Collaborative Design Interface

Design with a prefabricated strategy in mind

CLARK PACIFIC

Introduction

The construction industry is one of the largest in the world, with around $10 trillion spent on construction related goods and services each year. Despite this statistic, many of us are left wondering: what is holding back the transformation of the construction industry? Despite the technology, processes and innovation available today, the construction industry continues to fall behind other sectors when it comes to productivity.

Although the construction industry has never been one to quickly embrace change, it is upon us. Outside factors such as the skilled labor shortage, tight schedules and budget overruns are negatively impacting the industry. Increasingly, owners and especially owner-occupiers are expecting a design and construction process that is efficient, productive and cost effective to a degree that traditional construction methods can't deliver.

Conventional structural systems lead to conventional industry results. In its 2015 report on Industry Productivity, McKinsey Productivity Sciences Center stated the following:

"The concept-and-design phase is where the most project value can be gained (or lost)."[2]

To address these known problems, owners have recognized the value of bringing industry thought leadership into a project early, resulting in the use of design-build project delivery. However, even on design-build teams there is difficulty in incorporating prefabrication into the designs even though most in the industry recognize the current delivery model is not as productive or efficient as it can be. This can be attributed to common misconceptions and a general lack of knowledge of prefabrication.

Many designers, builders, and owners recognize the identified industry problems such as:

- **98% of projects incur cost overruns or delays**
- **The average cost increase is 80% of original value**
- **The average slippage is 20 months behind original schedule[1]**

[1]Source: "The construction productivity imperative" by Sriram Changali, Azam Mohammad, Mark van Nieuwland; McKinsey Productivity Sciences Center, June 2015. Companies' public annual reports; IHS Herold Global Projects Database, November 19, 2013; press releases
[2]Source: "The construction productivity imperative" by Sriram Changali, Azam Mohammad, Mark van Nieuwland; McKinsey Productivity Sciences Center, June 2015, pg. 5.

Design Teams are Key
to Driving Awareness and Adoption

It is widely known that prefabricated building systems can help overcome many of the challenges of the industry today and yet it has been slow for the industry to adopt. So why hasn't the industry caught up? Recent research shows that among all stakeholders, the primary reasons for not using prefabricated and off-site construction are:

- The architect did not design it into the project (46 percent)
- Unfamiliarity with the process (34 percent)[3]

To address these issues and accelerate the learning curve of designing with precast and prefabrication strategies Clark Pacific has teamed with Certain Measures to develop the **Collaborative Design Platform (CCDI)** to provide designers with schematic drawings for student housing.

The Collaborative Design Interface accelerates the learning curve for designing with precast and prefabrication strategies and allows the design team to move rapidly and respond to the Owners questions in real time, positioning the design team as the thought leader in prefabricated building strategies.

Solution:
Collaborative Design Interface

Our design interface tool is a rapid design tool that provides schematic student housing designs which meet owner-driven requirements and design objectives, all the while incorporating prefabrication strategies. Unlike the conventional design process, our design interface allows teams to take advantage of prefabrication and delivers design teams a precast-ready schematic building.

With a precast prefabricated structural design in hand, designers can then focus on building aesthetics and unique project needs that add value. The tool will help keep designers on the cutting edge of technology and able to increase project value for owners.

[3]McGraw Hill Construction, "Prefabrication and Modularization: Increasing Productivity in the Construction Industry," 2011

Increase Design Efficiency
while Leveraging Standards

The Collaborative Design Interface gives design teams and construction professionals a tool to rapidly share design and construction options, review and compare multiple options, and collectively analyze the information as a team. With design tools that leverage standards, the interface allows the design team to move rapidly and respond to the owner's questions in real time, positioning the design team as the thought leader in prefabricated building strategies.

Once the design decisions are made, Clark Pacific engineers the manufacture-build process. In addition to budget and schedule certainty, precast prefabricated solutions have other far reaching benefits such as reduced site-impacts, healthy buildings and resilience that both owners and design teams benefit from.

"When you have a big building, there are a lot of repetitive elements that you can prefabricate in a factory, and anything that you can prefabricate, unless it has to be trucked an enormous distance, normally is very cost effective and the quality is higher. If you can put the proper design content for prefabrication into the design from the beginning, you can achieve a very significant improvement."

Paul Teicholz, Professor of Civil and Environmental Engineering, Emeritus; Stanford University

Collaborative Design Interface Specs:

The Collaborative Design Interface enables designers to rapidly generate dormitory schematic massing concepts that satisfy a client's layout requirements while taking advantage of Clark Pacific's prefabricated precast components.

Features

- Easy input of design parameters
- Rapid development of building massing
- Rapid development of structural precast solutions
- Output of high-level quantities for rough estimating
- Analysis and visibility into prefab solutions
- Analysis and visibility into performance metrics that impact design and costs

User Experience

- Easy to use while gaining insight into building design, fabrication, and costs
- Design flexibility to quickly try options
- Easy to understand the design, metrics, and analysis
- Analysis that supports ways to improve designs without compromising design integrity

Industry Benefits

Accelerate the design process

- Shorter time to market
- Design more and faster
- Increases design selection success

Increase Optioneering

- Integrate with precast and prefabrication knowledge
- Rapid ROM Estimates and High-level Analysis
- Quality improvements in the design-build process

Increase efficiency

- Reduce rework and lead time
- Value plan rather than value engineer
- Leverage best practices and standards

Summary

The industry needs better and faster ways to include prefabricated options in the conceptualization phase of a project. The Collaborative Design Interface gives designers and engineers a head start on a building project, by leveraging best practices and standards while incorporating prefabricated building systems to take advantage of off-site construction benefits.

The interface allows for rapid iteration of design which is essential to successful project pursuits as it increases design-build efficiency and productivity. The development of the platform enables a wide spectrum of design teams to incorporate solutions that address our industry's largest problems.

For more information, contact us today:
www.clarkpacific.com/contact/