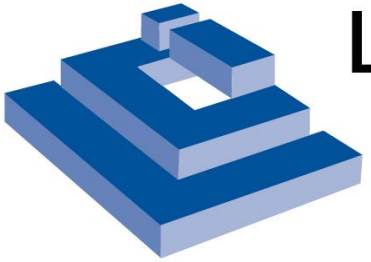

Lean Construction Institute

Building Knowledge in Design and Construction

Provider Name: Lean Construction Institute
Provider Number – H561

Course Name: Can We Just Define Lean Design, Already?

Course Number – 20121012AM1

Course Speakers: Ralf-Uwe Modrich, Graham Sinclair , David E. Wright, P.E., Dana Hunter, G. Douglas Gray, Timothy Ott

Course Date: October 12, 2012

Credit(s) earned on completion of this course will be reported to AIA CES for AIA members. Certificates of Completion for both AIA members and non-AIA members are available upon request.

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Questions related to specific materials, methods, and services will be addressed at the conclusion of this presentation.

Copyright Materials

Course Description

EVIDENCE BASED DESIGN AS PART OF A LEAN PROJECT DELIVERY IN THE CATHEDRAL HILL HOSPITAL PROJECT

While the methods of Lean Project Delivery (LPD) are becoming more widespread and sophisticated, a significant gap remains between Lean design and Lean construction. In the Integrated Project Delivery (IPD) setting, design and construction overlap and intertwine for a significant portion of the project; therefore, it is important to understand how these two can interrelate and enhance the Lean Project Delivery setting. This presentation also explores a relatively new field of study, Evidence-Based Design (EBD), that emphasizes the use of objective research data to inform design decisions in a very systematic way, and how EBD complements and enhances the Lean Project Delivery process.

EBD, which is currently employed in many healthcare projects, uses established credible research, or evidence, to inform the design of the building from concept through construction and into occupancy. Topics discussed will include EBD principles utilized in the Cathedral Hill Hospital project, a LPD venture, and how the architect has successfully integrated contractor input into user group dialogue. Furthermore, the presenters will describe how EBD concepts and principles carry forward from design into the construction, analyzing how they can be integrated with and reinforce the current understanding of Lean design and Lean construction methodologies.

Finally, the audience will be educated on the methods of EBD and how they relate to Lean design and construction, including the relationship between Toyota Product Development System LPD, IPD and EBD, delving into the issue of how the architect, working closely with the contractor, in a fully collaborated manner, can and should be involved in the development of the Lean delivery process by combining ideas of the LPD and EBD. Through this presentation, the audience will gain an understanding of this new method of design that is becoming increasingly prevalent in the healthcare design field and the strong relationship between the two, allowing Evidence-Based Design to strengthen and reinforce current Lean principles.

Presentation B: MULTIPLE RENOVATIONS – ONE LEAN TEAM

In 2008, Universal Health Services (UHS) adopted LEAN Construction as their primary project delivery method for new hospitals and major expansions. In 2009, UHS expanded that model and developed a LEAN team “Big Room” to collaboratively deliver multiple small projects at George Washington University Hospital. Through our experience, we know that most healthcare facilities are constantly updating and renovating their facilities. With this knowledge, UHS decided to invest in a team dedicated to handling facility projects. As project size and frequency changes; the core team which includes UHS, HKS, ccrd partners and HITT Construction determines the use of the Big Room to meet project requirements. The Big Room core team meets, in person, every other week, with conference calls on off weeks. For example, the room has been used from four to 16 hours with varying numbers of project team members, depending on the scope the project.

Over the past three years, UHS has completed 10 projects and currently has five projects in various phases from conceptual design to construction using the Big Room concept.

- Through this process we have learned how to allocate staff and additional trade partners based upon the needs of the project. Those needs can be: schedule, budget, and/or technical expertise.
- We have also worked to eliminate the unknown. During the field investigation portion of the design, the trade partners are actively working with the design team to verify existing conditions.

During the design phase, all parties are discussing not only the needs of the project but the needs of the facility to eliminate impact on patient care.

- The team actively uses technology to improve and maximize communication. There is an interactive whiteboard in the Big Room that is the primary source of collaboration during all meetings. The Big Room also has webcams, so if a member is unable to attend in person, they can remote in via web conference. We also use Dropbox as the primary means of sharing information between the team to maximize the speed at which the information is shared.

Learning Objectives

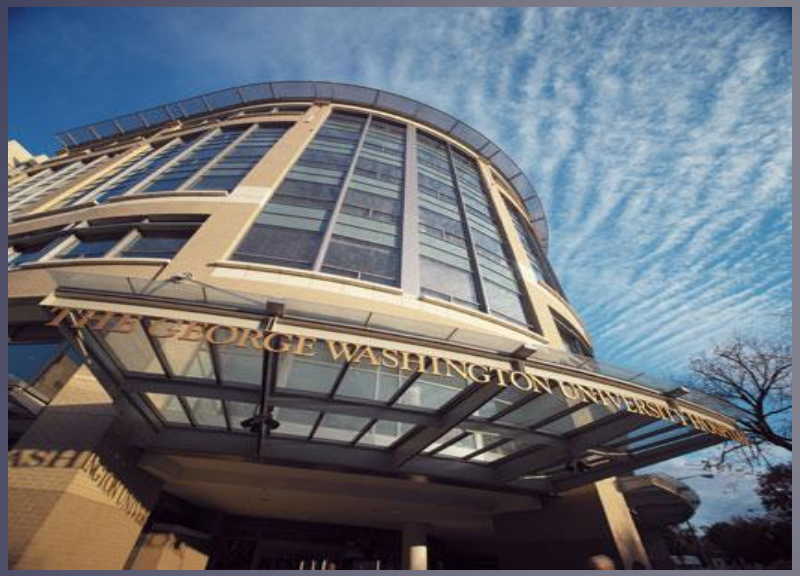
At the end of the this course, participants will be able to:

1) Learn about capital program management across a health system.

2) Demonstrate lessons learned in scaling application of lean project management from a single large project to application on multiple simultaneous small projects.

3) Understanding of appropriate use of lean tools and methods on smaller projects.

4) Learn about examples of technology use to supplement lean methods.



THE GEORGE WASHINGTON UNIVERSITY HOSPITAL

UHS Universal Health

IMPROVING PATIENT CARE: LEAN DESIGN IN THE BIG ROOM

HITT HEALTHCARE

POWER SOLUTIONS

DOMINION MECHANICAL

Creating places that enhance the human experience

HKS

ccrd

NON-TRADITIONAL USE OF LEAN, BASED ON FACILITY NOT PROJECT

- *TEAM DEVELOPED FOR FACILITY, NOT PROJECT*
  - *Expand beyond traditional use of Architect and Engineers of Record for Facility*
  - *Develop team with ownership of projects*
  - *Tackle renovation and upgrade projects quickly and eliminate risks*
- *UNDERSTANDING OF FACILITY*
  - *Knowledge of Facility standards and culture*
  - *Knowledge of all major systems*

NON-TRADITIONAL USE OF LEAN, BASED ON FACILITY NOT PROJECT

- *ONGOING RELATIONSHIPS WITH STAFF*
  - *Trust and Respect*
  - *Elimination/ Minimization of disruptions*

- *TEAM RAMPS UP OR DOWN BASED ON PROJECT NEEDS*
  - *Big Room meets every two weeks*
  - *Amount of time spent in Big Room dependent on project needs*
  - *Big Room has become virtual at times*
  - *Include additional trade partners, i.e. Millwork, Structured Cable*

GETTING TO KNOW USERS AND HOW DEPARTMENTS WORK TOGETHER

- *KNOWLEDGE OF FACILITY*
  - *Allows for quicker reaction to client needs*
  - *Allows for less revisions of work*

- *REGULAR INTERACTION WITH STAFF*
  - *Allows team to gain better understanding of needs / patient care*
  - *Ability to quickly alter design for new technology needs*
  - *Ability to quickly adjust for changes as other needs are identified*

- *TEAM KNOWLEDGE IS BUILT THROUGH EACH SUCCESSIVE PROJECT*

ELIMINATION OF UNKNOWNS

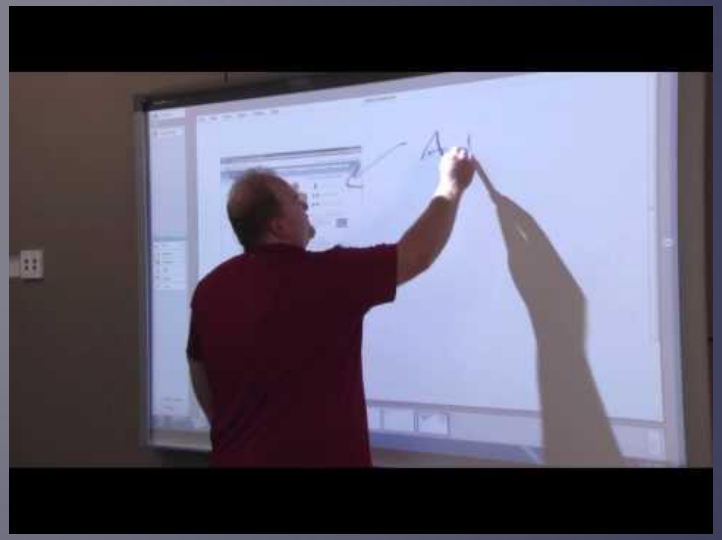
- *DETERMINATION OF EXISTING CONDITIONS*
  - *Joint field investigations*
  - *Constructability reviews concurrent with design*
- *KNOWLEDGE OF BASE BUILDING SYSTEMS*
  - *Allows for quicker reaction to client needs*
  - *Elimination of RFI's and construction delays*
- *REGULAR INTERACTION WITH FACILITIES STAFF*
  - *Identifies areas of concern for equipment or systems*
  - *Optimize system operation*
  - *Coordinate system shut down to minimize patient disruption*

ELIMINATION OF UNKNOWNS

- *TRADE AND DESIGN PARTNERS IDENTIFYING POTENTIAL CHALLENGES EARLY ON*
  - *Phasing of construction is addressed early minimize patient disruption*
  - *Constructability is reviewed during design*
- *ON GOING RELATIONSHIPS WITHIN FACILITY*
  - *Allow direct discussions with users about construction activities help to keep disruptions to a minimum*
  - *Help identify needs that can be addressed by team*

BIG ROOM TECHNOLOGY

- *SMARTBOARD*
  - *Efficiency and effectiveness*
  - *Improves collaboration & communications*
  - *Visual design and problem solving*
  - *Action items and commitments*
  - *GoTo Meeting integration*
  - *Real time collaboration*



- *DROP BOX*
  - *Real time update to entire team of drawings, schedules and budgets*

Dropbox

RESULTS

- *OVER 10 PROJECT COMPLETED*
- *SURGICAL FLOOR RENOVATIONS*
  - *Increased capacity*
  - *Allowed for new technology*
  - *Improved care based on new flow and arrangement*
  - *$9MM GMP; $400K in unused contingency + $90k savings pool*
- *EMERGENCY DEPARTMENT RENOVATIONS*
  - *Increased Capacity*
  - *Improved Patient Care*
  - *Promotes staff interaction while treating patients*
  - *Improved technology of record keeping*
  - *$3MM IFOA; $70k saving + profit at risk*


Information Center
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CONCLUSION

- *IMPROVED PATIENT CARE INCREASING PRODUCTIVITY*
- *MINIMIZE CONSTRUCTION RELATED SYSTEM DISRUPTIONS*
- *ELIMINATION OF UNKNOWN CONDITIONS*
- *ABILITY TO QUICKLY PROVIDE REALISTIC PRELIMINARY SCOPE, BUDGET AND SCHEDULE*
- *TEAM CAN PRODUCE AND DELIVER QUICKER*

This concludes The American Institute of Architects
Continuing Education Systems Course

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