SUMMIT ON OFF-SITE CONSTRUCTION
APRIL 22, 2013
NOTES

- Henry Green and Tom Hardiman welcomed the participants
- Participants introduced themselves
- Green presented on the current state of the building industry and the opportunity for improvements. Key messages included:
  - Opportunities for efficiency through systems-based approaches
  - Importance of working collaboratively toward common goals
  - Role of Building Information Modeling (BIM) in achieving industry goals
- Ryan Colker presented on the opportunities to engage stakeholders in examination of key issues through the National Institute of Building Sciences. Key messages included:
  - Institute Councils provide neutral forums for discussing industry issues and opportunities
  - Opportunities to engage with other Councils
  - An Off-Site Construction Council can help address:
    - Poor understanding among owners, designers and contractors
    - Research and data on benefits of off-site construction
    - Linkages between BIM and off-site opportunities
  - Unlike manufacturing, construction has a significant amount of non-value added investment
- Participants discussed the need for a home for neutral off-site construction related activities.
  - Fundamental to the discussion was agreement on what is “off-site construction.”
    - Considerations included:
      - Type of systems: modular, panelized, components
      - Duration: temporary or permanent
      - End use: components/materials, panels, modules
      - Systems: service, walls, MEP
      - Market: residential, commercial, health care, etc.
      - What is it not?
      - Focus on commonalities: less disruptive, faster, less waste, quality, safer, added value, quality control, standardization
      - Beyond just a product, should incorporate the process also
  - Existing challenges to widespread use of off-site were discussed
    - Little data exists on achievement of perceived benefits
      - Need to know what to measure and a common database/repository
      - Need to define current state of industry to show improvements
        - What metrics are used in site-built?
      - Moving beyond concept of “manufacturers” to “integrators”
Focus on role of standardization and technology in advancing building industry. Includes use of BIM, common terminology, communications/outreach

Engaging/educating stakeholders (design, owners, contractors) and illuminating process shifts and specifications to address client’s needs (predictability, cost, better, faster, cheaper (increased value))

Engagement at universities
- Familiarize next generation of building professionals
- Conduct research on industrialization, process, etc.

Reduce industry fragmentation and collaborate to make everyone better, overcome perceptions. Focus on what people need to frame the message.

- Significant time was spent on developing a consensus definition.

Preliminary considerations:
- A permanent structure
- Process of integration
- What degree of “completeness?”
- Recognize compliance with applicable building codes

Proposed definitions (highest rated are highlighted):
- A process of constructing a permanent building through concurrent construction methods for assembly at the final point of installation
- An integrated process of concurrently constructing segments of a permanent building for assembly at the final point of installation
- RES – “Offsite is the process of planning, designing, fabricating, transporting and assembling building elements for rapid (efficient) site assembly to a greater degree of finish than in traditional piecemeal onsite construction. It includes a range of materials, scales and systems, digital software, methods of manufacture and fabrication, and innovations in social and technological integration. Offsite includes componentized, panelized, and modularized elements deployed in the service of structural, enclosure, service and interior partition systems. An optimizing strategy of offsite is to integrate these systems and supply chain through research, design, testing and prototyping or Modern Methods of Construction (MMC).”
- A building delivery method where a substantial portion of a building is prefabricated in a controlled environment, transported and assembled on site where it will remain for the duration of its life-cycle.
- Offsite is the process of planning, designing, fabricating, transporting and assembling building elements for rapid (efficient) site assembly to a greater degree of finish than in traditional piecemeal onsite construction.
- Off-site construction refers to complex components assembled at a location different from its final location.
• The integrated process of pre-constructing major assemblies or components of a permanent building, in a controlled environment, ready for transportation and assembly at the final site location

• Participants broke into smaller groups to discuss challenges and opportunities to potentially be addressed through work at the Institute. Key areas include:
  o Lack of data
    ▪ Why or why not offsite, need performance metrics of industry broadly
    ▪ Common protocols, repository for data collection
  • Metrics needed include
    o Cost
    o Waste reduction
    o Labor efficiency (hrs/sq.ft.)
    o Safety
  ▪ Not product specific, but more process driven
  ▪ Need to focus on key audiences:
    • Owner/advisors
    • Architects
    • Obstructionists—lenders, insurance
  o Case studies needed (like building types, characteristics, etc.)
    ▪ Show various design options to overcome perception that can only design boxes
  o Research
    ▪ Focus on getting beyond uniqueness, but rather a part of the industry
    ▪ Process for engagement
    ▪ Overcome lack of innovation within the industry
  o Barriers to widespread use:
    ▪ Government regulations and specifications
      • Regulated at the state level
    ▪ Culture/Status Quo
    ▪ Lack of data
    ▪ Delivery processes
    ▪ Innovation in the offsite industry
    ▪ Perception (industry capabilities)
      • Limitations in design
      • Inferior product (not cheaper)
  o Need to identify best practices from delivery to turnover
    ▪ Show linkages with BIM, sustainable, lean
    ▪ Produce design guides for architects and owners to highlight the process and benefits
    ▪ Develop integration guidelines for contractors
  o Engaging students essential to expanding use
    ▪ Include academics in the council
- Design competition for students
- Peer reviewed paper session at Institute Annual Conference: BI2014
  - Support a research community to focus on assembly performance, innovation and materials
  - Engage unions (with New York as a potential model)
- Ryan Smith and Brandon Campbell presented during lunch on current research efforts to further understand the off-site construction industry and the potential benefits