

***PREFABULOUS* SYSTEM-BUILT BUILDINGS**

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**DEMONSTRATION/DISCUSSION**

**This module is part of the Architecture Series. It is to be presented in one session as part of the Architecture Path to foment understanding of how creative Architecture, blended with solid Engineering and leading-edge Construction methodologies form a more efficient building approach, saving time, resources, energy, the environment, and money.**

**Educational Goals**:

 Students will:

* Learn about a more advanced building method for the great part of buildings built today
* Learn what “Pre-Fab” means and its impact on construction
* Discover how factory-built systems can solve many problems and help the environment
* Be introduced to recycling on a very large scale, where people take old shipping containers and re-use them for new living and working environments
* Learn how critical-thinking, problem-solving methods solve existing problems with new ideas

Ov**erview**: This module consists of a Powerpoint with a definition of Pre-Fabrication, a bit of the history of pre-fab, and some current examples of how people around the world use pre-fab to construct buildings which are more efficient, safer, stronger, cheaper, faster, and more environmentally friendly.

This module, being part of the Architecture Path, is mostly meant to be read aloud, viewing the videos, and discussed as a group.

**Content:** The main content focuses on the idea of pre-constructing pieces and parts of buildings in a factory first, then transporting these pieces out to the job site to be assembled together and finished to make a complete building. A large portion of the content includes videos about recycling old shipping containers into new buildings, thus saving the environment of thousands of discarded steel boxes, and relieving the need for new materials to produce homes and offices for people to use.

**Time**: Approximately 1-1.5 hours. Mentor should foment discussion of each of the ideas introduced by asking the students what they saw, what they thought the positive impacts would be on the environment and society, whether they would live or work in such buildings (why and why not?), and what do they think of this approach as a solution to the need for more buildings. Mentor should feel free to experiment with the ideas and see what else the students might envision regarding pre-fabrication in their daily lives.

**Materials Needed**:

* Computer and Projector

**Directions**: Very simple…run the Powerpoint on the projector, follow it, ask questions about what they are seeing, and inform them of how creative this is as a solution to building needs. The main thing the student’s take away is to understand that we cannot keep on using wood, steel, masonry, and other resources without thought to recycling and becoming more effective and efficient in our building practices.

**Topics to Discuss**:

Discuss how pre-fab works—raw or recycled materials enter one end of a factory and exit the other

 end a finished product—similar to any other factory (cars, refrigerators, t.v.’s, etc)

 Discuss the fact that the recycled shipping containers can be had for very little money, re-designed and re-configured for low cost into new structures which can then be transported anywhere in the world

Also, address the stigma in this country of the old method of factory-building, namely mobile homes and trailers, which have always had a negative connotation and compare how the new methods are different and superior. Yet, it is hard to overcome the stigma of poverty associated with the old methods.

As a discussion point, ask if any of the students have ever seen a pre-fabricated home or building. Where, and what was their impression of it. Did they know that on the East Coast of the U.S. many motels, apartments, and homes are built in a factory? In other parts of the world this is a standard method. In fact, the cabins on cruise ships in Europe are built in factories and then assembled into the hull at the shipyard

If your class seems especially bright, perhaps do research on factories around the world to see what is new and how this technology and approach is being done in other countries.

Ask questions for further research the positive impacts of the use of materials (factories waste less than 1% of the raw materials which come in—using that waste in their heating plants), the enhanced economics and reduced environmental impact of building a structure which only take 3-4 weeks on-site vs. 9-12 months, and the efficiency of factory-built methods.

M**entor Notes**: This is really quite simple, but it is incumbent upon the Mentor to present an atmosphere of excitement at the ways people come up with to make an existing approach to construction better. The real problem with factory-built construction is the perception of cheapness which exists in this country because of the old products which used to be produced. In other countries without that prejudice, pre-fab is taking hold with large shares of the market as it has proven to be more effective and efficient, saving time, money, and the environment , to produce superior structures which are safer, stronger, and cheaper. So, what is the cost of prejudice in our approach to resource management? That is why this module is categorized under the Architecture Path, yet relates equally to Engineering and Construction, as it is a blend of all three working together to create real solutions to real problems. It is meant expose the students to the critical-thinking, problem-solving process to encourage them to solve existing problems with new thought.