Integrated Building Solutions for Collaborative Workflow

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Integrated Building Solutions

Integrated Building Solutions – In support of our core business, every phase of construction will be analyzed for process improvement through the use of new technologies, innovative thinking, and solutions integration.

Pace of Innovation is Accelerating

Visualizations of Scope

CMU Scope
Build
Opt On 2,
Precast 7,
Opt On 3,
Brck 6,
Opt On 4,
Curtainwall
Opt On 5,
na sunshade
156800185600339000339900
18560015680025002500
66456626$12449$17412
22752000$22688000$42625000$5962000
Riverside Doctor's Hospital
Operate
Plan
Build
Visualization of Scope
Model Based Estimation
Voxel iStudio Quantify – Takeoff, quantify, model, and report using traditional 2D layout methods, but in a 3D environment.
Voxel iStudio Attribute – Intelligent building information content management.
Voxel iStudio Attribute Content Management
Model Based Estimation
Voxel iStudio Quantify
Voxel iStudio Attribute
Model Based Estimation
Visualization of Scope
Visualization of Scope
4/17/2012
Operate
Plan
Build
Turner Voxel iStudio

Voxel iStudio is a series of Turner applications built upon existing software for optimization and additional functionality to drive information, integration, and innovation.

Voxel iStudio can be packaged into different Voxel iStudio Suites for project specific uses.

Model Based Code Checking

Permit Submission & Review

Lifecycle Studies – Daylight Simulations – Energy Analysis

NYU Dentistry – Department of Buildings Submission in .dwf for site safety

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Educate

Total Cost of Ownership

Educate

Permit Submission & Review

Model Based Code Checking
Combined model reviewed with structural engineer, layout team, and detailers.

Points exported from model to total station for layout.
As-built information overlaid for verification prior to concrete pour.

Model Based Layout

MEP Process Performance

0-CELLAR

Weekly Coordination Meetings

Spike 3 – Change to LEED project, MEP systems changed
Spike 2 – Clashes with Fire Protection
Spike 1 – Structure, Sheet Metal, & Plumbing Clashes

Coordination Tracking
Operate
Plan
Build
Operate

Digital Document Management

Turner c.docs
Digital Plan Room

Plan
Build
Operate

Jobsite Office Prefabrication?

Plan
Build
Operate

Visual Production Control

Work in Place Tracking
Visual RACS

Plan
Build
Operate

Results
Increased Productivity

BIM Average Productivity vs. Non-BIM Average Productivity

143% Increase in Mechanical Productivity
67% Increase in Electrical Productivity
36% Increase in Fire Protection Productivity

Plan
Build
Operate

MEP Systems Prefabrication

Plan
Build
Operate

AR via Turner iPad/iPhone app
VOXEL iSTUDIO

Plan
Build
Operate

BIM AVG PRODUCTIVITY
NON BIM AVG PRODUCTIVITY

10.0
20.0
30.0
40.0

Average Productivity Metrics

0.0
10.0
20.0
30.0

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Plan
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Operate
Educate

Voxel iStudio FM
Voxel iStudio Library – Visual BIM Interface with drag and drop linked documents cloud synced for sharing and collaboration.
Voxel iStudio Scan – QR code reader and bar code scanning app that connects to the cloud synced BIM based Library to track status & apply real-time information graphically to building assets.
Voxel iStudio Monitor – BMS & CMMS link to the visual BIM interface.

Turner e.docs
Digital Facilities Manual

• 601 Physical Sensors
• 17,075 Data Points
• 2,250 Points Polled
• 3,437 Documents
• 14,524 Document Links

Turner e.doors

Turner e.library & e.scan
Implementation at Turner

- Senior level support & engagement
- National/Regional talent & support for standards, procedures, education, training, & consistency
- Local talent for project support
- Subcontractor talent for implementation

Turner Sharepoint – VDC Internal
- BIM Job Metrics
- BIM Staff Metrics
- BIM Examples
- Recorded Webinar Wednesday Videos
- Streaming Training Videos

Socialcast – Turner VDC Social

Network of Resources

Turner BIM University

- Enrolled BIM Specific Training
- Advanced BIM Training
- BIMfographic # of BIM Projects
- BIMfographic Volume of BIM Projects

Turner Metrics
- Ranked #1 BIM Implementer in BD&C Magazine in 2010
- Total Number of BIM Projects - 387
- Total BIM Project Estimated Volume - $21.7 Billion
- Total MEP Clash Projects - 136
- Total Quantity Take-Off/Cost Estimating Projects - 114
- Total Scheduling/4D Modeling Projects - 128
- Total Laser Scanning Projects – 33
- Total iRoom Setups in Use – 109

Turner BIM University
- 2010 – 11 new BIM Metrics
- 2011 – 25 new BIM Metrics

- 2010 – 25 new BIM Metrics
- 2011 – 11 new BIM Metrics

Network of Resources

Implementation at Turner

- Support structure in place for implementation
- Local lean for project support
- Policy, education, training, & consistency
- National/regional lean & support for standards
- Senior level support & engagement
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Implement at Turner

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Implementation at Turner

Select the appropriate technology
• by solving issues or improving current process workflow
• by identifying potential project issues
• by identifying current inefficiencies in the process
• by learning a 3D model or analytics software – Google Sketchup, Navisworks Freedom
• by learning how to build

Turner Innovation Series
Turner BIM University

4/17/2012