

**Testimony of Marty Mullaney, Satellite Shelters, Inc.
On Behalf of the Modular Building Institute**

**Committee on Indian Affairs
United States Senate**

**Hearing on Bureau of Indian Education – School
Construction and Facility Issues**



Saturday, September 11th, 2010

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On Behalf of the Modular Building Institute
U.S. Senate Committee on Indian Affairs
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Chairman Dorgan, Vice Chairman Barrasso, and members of the committee, I am Marty Mullaney, President of Satellite Shelters, Inc. a national provider of commercial modular buildings headquartered in Plymouth, Minnesota. I am testifying today as the past president and on behalf of the Modular Building Institute – a national non-profit trade association established in 1983 representing commercial modular construction companies.

MBI appreciates the opportunity to speak to the Committee on ways to help provide high quality schools to remote locations in an efficient and timely manner.

Commercial modular buildings are non-residential structures, 60 percent to 90 percent completed off-site in a controlled environment, and transported and assembled at the final building site.

About two years ago, our industry began conversations with the Bureau of Indian Affairs on how we could help the agency better achieve its goals. A large part of that conversation was educating key staff on the fact that the modular construction industry provides both temporary facilities as well as permanent structures.

As a result, the BIA recently issued two RFPs specifically for permanent modular campuses in Kaibato and Wide Ruins Arizona. In fact, our industry has successfully delivered on many permanent school construction projects across the country including several in remote locations.

I'd like to discuss two main advantages of modular schools with you today:

- 1) Time advantages of the modular construction process
- 2) Ability to deliver facilities in remote locations in an efficient manner.

Unique to modular construction is the ability to simultaneously construct a building's floors, walls, ceilings, rafters, and roofs. During site-built construction, walls cannot be set until floors are in position, and ceilings and rafters cannot be added until walls are erected. On the other hand, with modular methods of construction, walls, floors, ceilings, and rafters are all built at the same time, and then brought together in the same factory to form a building. This process often allows modular construction times of half that of conventional, stick-built construction.

And because construction occurs in a controlled environment, weather delays are minimized and the construction season is extended, even into harsh winter months. As a result, the typical modular construction schedule is about 30% shorter than a comparable stick-built project.

Recently, the National Institute of Standards and Technology (NIST) requested that the National Research Council (NRC) appoint a committee of experts to provide advice for advancing the competitiveness and productivity of the U.S. construction industry. The committee identified five breakthroughs to improve the efficiency and productivity of the construction industry, including "Greater use of prefabrication, preassembly, modularization, and off-site fabrication techniques and processes."

Advantages of modular construction cited in the NIST report include:

- More controlled conditions for weather, quality control, improved supervision of labor, easier access to tools, and fewer material deliveries (CII, 2002);
- Fewer job-site environmental impacts because of reductions in material waste, air and water pollution, dust and noise, and overall energy costs, although prefabrication and related technologies may also entail higher transportation costs and energy costs at off-site locations;
- Compressed project schedules that result from changing the sequencing of work flow (e.g., allowing for the assembly of components off-site while foundations are being poured on-site; allowing for the assembly of components off-site while permits are being processed);
- Fewer conflicts in work crew scheduling and better sequencing of crafts persons;
- Reduced requirements for on-site materials storage, and fewer losses or misplacements of materials; and
- Increased workers safety through reduced exposures to inclement weather, temperature extremes, and ongoing or hazardous operations; better working conditions (e.g., components traditionally constructed on-site at heights or in confined spaces can be fabricated off-site and then hoisted into place using cranes) (CURT, 2007).

The summary to this report is included as **Attachment One**.

Another key advantage to modular construction is our industry's ability to deliver facilities in remote locations. Because a majority of the structure is built off site, finding a skilled labor force in remote regions is less of a concern. However, the modular industry can work with local general contractors for portions of the site work, foundations, and set-up of the building to ensure local labor benefits from the project.

Our industry has successfully placed buildings in all areas of the globe, from the driest deserts in South America to the most severe winter climates in northern Canada and Russia. It is because of our ability to deliver to remote locations and our shorter construction schedule that many are looking at our industry to play a big role in rebuilding efforts in places like Haiti and Chile.

The MBI represents about 300 companies all across North America and is well positioned to help on any school project. **Attachment Two** shows a map of MBI member locations.

Conclusion:

The modular construction industry is well positioned to help deliver quality school projects to remote locations in a much shorter time frame than conventional construction projects. The industry can deliver both temporary facilities and permanent campuses built to meet all local, state, or tribal requirements. We believe our record of performance on past projects should instill a level of confidence in the Committee as well as the BIA that considerations for future education buildings and other applications will include a modular solution. On behalf of the MBI, as well as Satellite Shelters, I thank you for your time and attention.

Summary

In 2008, the National Institute of Standards and Technology (NIST) requested that the National Research Council (NRC) appoint an ad hoc committee of experts to provide advice for advancing the competitiveness and productivity of the U.S. construction industry. The committee's specific task was to plan and conduct a workshop to identify and prioritize technologies, processes, and deployment activities that have the greatest potential to advance significantly the productivity and competitiveness of the capital facilities sector of the U.S. construction industry in the next 20 years.¹

Because the concept of *productivity* can be difficult to define, measure, and communicate, the committee determined that it would focus on ways to improve the *efficiency* of the capital facilities sector of the construction industry. It defines *efficiency improvements* as ways to cut waste in time, costs, materials, energy, skills, and labor. The committee believes that improving efficiency will also improve overall productivity and help individual construction firms produce more environmentally sustainable projects and become more competitive.

To gather data for this task, the Committee on Advancing the Competitiveness and Productivity of the U.S. Construction Industry Workshop commissioned three white papers by industry analysts and held a 2-day workshop in November 2008 to which 50 additional experts were invited. A range of activities that could improve construction productivity were identified in the papers, at the workshop, and by the committee itself. From among these, the committee identified five interrelated activities that could lead to breakthrough improvements in construction efficiency and productivity in 2 to 10 years, in contrast to 20 years. If implemented throughout the capital facilities sector, these activities could significantly advance construction efficiency and improve the quality, timeliness, cost-effectiveness, and sustainability of construction projects. Following are the five activities, which are discussed in the section below entitled "Opportunities for Breakthrough Improvements."

1. Widespread deployment and use of interoperable technology applications,² also called Building Information Modeling (BIM);
2. Improved job-site efficiency through more effective interfacing of people, processes, materials, equipment, and information;
3. Greater use of prefabrication, preassembly, modularization, and off-site fabrication techniques and processes;
4. Innovative, widespread use of demonstration installations; and
5. Effective performance measurement to drive efficiency and support innovation.

The five activities are interrelated and the implementation of each will enable that of the others. Deploying these activities so that they become standard operating procedures in the capital facilities sector will require a strategic, collaborative approach led by those project owners who will most directly benefit from lower-cost, higher-quality sustainable projects, namely the large corporations and government agencies that regularly invest hundreds of millions of dollars in buildings and infrastructure.

¹ The *capital facilities sector* includes commercial (including high-rise and multifamily residential), industrial, and infrastructure projects. It does not include single-family and low-rise residential projects.

² *Interoperability* is the ability to manage and communicate electronic data among owners, clients, contractors, and suppliers, and across a project's design, engineering, operations, project management, construction, financial, and legal units.



About the Modular Building Institute:

- Non-profit trade association founded in 1983
- Represents 300 companies in North America
- 1,500 member locations/branches
- Commercial modular construction
- Works closely with BIA and Dept. of Education Impact Aid Program

Modular Construction Defined

A resource efficient,
off-site project delivery method
to construct code-compliant buildings
in a quality-controlled setting.



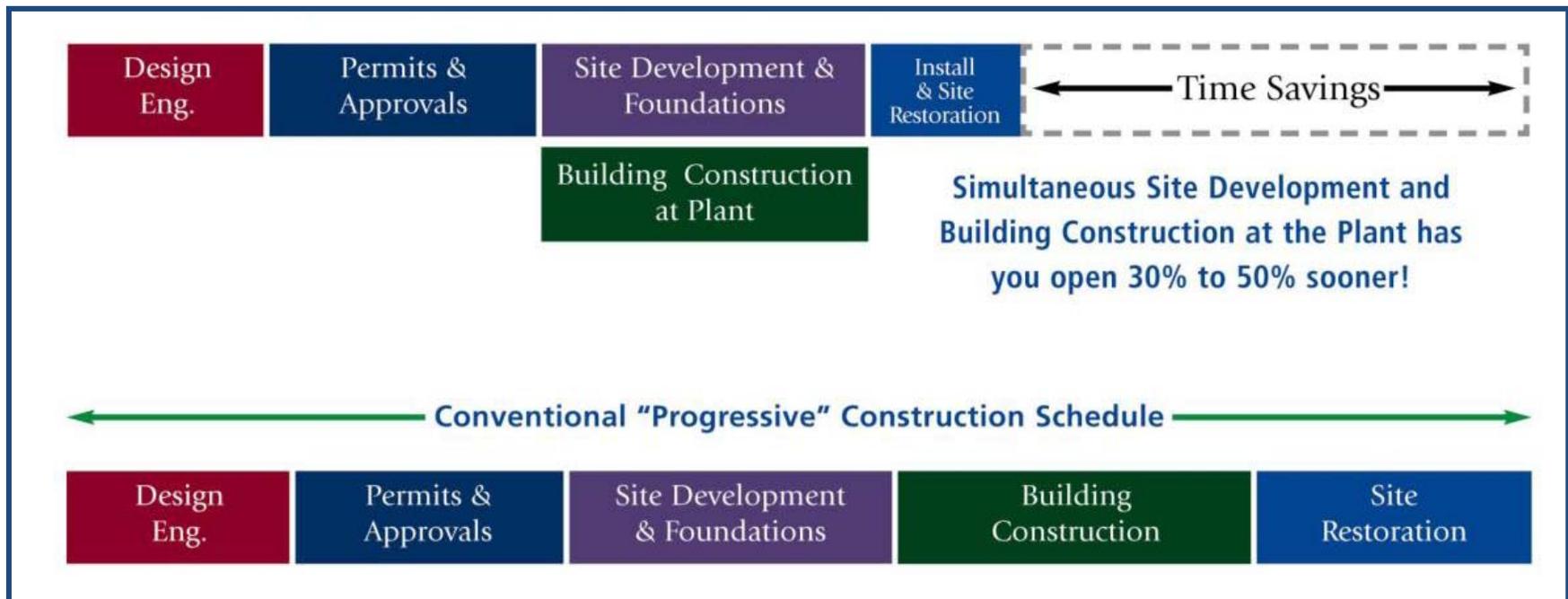
Temporary Office Space



Permanent Medical Facility

Resource Efficient

Modular construction saves on time/labor



Quality Control

Manufacturing building components off-site provides for more controlled conditions and allows for improved quality and precision in the fabrication of the component”–

Advancing the Competitiveness and Efficiency of the U.S. Construction Industry;
National Research Council -
2008



Improving Construction Efficiency & Productivity with **Modular Construction**

Prepared by

The Modular Building Institute
944 Glenwood Station Lane, Suite 204
Charlottesville, VA 22901 USA

with Excerpts from:

“Advancing the Competitiveness and Efficiency of the U.S. Construction Industry,” a report issued by the National Research Council

Recently, the National Institute of Standards and Technology (NIST) requested that the National Research Council (NRC) appoint an ad hoc committee of experts to provide advice for advancing the competitiveness and productivity of the U.S. construction industry. The committee’s specific task was to conduct a workshop to identify and prioritize technologies, processes, and deployment activities that have the greatest potential to advance significantly the productivity and competitiveness of the capital facilities sector of the U.S. construction industry in the next 20 years. The committee identified five breakthroughs to improve the efficiency and productivity of the construction industry, including breakthrough number three: “Greater use of prefabrication, preassembly, modularization, and off-site fabrication techniques and processes.”

The modular construction industry has made significant advances in implementing processes and materials to build and deliver more sophisticated and complex facility types. More and more customers are turning to modular for multi-story, steel framed structures, healthcare facilities, educational structures, and large scale military projects. Always known for its time saving advantages, modular is now being recognized for being a more environmentally-friendly process and long term solution by many agencies and organizations as well.

This report includes portions of “Advancing the Competitiveness and Efficiency of the U.S. Construction Industry,” a NIST/NRC study, along with supplemental supporting information, reprinted under a licensing agreement with the National Academies Press (license # 2330810884814).

Inherently Greener

“The life cycle expectancy of modular construction is the same as conventional, and in a world where sustainability is gaining momentum each day, there are also several basic principles intrinsic to the modular construction process that make it more eco-friendly than conventional construction.”

American Institute of Architects (AIA) -“External Issues & Trends Affecting Architects, Architectural Firms, and the AIA” -February 2008

Inherently Greener

Resource: How modular construction dovetails into the LEED Rating System

Available at
modular.org



**Modular Building
and the USGBC's LEED™
Version 3.0 2009 Building Rating System**

Prepared for

The Modular Building Institute
944 Glenwood Station Lane, Suite 204
Charlottesville, VA 22901



Prepared by

Robert J. Kubet, AIA, LEED AP
Susterra/Assurance International, Inc.
5142 Friendship Avenue
Pittsburgh, PA, 15224

and

137 Golden Isles Drive
Hallandale, FL, 33009

This report was prepared at the request of the Modular Building Institute (MBI). It is intended to provide the membership of MBI and other interested stakeholders with an overview of how the Modular Building Institute's current practices and products can benefit from an awareness of the US Green Building Council's Leadership in Energy and Environmental Design (LEED™) Building Rating System. Information in this document represents the author's best attempt to align the modular building industry with the Prerequisite and Credit requirements imbedded in LEED. The interpretations herein are those of the author and do not represent any official posture of the US Green Building Council beyond those contained in the Reference Guide to LEED for New Construction and Major Renovations, Version 3.0, 2009.

It is recognized that modular building components and finished modular building units can be a part of any LEED design and construction effort. This report is limited to LEED for New Construction and Major Renovations, applied to commercial construction, and LEED for Schools. The literature shows there is a growing awareness of the environmental benefits of modular construction in the residential sector. LEED for Homes has emerged from its pilot phase and is currently in use. Most of the comments and observations of this report can be applied to LEED for Homes.

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October



November



December

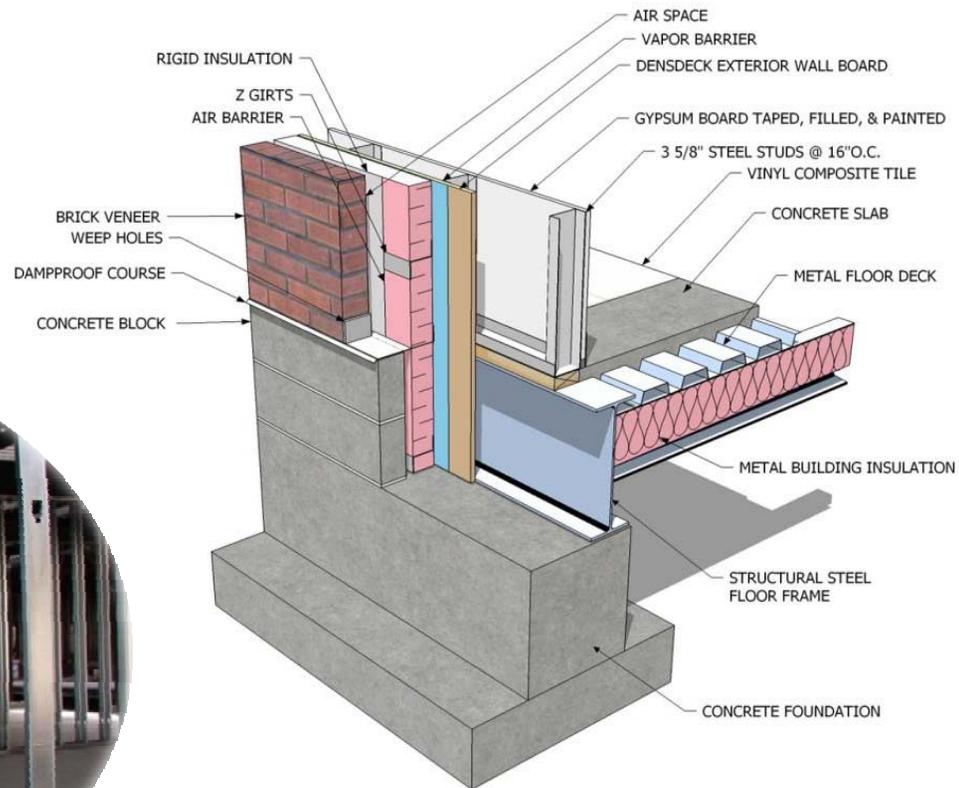


January



Durability

No
restrictions on
materials –
Type II or
Type V



Education Offices / Classrooms



Public Health / Medical Services



Public Health



Public Safety



Community Centers



Community / Recreational



Administrative / Office





Contact Information

Tom Hardiman, Executive Director
944 Glenwood Station Lane, Suite 204
Charlottesville, VA 22901

888-811-3288 x158

tom@modular.org • www.modular.org