



Taiwan



COST COMPARISON: WOOD-FRAME vs. TRADITIONAL CONSTRUCTION

Edited by:

David Cartwright
Marketing Consultant

March 2004



Canada Wood
加拿大木业协会



MARKET OPPORTUNITIES FOR WOOD-FRAME CONSTRUCTION

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Table of Contents

Page

1.-	Executive Summary	
2.-	Introduction	
3.-	Taiwan's housing market	
3.1	Government support	
3.2	The Green Building movement	
3.3	Lifestyle and familiarity	
3.4	Vacation homes	
3.5	Retirement communities	
4.-	Wood-frame housing market	
4.1	The role of government	
4.2	The role of the private sector	
4.3	The role of the transport system	
4.4	Development of farmland	
4.5	Principal geographic growth centers	
4.5.1	Northern Region	
4.5.2	Central Region	
4.5.3	Southern Region	
5.-	Wood truss market	
6.-	Cost comparison	
6.1	Single-family residence	
6.2	Apartment truss roof	
7.-	Conclusions	
8.-	Proposed Market Development Program	

List of Tables

Table 1	Number of residential housing by region and type of residence
Table 2	Materials takeoff, wood-frame design
Table 3	Cost comparison, single-family residence
Table 4	Cost of the apartment peaked roof built in concrete
Table 5	Cost of the apartment peaked roof built in wood

List of Charts

Chart 1	Building permits issued, 1993-2003
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List of Figures

Figure 1	Taiwanese single-family residence, view 1
Figure 2	Taiwanese single-family residence, view 2
Figure 3	Taiwanese single-family residence, view 3
Figure 4	Taiwanese single-family residence, view 4
Figure 5	Taiwanese single-family residence, First Floor Plan
Figure 6	Taiwanese single-family residence, Second Floor Plan
Figure 7	Taiwanese single-family residence, Third Floor Plan
Figure 8	Taiwanese single-family residence, Roof Plan

- Figure 9 Taiwanese single-family residence, Wood-frame
Figure 10 Taiwanese single-family residence, Wood-frame, Level 1
Figure 11 Taiwanese single-family residence, Wood-frame, Level 2
Figure 12 Taiwanese single-family residence, Wood-frame, Level 3
Figure 13 Taiwanese single-family residence, Wood-frame, Roof Plan
Figure 14 Taiwanese single-family residence, Wood roof truss design
Figure 15 Taiwanese single-family residence, Wood roof truss N° 1
Figure 16 Taiwanese single-family residence, Wood roof truss N° 2
Figure 17 Apartment roof drawing used for the cost comparison
Figure 18 Wood truss designed for the apartment roof

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1.- Executive Summary

This report has been prepared in support of Canada Wood's market development program in Taiwan. It provides an overview of the opportunities that exist for the use of wood-frame building technology and materials as well as wood roof trusses for use in the construction of roofs. A very detailed cost comparison of a single-family residence built in reinforced concrete and in wood is provided. The cost advantages of building in wood are quantified.

During the past decade there has been a rising interest in the North American style of wood-frame housing. It is considered by many Taiwanese to be a technologically advanced form of construction, one that reflects the high standard of living common in North America, and an earthquake resistant construction system.

In Taiwan the construction of residential wood-frame structures has tended to be relegated to the rural areas, particularly for recreational residences. The use of wood to frame houses in urban areas has faced restrictions imposed by building codes that only consider non-wood materials. It has also met with resistance from buyers due to fire and durability concerns, particularly termite and humidity issues.

The development of a wood-frame code for Taiwan was considered an important step in the introduction of wood-frame construction. With significant input from Canadian specialists this was accomplished and in May 2003 the Taiwan Timber Code was formally approved. It is expected that this step will lead to significantly increased use of this form of construction. The rising per capita income, the desire for a higher standard of living, and given that a large number of Taiwanese have trained and lived in North America, is creating a rising market for detached single-family residences designed and built in wood-frame.

The cost of residential construction remains one of the more important considerations to developers, builders and homebuyers. While the use of reinforced concrete is considered to be a cost effective form of construction, there is a general lack of comparable cost information for wood structures.

The research undertaken entailed two cost comparisons. The first comparison was the cost of building a single-family residence to the lockup stage in concrete and in wood. The second entailed a roof constructed out of steel trusses and wood trusses.

The single-family residence selected for the cost comparison entailed a 2,850 square foot, three floor, single-family residence. The results of the cost analysis undertaken by Mr. Tseng Chuan, Jin Hwa Design Consultants, Taipei indicate a significant cost savings when building the structure in wood rather than in reinforced concrete. The cost of the structure built in reinforced concrete was NT\$3,146,177 while the comparable cost for the wood-frame structure was NT\$2,565,186, an 18.47% savings. In order to provide a valid cost comparison the interior finishing of this residence was also quantified. The cost

of interior finishing the reinforced concrete building was NT\$1,734,755 while for the wood-frame building it was NT\$1,917,281.

The overall cost of building this particular residence in wood-frame (to the lockup stage) when compared to the reinforced concrete building, offers the builder a savings of NT\$1,492/m² that corresponds to an 8.16% overall savings.

The results of the roof cost comparison (concrete vs. wood truss) indicate that a builder could benefit from a 32.9% savings when building with wood trusses. This corresponds to NT\$681/m². However, for this to become a reality, the truss industry in Taiwan will have to experience significant development and be able to produce trusses at prices that are similar to those offered by the Canadian truss industry.

The significant cost advantages of building roof systems and residences in wood warrant further discussion by interested parties including builders, developers and buyers. The results should be made known on a broader scale. This can be done by distributing widely the information contained in this report, publishing short articles on the subject and in seminars organized specifically for this purpose. A controlled demonstration project may be warranted in order to document more conclusively the cost advantages of residential wood frame construction and wood truss roof systems.

For further information please contact the author, Mr. David Cartwright, at
david.cartwright@gryphonresources.com