BIM before BIMs

Building Information Management
Before
Building Information Models
Benjamin Crosby

Fall BIMForum
Orlando, FL
Disney's Yacht Club Resort
October 20-21, 2015

#BIMForumED  @BIMjamin
Modeling or Management

#BIMForumED
Continuous Improvement

If your not keeping score your just practicing!
1. First Contact
How your BIM looks?
1. First Contact

WHY?
1. First Contact

HOW?
2. BIM Intent

Good Results
2. BIM Intent

Expectations Meeting
2. BIM Intent
Expectations Meeting
3. BIM Addendum

There is no agreement until it is written down!
3. BIM Addendum

3. effective at the time the Model has been developed to the same stage of completion as two-dimensional Construction Documents.

☐ Each Contributor represents that the dimensions in its Contribution to a Model are accurate and take precedence over the dimensions called out in the Drawings or inferred from the Drawings. Details and components that are not represented in a Contribution to a Model must be retrieved from the Drawings;

☐ Each Contributor represents that the dimensions in its Contribution to a Model are accurate to the extent that the BIM Execution Plan specifies dimensions to be accurate, and all other dimensions must be retrieved from the Drawings;

☐ Contributors make no representation with respect to the dimensional accuracy of the Contributor's Contribution to a Model. A Model can be used for reference only and all dimensions must be retrieved from the Drawings; or

☐ Other: ________;
If the owner and designers agree that everyone would like to be able to show the models for marketing and promotional purposes then you will need to adjust item 6.2 (d) to read:

“(d) a limited, non-exclusive license to reproduce, distribute, display, or otherwise use any Model containing such Contributions, or any other Model with which the Model containing such Contributions is federated or otherwise related, in each case for the sole purpose of carrying out the Project Participants' respective duties and obligations relating to this Project and to display the Model for project promotion and marketing purposes.”
MAKES NO WARRANTY, EXPRESS OR IMPLIED, OF MERCHANTABILITY OR FITNESS FOR ANY PURPOSE IN CONNECTION WITH THE SERVICE OF PROVIDING ACCESS TO, AND THE TRANSFER OF, THE DIGITAL MODEL FILES, OR THAT THE DIGITAL MODEL FILES WILL BE USABLE OR ACCURATE, WHICH WARRANTIES AND REPRESENTATIONS ARE EXPRESSLY DISCLAIMED.
4. BIM Score

Project Needs and Responsibilities

SMART GOALS:
- Specific
- Measurable
- Achievable
- Relevant
- Time-based
4. BIM Score

Desired Results/Measurement

- VDC Contract
- Design Communications
- Construction Communications
- 3D Coordination
- 4D Scheduling
- 5D Estimating
- 6D Owner Information
- XD – The Next Level
- ROI
- Extras
<table>
<thead>
<tr>
<th>VDC/BIM Score</th>
<th>Project Name:</th>
<th>Proj. Abbrev.:</th>
</tr>
</thead>
<tbody>
<tr>
<td>VDC Contract Initiated VDC</td>
<td>Design Starts w/ Execution Plan</td>
<td>Construction Contracts/Owner/Subs</td>
</tr>
<tr>
<td>Schematic Design Models Used</td>
<td>Defined VDC/BIM Scope for all Contractors</td>
<td>3D - Coordination</td>
</tr>
<tr>
<td>45% of Design Models Reused On</td>
<td>Value Stream Model of Model Procedures</td>
<td>3D - Scheduling</td>
</tr>
<tr>
<td>95% of Design Models Reused On</td>
<td>Verification/Assessment Models Relied On</td>
<td>3D - Estimating</td>
</tr>
<tr>
<td>Designers Prepare Report (Clean) Verification</td>
<td>75% Coord Models Reused On</td>
<td>4D Schedule Created Using Model</td>
</tr>
<tr>
<td>Energy Analysis Used</td>
<td>95% Coord Models Reused On</td>
<td>Design Changes Scenarios Created in Model</td>
</tr>
<tr>
<td>Egress/Code Analysis / Verification</td>
<td>Only Model Prepared Work INSTALLED</td>
<td>Changes/RFS Incorporated into Design Model</td>
</tr>
<tr>
<td>No Modeling Outsourced (Vendor or Sub)</td>
<td>Coordinated Model Available in Field (Some Locations)</td>
<td>Coordination Models Provided to Owner</td>
</tr>
<tr>
<td>VDC/BIM In Multiuser Online Meetings Used</td>
<td>Coordinated Model Available for Individual (Everywhere)</td>
<td>Augmented Reality Productivity Used</td>
</tr>
<tr>
<td>Field Models used by 50% of Subs</td>
<td>QA/QC 95% Paperless (Full Hardcopy, Tracking W Sub Access)</td>
<td>Project Permitting/Inspections Prioritize Models Over 2D Documents</td>
</tr>
</tbody>
</table>

**Teamwork**
- Owner Contract
- Design
- Construction
- Contractor
- Owner
- Sub

**Information**
- Owner/Miscellaneous
- VDC/BIM Score
- Project Name
- Proj. Abbrev.
- Kickoff Score
- Interim Score
- Final Score

**Date:** 7/7/2015

**Mark one:**
- Kickoff Score:
- Interim Score:
- Final Score:

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**BIM Score**

**Desired Results/Measurement**

<table>
<thead>
<tr>
<th>Desired Results/Measurement</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIM</td>
</tr>
<tr>
<td>4D</td>
</tr>
</tbody>
</table>

**Template Updated:** 7/7/2015

#BIMForumED
5. BXP and LOD

Good Instructions
5. BXP and LOD

Formal BxP
The following information is designed to help everyone be aware of what is needed to make the best use of BIM to increase construction activity efficiency.

**Design Authoring**
- Desire
- Change Log
- Owner/Designer

**Mon.**
- Reactions, Decisions

**Tues. 5-6 pm**
- Design Model
- Expectations Set
- Report

**Friday Afternoons**
- Status Changes
- Reported

**Thurs. 12:30 am**
- Approved
- Rejected

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**Field Coordination and Usage**
- ifc, .nwc, and Native formats
- All Trades
- All Designers
- All Vendors
- Pulled into Process

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**5. BXP and LOD Process Maps**
5. BXP and LOD Process Maps
5. BXP and LOD

LOD Definitions
### 5. BXP and LOD

#### Attribute Agreement

<table>
<thead>
<tr>
<th>Uniform Format Level</th>
<th>Relevant Attribute Tables</th>
<th>SD Date</th>
<th>MEA Notes</th>
<th>DD Date</th>
<th>LOD</th>
<th>MEA Notes</th>
<th>LOD</th>
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<tbody>
<tr>
<td>A 10</td>
<td>Foundations</td>
<td></td>
<td>A, B Concrete; A, B Wood; A, B Masonry; A, B Precast Concrete</td>
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<td>A, B Concrete; A, B Wood; A, B Masonry; A, B Precast Concrete</td>
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<td>A 10 10 .10</td>
<td>Wall Foundations</td>
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<td>A, B Concrete; A, B Wood; A, B Masonry; A, B Precast Concrete</td>
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<td>A 10 10 .30</td>
<td>Column Foundations</td>
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<tr>
<td>A 10 20</td>
<td>Special Foundations</td>
<td></td>
<td>A, B Concrete; A, B Wood; A, B Masonry; A, B Precast Concrete</td>
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<td>A 10 20 .80</td>
<td>Grade Beams</td>
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<td>A, B Concrete; A, B Wood; A, B Masonry; A, B Precast Concrete</td>
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<td>A 20</td>
<td>Subgrade Enclosures</td>
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<td>A, B Concrete; A, B Wood; A, B Masonry; A, B Precast Concrete</td>
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<td>A 20 10</td>
<td>Walls for Subgrade Enclosures</td>
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<td>A 40</td>
<td>Slab-on-Grade</td>
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<td>A, B Concrete</td>
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<tr>
<td>A 40 10</td>
<td>Standard Slab-on-Grade</td>
<td></td>
<td>A, B Concrete</td>
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<tr>
<td>B B</td>
<td>SHELL</td>
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<td>A, B Concrete</td>
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</table>

#### B - Concrete

<table>
<thead>
<tr>
<th>Part 2 - LOD Profile</th>
<th>Part 3 - Project-Specific Milestones/Examples</th>
<th>Commentary</th>
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<tbody>
<tr>
<td>Data Type</td>
<td>Units</td>
<td>Option Examples</td>
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<td>Concrete Compressive Strength</td>
<td>PSI</td>
<td>PCIe, MCI, PCI</td>
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<tr>
<td>Pavement Steel</td>
<td>PSI</td>
<td>PCIe, MCI, PCI</td>
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<tr>
<td>Structural Steel</td>
<td>PSI</td>
<td>PCIe, MCI, PCI</td>
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<td>Exterior Exposure</td>
<td>Shear</td>
<td>PCIe, MCI, PCI</td>
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<tr>
<td>Shear</td>
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<td>PCIe, MCI, PCI</td>
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<td>Concrete Compression</td>
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<td>PCIe, MCI, PCI</td>
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<td>pav. Steel</td>
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<td>PCIe, MCI, PCI</td>
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<tr>
<td>Structural Steel</td>
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<td>PCIe, MCI, PCI</td>
</tr>
</tbody>
</table>

#BIMForumED
6. BIM Kickoff
Show the Plan Works
6. BIM Kickoff

As Many as Needed

Design Team
Design Assist
Coordination
Fabrication
5. BIM Kickoff

Be Lean

Dan Fauchier

Collaborate, really collaborate
Increase Relatedness
Optimize the whole
Tightly couple learning with action
Network of Commitments
BIM is a journey, not a destination!

7. Model Creation
7. Model Creation
7. Model Creation

Happy Client?
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