumption lagging behind. While domestic consumption typically accounts for about two-thirds of GDP in developed countries, in China it accounted for just 42% of GDP in 2004 which was down from the 48% rate recorded in 2000. As a result of the underperformance of domestic consumption, the World Bank estimates that China's trade surplus will skyrocket from \$32 billion in 2004 to well over \$100 billion this year.



As worrying as this is, the bigger concern in China is the growing economic disparity between the rich coastal regions and the poor interior

rural regions. The number one priority of the Chinese government is providing jobs for the unemployed and underemployed. Failure to provide economic opportunities for the poor will ultimately lead to the deterioration of the social contract between the government and Chinese citizens and result in political instability. This is the fundamental factor that the US managers and policymakers must understand is driving, and will continue to drive, economic policy in China. The Chinese government is in a mad rush to provide enough jobs to allow the poor to share in the benefits of the on-going economic prosperity in China. As a result, the continued role of the Chinese government in providing subsidies and low interest loans to export oriented companies will result in the continued expansion of this sector.

Concerning the Forest Products Industry

Over the past several years I have heard a broad range of opinions voiced about China and the opportunities for exporting US wood products. Some folks are exuberant about the opportunity in China while others shrug it off with a pessimistic shake of the head. Some see a tremendous opportunity for US wood products while others only see a competitor that doesn't play by the rules.

My own assessment of China and the opportunity for US wood products is a bit more nuanced. Without a doubt opportunities exist, but US exporters must strive for a balance between optimism, objectivity and realism. For example, despite the huge effort to promote wood frame construction in China, there were only about three hundred western-style wood frame homes built in China in 2004. To say that developing this market requires a long-term commitment is a bit of an understatement, to say the least. Identifying business opportunities and acquiring the information required to make an objective assessment of the Chinese market inevitably requires that US exporters take the time to visit China. While much information can be gained from market research reports and newspapers, sound decision making ultimately requires that managers take the time to visit China themselves to assess the market opportunities. For some companies, there may be an opportunity to export their products to China. Other companies may find that, while there is not currently a market for their products in China, there is the opportunity to source components from China. Finally, other companies may conclude that there are no opportunities for them in China at all. However, I strongly believe that reaching an informed and objective assessment of the opportunities in the Chinese market must include first hand information and the experience gained from visiting

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The Center for International Trade in Forest Products addresses opportunities and problems related to the international trade of wood and fiber products. Emphasizing forest economics and policy impacts, international marketing, technology developments, and value-added forest products, CINTRAFOR's work results in a variety of publications, professional gatherings, and consultations with public policymakers, industry representatives, and community members.

Located in the Pacific Northwest, CINTRAFOR is administered through the College of Forest Resources at the University of Washington under the guidance of an Executive Board representing both large and small companies, agencies, and academics. It is supported by state, federal, and private grants. The Center's interdisciplinary research is carried out by university faculty and graduate students, internal staff, and through cooperative arrangements with professional groups and individuals.

and observing companies and managers in China. A tremendous way to visit China and assess the market opportunity first-hand is by participating in one of the China market development missions organized through the US-China Build program.

However, you need to remember that every opportunity in China comes with a potential competitive challenge and US managers must be especially cautious in protecting intellectual property in China. Make no mistake about that one fact. As of today, Chinese companies generally do not respect intellectual property rights and have few qualms about copying products and ideas. One trip to the knock-off markets in Shanghai and Beijing is enough to prove this point. A recent trip to China by representatives from APA-The Engineered Wood Association found APA grade stamps being applied to domestically produced Chinese plywood, despite the fact that no Chinese

plywood manufacturer has been approved to apply the grade stamp approval by APA.

In summary, China is a dynamic and growing market that holds potential opportunities and competitive threats for the US wood products industry. Developing a realistic understanding of those opportunities and threats requires that managers in the forest products industry develop a first hand understanding of the Chinese forest products industry. Even a single trip to China will help you to better understand the nature of the market opportunities in China and the potential challenges confronting your company.

(To learn more about the upcoming US-China Build market development mission in mid-September, visit the US China-Build website at www.us-chinabuild.org or contact the program manager, Rose Braden at 503-248-0406) ▲

CINTRAFOR GRADUATE STUDENT

The Fall 2004 edition of the CINTRAFOR News highlighted the significant role that our graduate students play in the success of CINTRAFOR. Unfortunately, we mistakenly left out one of our graduate students, Lucy Edmonds. Lucy has made a strong contribution to CINTRAFOR and RTI, and we apologize for the omission.

Lucy Edmonds (USA)

My work within CINTRAFOR consists of creating and analyzing models using Athena Environmental Impact Estimator software for the new CORRIM report. Athena software generates Life Cycle Inventory (LCI) data and impact measures for a constructed building using LCI data provided in part from earlier CORRIM research. Working with John Perez-Garcia and Bruce Lippke, my research will contribute to the new CORRIM report will provide a database of information for quantifying the environmental impacts and economic costs of wood building materials through the stages of tree planting, growing the forest, lumber manufacturing, building construction, operational use and demolition of the building.

My research interests include the relationship between people and the landscapes in which they live. My thesis research consists of a survey of land trusts in Alaska and Washington regarding their motivations, methods, and measures of success. I hope to use this research as a discussion point to further evaluate conservation efforts throughout the US and the world. I graduated with a BS in general engineering and a secondary field of organic chemistry from the



University of Illinois in Champaign Urbana in 1999. After graduating, I spent several years working as a logistical consultant with Kurt Salmon Associates and as a business consultant with Arthur Anderson. ▲

US-CHINA BUILD PROGRAM LEADS MISSION TO CHINA

By Rose Braden, CINTRAFOR Research Analyst.

In June, the US-China Build Program (USCB) led its second annual business development mission to Shanghai. Rose Braden, a CINTRAFOR employee, serves as the Program Manager for USCB, and with the USCB Shanghai office, coordinated and led the program. Representatives from five US wood products manufacturing companies and organizations, including CINTRAFOR Director Ivan Eastin and CINTRAFOR graduate student Jeff Cao, joined the week-long mission. The group met with Chinese developers, building materials distributors, representatives from a Chinese building materials testing and certification bureau, members of the local American Forest & Paper Association and Foreign Commercial Service offices, and an American attorney specializing in Chinese business law. The group also toured single family home developments Chinese wooden door, prefabricated home, and flooring factories.

Representatives from the Foreign Commercial Service, the American Forest & Paper Association, and the Shanghai Housing Industry Association provided an introduction to China and Shanghai's economies and housing markets. As one of China's fastest growing and wealthiest cities, with \$90 billion in annual GDP and a per capita income of \$5,000, housing demand and investment in construction in Shanghai is booming. In 2004, 37% of Shanghai's capital investment was spent on residential construction, and prices are following suit. In 2004 housing prices in Shanghai increased 16% city-wide and 28% in the downtown area. As a means of stabilizing housing prices, the Chinese government has started to require larger down payments, which are intended to discourage speculative short-term investors. Mr. Hu, Deputy Secretary General of the Shanghai Housing Industry Association (SHIA), added that the Chinese government has decided to delay an earlier plan to phase out of "shell", or unfinished homes from 2005 to 2010 in an attempt to keep housing relatively affordable. Mr. Hu also talked about challenges in the construction industry in Shanghai including limited building materials technology and low energy efficiency, adding that residential and commercial buildings alone consume 50% of Shanghai's energy.

and delivery time are the primary factors that determine which products are selected. Since imported products are typically more expensive than domestically produced products and they take longer to arrive at the job site after being ordered, domestically produced products tend to be used more widely. For example, one developer said that water control in concrete block buildings is a problem that he believes Tyvek building wrap would remedy, yet he doesn't use house wrap because it's expensive and has an added shipping cost. He added that there are no domestic substitutes.

Which products are selected, however, also depends on the developer's target market. If the goal is to attract wealthy homeowners, imported products have a greater chance of being used. The developers told US firms that the best way to have their products specified in Chinese projects is to build relationships with US architects in China early in the project development phase. A list of architects with offices in the US and China is available on the US-China Build website (www.uschinabuild.org) on the "Articles/Briefs" link located at the bottom of the page.

A panel of distributors selling US building materials advised companies to work with a distributor with offices in China so that the US companies have representation in the market. The distributors also emphasized the importance of keeping inventory in China to circumvent the long lead time needed to supply developers with unpredictable project schedules. Under the WTO agreement, foreign companies are allowed to store products in China's Free Trade Zones for an unlimited period of time. However, the ability to stock a wide variety of products is a difficult obstacle to overcome.

Amy Sommers, an attorney with Squire, Sanders & Dempsey L.L.P., met with the group to discuss legal issues involved in doing business in China. Ms. Sommers emphasized the importance of protecting intellectual property by copyrighting your product and potentially your brand immediately. China's copyright law follows a "first to file" ruling which upholds the copyright of the company who files a copyright first as opposed to a "first to market" requirement in the US.

Niche Markets for US Wood Product

Site visits to Sheshan Golf Villas and Xijiao Gubei International Visits, luxury developments of single family wood and concrete homes, provided a look at the construction quality and types of products used in high-income single family homes. Sheshan is the site of the first US glulam bridge in China and

4 Building Materials Selection Process

In a panel discussion with developers, the delegation discussed the product selection process. All of the developers agreed that price



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also includes treated southern yellow pine walkways and clubhouses featuring heavy timber beams. A second bridge is scheduled to be completed at Sheshan this year.

Annually, 300 wood frame homes are built in China, four of which are at the Sheshan and Xijiao developments. Acceptance of wood frame homes among consumers is still limited due to concern about longevity and fire susceptibility. While the market for framing lumber in China is not promising due to the limited demand for wood frame houses and competition from Canadian and Russian suppliers, there are opportunities for other products. Chinese developers and designers are becoming more familiar with the benefits of glulams as a result of the seminars and promotion work by APA-The Engineered Wood Association, the American Forest & Paper Association, and the American Softwoods campaign. Treated southern yellow pine boardwalks and footbridges at residential developments and parks are becoming more popular and the specie faces no domestic competitors. Interest in glulams and heavy timbers for use in bridges, clubhouses, and public buildings is also increasing. Another emerging market is wooden roof trusses used with concrete construction, which can significantly reduce the construction time and weight load associated with concrete roofs. Continued education and promotion work is still needed however. Interest in wood for interior design is also increasing and response to Western species at the American Softwoods Booth in Dalian in March and presentations at the AHEC Annual meeting in Beijing in May was positive. There is also ongoing interest in US species in China for furniture and door manufacturing. The May mission group visited several door, flooring, and

DIY component factories during the tour, all of whom use North American softwoods.

During the week of September 19, 2005, the US-China Build Program will conduct its fourth annual Fall Sales Mission and Seminar Series. Chinese audiences of developers, architects, and traders in Shanghai, Chongqing, and Beijing will hear presentations about US building materials and construction technologies. Last year's seminars were attended by 400 Chinese construction professionals, and US participants estimated that they would gain a projected \$5 million in one-year sales as a result of their participation in the mission. Company speaking slots fill quickly, so companies are encouraged to register soon. The participation fee is \$650 for Evergreen Building Products Association or American Forest & Paper Association members, \$750 for non-members. For more information about the mission and a draft schedule, visit the USCB website at: www.uschinabuild.org/Events/events.htm.

The US-China Build Program is the result of a US Department of Commerce Market Development Cooperators Program grant awarded to the Evergreen Building Products Association in 2001. The US-China Build Program is also made possible with additional financial and staff support from the Center for International Trade in Forest Products; the State of Washington Community, Trade & Economic Development, the American Forest & Paper Association, the Softwood Export Council, and APA-The Engineered Wood Association. For more information about the US-China Build Program, please visit their website at www.uschinabuild.org or contact Rose Braden at 503-248-0406. ▲

US Deck Building continued from page 1

important attributes in the material specification process were long life, visual appearance and consistent material quality. In contrast, the lowest rated attribute was low price. In other words, deck

builders base their material purchase decisions less on price, preferring to focus on material quality. This suggests that home owners are less price sensitive in the purchase of a deck, preferring high quality, durability and ease of maintenance over low price.

Table 2. End-use application has a substantial impact on the type of material used.

	Substructure	Surface	Accessories
Alaska Yellow Cedar	0.0	0.9	0.9
Western Red Cedar	0.7	10.8	17.5
Redwood	0.0	5.3	6.6
Treated Lumber	91.2	28.3	27.8
Untreated Lumber	6.0	1.5	1.8
Wood-Plastic Composite	0.6	39.6	29.5
Tropical Hardwood	0.7	5.8	4.4
Plastic	0.0	4.2	4.8
Other	0.8	3.5	5.6

The survey data was used to develop a set of perceptual maps. Perceptual mapping is a graphical technique used to visually display consumer perceptions of products. Typically the position of a product is displayed relative to competing products along a pair



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