Applying a Value-Added, Timesaving Approach to the Building Construction Process
Rob Duceatt, Kitchell Contractors, BIM Manager - Primary Speaker
Steve Berry, Kitchell Contractors, BIM Manager - Co-Speaker

CO6035  This lecture will examine the approach of various timesaving, valuable processes utilized on a new 5-story healthcare addition. Prefabrication, integrated colocation (Big Room), quality install with laser scanning, and fully coordinated shop drawing creation are processes Kitchell used to induce critical waste-cutting techniques in order to shorten an already aggressive schedule. Kitchell selected 3 key areas of construction that the prefabrication process would benefit, including corridor utility racks, patient room headwalls, and patient bathrooms. We will go over the various Autodesk, Inc., software platforms utilized by trade partners in the coordination process, and we will show how co-locating to the prefab shop was a must. Participants used laser scanning to spot check areas for install and cross-referencing issues with the coordination model. Given the success of the project, Kitchell has adopted prefabrication and timesaving processes as a quality approach to be put forth on present and future projects for Kitchell.

Learning Objectives
At the end of this class, you will be able to:

- Define a value added process.
- Understand Integrated Co-Location and the benefits achieved.
- Think about processes that add value and cut waste.
- Quality to the end…following through.

About the Speaker

Rob Duceatt graduated from Lawrence Technological University with a degree in Architecture. For the last 19 years he has been participating in and gaining an appreciation for the Architecture and Construction scenes. Over the past few years Rob has led multiple Building Information Modeling (BIM) task forces around the Phoenix, Arizona, area, helping to demonstrate the BIM process from both an architect’s and a contractor’s viewpoints. Rob guest lectures at Arizona State University for the Construction Management Program, sharing his knowledge of various BIM applications with future construction superintendents and project managers. Rob is currently BIM Manager with Kitchell Contractors, leading the coordination on various healthcare projects.

Steve Berry’s passion for Legos, love for drawing and dads drafting tools led him to obtain a Masters in Architecture from Arizona State University. Steve’s first years of college coincided with PC’s becoming a real tool. Programs like 3D Studio, Photoshop and AutoCAD replaced the Legos and typical drafting tools. Technology became an obsession during Steve’s Architectural years that had to be married with various design and presentation processes. This became a journey through various industries that includes Architecture, 3D visualization and now Construction. Currently at Kitchell, Steve’s passion for software and technology has become an innate philosophy on how to leverage technology to refine overall processes. Yesterday it was parametric modeling, clash detection and laser scanning. Today it is photogrammetry, drones and game engines. Tomorrow it will be Google Glass, augmented reality and antigravity…or teleportation. Whatever it is, I hope I get to play with it!
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Objective 01: What defines a value added process

- Define Value
- Define Waste
- Types of waste
- Example: Material Management

Objective 02: Integrated Co-Location and the benefits achieved

- Why / How / When
- Typical Work Flow

Integrating Work Flow

- Create Kitchell Models:
  - CM – Construction Management Model
  - Link all Design Revit models – Section models by floor levels
  - EQ – Additional Equipment detail
  - MEP Racks
  - Headswalls
  - Misc Steel – Boom supports etc.
  - CL – Ceiling Grid Model (if no trade on board to provide)

- Insert Trades DWG files into Revit:
  - DWG files need to be prepared to be usable in Revit depending on software used by Duct/Pipe trade
  - Close DWG files
  - Create IFC from DWG
  - Revit Models from Trades??

- Create Fabrication Drawings:
  - Revit Sheet Layouts

- Extract Sheet layouts for Trades:
  - Trades review layouts, add notes/text for Prefab Fabrication in Autocad
  - Provides for trades to take ownership of the fabrication sheets since the trades will be building from the fabrication sheets
  - All trades participate with creating prefabrication sheets:
    - Duct
    - Pipe/Plumbing
    - Electrical
    - Fire Protection
  - Review EQ models (Steel Boom Supports) with Misc Steel Trade (did not have shop drawings in contract)
    - Steel Boom Supports model created with input from Misc Steel trade
    - Steel models extracted and used during coordination
    - Installation layout created in Revit
    - Included Misc Steel, Structural Steel and Coordinated MEP trades
Objective 03: Processes that add value and cut waste

- Prefab Bathrooms
  - Time Line
  - Physical Mockup
- Coordination Model
• Prefab Head Walls
  o Time line
  o Shop Drawings

  o Coordination
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- **Prefab MEP Racks**
  - **Timeline**

- **Collaborative Modeling / Revit**
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- Collaborative Shop Drawings / ACAD

- Collaborative Coordination / Navisworks
Objective 04: Quality to the end...following through

- Supplemental Shop Drawings

- Checking with lasers