CenturyLink - Bringing it all to the Deep South

Benjamin Crosby, Schaeffer Harris
Welcome to LA
–
#BIMForumED

Monroe, LA
Team Selection

• Wolf Wiewel – Director of Design and Construction for Century Link on Design and CM team selection
Team Selection - Contractors

- Local Participation
- MEPS pre-bid meeting
- Invitation to Ikerd
- Avoid Chaos
Kirke Chamblee

BIM Transition
IKERD: Sociology and Technology
DISC Personality Assessment

Natural Style

<table>
<thead>
<tr>
<th></th>
<th>D</th>
<th>I</th>
<th>S</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>67</td>
<td>67</td>
<td>53</td>
<td>39</td>
</tr>
</tbody>
</table>

[Bar chart showing the natural style with D and I being 67, S being 53, and C being 39.]
DISC Assessment

Natural Style

<table>
<thead>
<tr>
<th>D</th>
<th>I</th>
<th>S</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>67</td>
<td>67</td>
<td>53</td>
<td>39</td>
</tr>
</tbody>
</table>

[Diagram showing DISC assessment results with colored bars and a grid with data points.]
BIM During Design
Pre-construction Design BIM

- Architect: BIM Design
- Structural: BIM Design
- MEP: 2D Design not in BIM
During Construction
Coordination Meetings
Meeting with the Designers

Friday, February 7, 2014
Meeting Minutes for 01-31-2014

REQUEST MOVING
During Construction
Feasibility and Cost Impact of Changes

BIMFORUM
BIM Spec/LOD

• How we used them to establish order (beat chaos).
  • BIM Addendum
  • BIM Execution Plan
  • LOD Specification
  • Practice
• What we learned
  • Addendum and BxP
  • LOD 350 vs 400
  • LOD 500?
1.1 This Addendum does not effectuate or require a restructuring of contractual relationships or shifting of risks between or among the Project Participants.

2.4 Contribution means the expression, design, data or information that a Project Participant (a) creates or prepares, and (b) incorporates, distributes, transmits, communicates or otherwise shares with other Project Participant(s) for use in or in connection with a Model for the Project.

4.1 …all Project Participants shall meet, confer and use their best efforts to agree upon any necessary modifications to a BIM Execution Plan.

5.1 Each Party shall be responsible for any Contribution that it makes to a Model or that arises from that Party’s access to that Model.

6.2 …and to display the Model for project promotion and marketing purposes…
BIM Execution Plan

Purposes:
Using contractor BIM to create shop drawing/coordination data allows the project team to increase the quality of coordination. Clash detection and 4D schedule review have been shown greatly improve project productivity and show positive return on investment for contractors.

Software:

Model Contents:
Architects and Engineers: minimum “Level of Development 300” per AIA E202
Contractors: provide a “Level of Development 400” per AIA E202

Model Coordinates:
Project Zones/Levels:

Naming Convention and Color Code:
Proje_Trad_Compa_ALLB_AREA_F001_100_20130601.???

Model upload frequency and location:
Project Meetings:
BIM Execution Plan

Trade Model Level of Development examples (LOD 400):

All Trades:
1. General rule - Everything that would appear on a quarter inch (¼”=1’0”) scaled drawing.
2. General rule – Intelligence necessary to produce schedules for that scope – including but not limited to fixtures (lighting, plumbing, etc..), doors/hardware, windows, accessories, access panels, etc…
3. All structural and seismic supports, racks, trays, bracing (temp and perm) and supporting systems.
4. Equipment should be modeled to its overall height, width, and length.
5. Access – areas need to be modeled at 50% transparency and distinct from the item that is requiring access.
   - Code/Manufacture required access (example: clear space for maintenance, safety zones, meters, valves, etc..)
   - Access panels, including space below and above as required.
   - ABA/ADA/Accessibility clearances should be modeled based on the item requiring the clearance (example: ADA door clearances would be with the door, ABA toilet clear space with the toilet, etc..)
6. Penetrations through another trades work, size, fire proofing, security needs, etc... need to be identified by the trade that penetrates.
LOD Specification

BIM is visual – Use Pictures!!!

**Mechanical Ductwork:** Ducts, equipment, and accessories, be sure to include outside dimensions of insulation and supports.

**Mechanical Piping:** The model detail will vary based on elements, Small diameter (less than 1-1/2” NPS) field-routed piping is not required, but connection points and access should be allowed for.

**Electrical:** Conduit/MC cabling (2” outside diameter and larger), homeruns and mass conduits occupying more than 4 sq. in., light fixtures, junction boxes, all connections to other trades even if smaller than 2” outside diameter and include wire sizes,

**Plumbing:** Piping, slope requirements, fixtures, insulation and equipment.
Practice
Practice
Practice
BIM Addendum and BxP - Learning

Intention / Purpose
LOD 350 vs 400 - Learning
LOD 350 vs 400 - Learning

LOD 350

**Mechanical Piping:** Small diameter (less than 1-1/2” NPS) field-routed piping is not required

LOD 400

**Mechanical Piping:** No field routed piping – Prefabrication and modularization take precedence.

Intention / Purpose again!
Contractors shall use field installation drawings created from signed off (fully coordinated) models to install work. Any variation must be documented in the model and shown to be clash free – including future trade’s work.
LOD 500 - Learning

AIA E202 LOD 500 – The Model shall not likely be utilized for maintaining, altering, and adding to the Project.

Refer to State of TN BIM Requirements
LOD 500 - Learning

Refer to State of TN BIM Requirements

Owner Information pulled from all stages. General and Equip. Inventory Requirements, Standards and Attributes.

#BIMForumED
BIM Spec/LOD

• How we use them
  • BIM Addendum
  • BIM Execution Plan
  • LOD Specification
  • Practice
• What we learned
  • Addendum and BxP
  • LOD 350 vs 400
  • LOD 500?

Continuous Improvement

Chaos tried to get in, but we defeated it.
Colocation
IKERD - Colocation
December 23rd Building Review
Technicians on Multiple Trades
Monumental Stair MEP
Ceiling Clouds
Communication
Facilitating Communication Between Quality Builders:
Voice
Conversation Memos (Documentation)

Schaeffer Harris

To: Schaeffer Harris
Subject: FW: Conversation Memo: VAV Clearances

John,

I want to confirm what I understood from our conversation regarding the VAV clearances. Please confirm whether this is correct or not within 2 business days.

- Provide 36” of clearance directly in front of the controls on the box. This space does not need to extend down to the ceiling. So, lights below this 36” clearance are not a problem.
- Provide 12” of clearance all the way around the specific units as required by the submittals. This space does not need to extend down to the ceiling. So, anything running below the 12” or the unit itself is not a problem.
Technology Gap (a Continuum)
Origin (A Plethora)
Meeting Minutes

Mr. Cleet McHenry,

The purpose of this report is to give meeting minutes on the above referenced meeting. Please inform us of any items which are not outlined herein that require attention or clarification.

**Interior systems (1pm-2pm):**

1. No one from the design team was present on the call to provide an update on the new bulletins and answer the questions below.
2. Schedule
   a. The Penthouse duct is a high priority.
   b. IKERD is working to upload the changes from Bulletins 14 and 15 on Monday, March 24th.
3. Bulletins:
   a. 14 and 15: IKERD approved for work by Cleet Tuesday, March 18th.
   b. 17-18: Uploaded to 4Projects Tuesday, March 18th.
   c. A conformance set is expected soon.
4. MEP Building Duct
   a. The outside air duct for AHU-1 is already installed. CEC instructs that duct to be changed in Bulletin 18. Can the installed duct and damper size be maintained outside the restroom?
5. MEP Building Duct: An open RFI requests adjusted routing on the drains in generator room.
6. Lowering Ceilings for Lights
   a. Nade will confirm that these RFI’s have been answered.
7. Penthouse Ductwork: Nick is providing plenum designs for the Supply and Return Air. IKERD is assisting him with special coordination.
8. Installing future equipment is still to be coordinated by Moody Nolan.
9. Wind chase: Nick will review sizes.
10. IKERD requested an updated schedule from Yates.
11. IKERD will upload a model with viewpoints of fire sprinkler clashes and notify Justin Rader.
In Person
Successes
Floor Movement in Joint Challenges for Exterior & Interior
Tube Steel Expansion Joint
Enclosures
Perimeter Diffusers

These dimensions are based off of graphical assumptions (see page 2). They are to be reviewed and modified by the architect prior to soffit coordination.
Drywall MEP Coordination
Penthouse Layout
Conclusion

Chaos is hiding in all our projects!
A good plan and experience lets you identify where chaos is lurking.
Communication and Collaboration flush the chaos out of hiding.
Good people can navigate past chaos!
Good people + BIM, eliminates chaos!!

Chaos Slayer
CenturyLink - Bringing it all to the Deep South

Benjamin Crosby, Schaeffer Harris