Possibilities with BIM?

A Design Build Maintain Mechanical Contractor’s Viewpoint

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Best BIM Projects Today

- Team oriented contract
- Self selected team at start
- Lean culture - remove waste
- Sensible use of BIM
- The installer builds the model
Today BIM Automates Tasks

- Studies
- 3D coordination
- Schematic design directly to fabrication drawings
- Fabrication e.g., plasma cutters
- Preassembly – racks, VAV boxes
- Layout e.g. total station
Option A Riser Diagram

OPTION A
(3RD FLOOR MECH. ROOM)

PHASE 2

PHASE 1

10 - PATIENT ROOMS

9 - PATIENT ROOMS

8 - PATIENT ROOMS

7 PATIENT ROOMS

6 - PATIENT ROOMS

5 - PATIENT ROOMS

4 - ICU'S

3 - PHARM.

1 - IMAGING/DINING

LL1 - O.R.

LL2 - CENTRAL STERILE
Option B Riser Diagram
Option A
3rd Fl & High Roof AHU’s

Option B
High Roof AHU’s
Option A High Roof
Option B High Roof
Option A 3rd Floor
3D Trade Models

- Trade shop drawings are 3D model
- Allows better coordination
3D Building Model

- Using NavisWorks all the trades 3D models are placed into a single forum
Clash Detection

- Automated clash detection generates clash report
- Resolve as a team
Walk Thru

• Using NavisWorks a walk thru of the building can be created as well as snap shots to show congested areas
Field Work Map
Facilitates Work Planning

- Project manager and detailer creates a work map/plan for the field.
- Tools include: Weekly Work Plan, Constraint Log, Spool Sheets with BOM, access to estimated hours and labor feedback.
Sectioned Duct on Wheels
VAV Boxes Ready for Shipping
Field Installed VAV Box
Prefabricated Racks
Loading Prefab into Building
Field Installation of Rack
Installation Matches the Model
Utilizing the Power of BIM

- Train people to use the power of the software – not just automate existing tasks
- Carry multiple solution sets until the last responsible moment
- Enable new ways of operating and constructing facility
- Remove waste
BIM Possibilities for Planning

- Capture performance vs. intent of past facilities
- Modeling business operations in new facility
- Automated life cycle costing
BIM Possibilities for Design (1)

- Design systems as a series of related objects
- Store as building level, system level, sub system, assembly and component level
- Define interactions between objects from different systems and relationships within a system
- Capture design intent and store system decisions as A3 objects
BIM Possibilities for Design (2)

- Use cost and system knowledge as inputs to design
- Carry multiple design sets until the last responsible moment
- Utilize schematic level logic diagrams to check the BIM model
- Eliminate wasted design steps
- Eliminate drawings not used by anyone
BIM Possibilities for Construction

• Allow field to link or split objects to plan prefabrication and sequencing
• Field defines design info they need
• Develop sequences and designs to allow larger prefab pieces
BIM Possibilities for Operations and Maintenance

- Attach O&M information to system level logic diagrams
- Provide diagnostics on operations vs. design intent
- Provide company wide knowledge on equipment and energy performance.
How can we do this?

- Work with Owners who have the right culture and contracts
- Develop a learning team for a portfolio of work
- Enable the client to provide better value to their customers
- Share risk and reward
Questions?