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A Comparative Assessment of the North American and Japanese 2 x 4 Residential Construction Systems

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Abstract

Despite Japan's relatively small size, residential housing starts have exceeded those in the US throughout the 1990s, totaling 1.57 million units in 1994. However, the cost of residential housing in Japan is substantially higher than in other developed countries. In an effort to address this problem, the Japanese Ministry of Construction (JMOC) recently announced an action program to reduce the cost of residential housing 33% by the end of the century. Numerous factors have been cited as contributing to the high cost of residential housing in Japan, including high labor costs and low labor productivity, a lack of skilled carpenters familiar with the 2x4 system, non-standardized building materials, a lack of competition in the construction industry, restrictive building regulations, high building material costs, inadequate construction management systems, and an inefficient and extended distribution system from imported building materials. Many industry observers in both the US and Japan feel that one way to reduce residential construction costs would be through the adoption of North American 2x4 construction technology as an alternative to the more traditional but less efficient post-and beam construction technology.

US construction professionals familiar with the Japanese construction industry indicate that the small segment of Japanese contractors currently building 2x4 houses have modified the 2x4 system to fit their traditional construction system. These modifications have resulted in a hybrid construction technology that fails to achieve the production and cost efficiencies inherent in the North American system. Exploratory interviews with building professionals who have worked on residential construction projects in both the US and Japan identified a number of areas where the Japanese 2x4 construction system differs from its US counterpart in terms of these efficiencies. The primary areas where significant differences were noted included foundations, interior wall finishing, ceiling framing techniques, finish carpentry, labor specialization, and project management skills.

In order to take full advantage of the efficiencies inherent in the North American 2x4 construction system, it is important that Japanese designers, contractors, and carpenters develop a basic understanding of the North American 2x4 system. This implies that the transfer of 2x4 technology should occur at a variety of skill levels within the Japanese residential housing industry. At a minimum it is important that four groups be included in a any 2x4 technology transfer programs: designers/architects, carpenters, construction site supervisors, and project managers.

The process of effectively transferring 2x4 construction technology requires that US contractors and carpenters be allowed to work with their Japanese counterparts. However, the perceived and real difficulties involved in obtaining work visas for US construction professionals in Japan have effectively restricted this component of technology transfer. A review of existing policies related to the issuance of work visas for US construction professionals and skilled workers would support total technology transfer and provide benefits for both the residential construction industry and home buyers in Japan. This strategy would provide the basis for rationalizing construction costs and management systems within the Japanese residential construction industry.

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