BIM with Data

Enhancing Value for the Owner
Presenters

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What we’ll talk about

• BIM Execution Plan
  • Why/How
  • Contract Deliverables
  • Keys for Success

• Level of Development

• Model Workflow and Handoffs

• Leveraging Data in the Virtual Building Models
  • Data Implementation in Cost Estimating and Fabrication

• BIM as a Database – Beyond 3D Visualization
BIM Execution Plan - The Why and the How

BIM is a project on its own! – Management of several key items

INITIATING
- Integration
- Stakeholder

PLANNING
- Integration
- Scope
- Time
- Cost
- Quality
- Resource
- Communication
- Risk
- Procurement
- Stakeholder

EXECUTING
- Integration
- Quality
- Resource
- Communication
- Procurement
- Stakeholder

MONITORING / CONTROLLING
- Integration
- Scope
- Time
- Cost
- Quality
- Communication
- Procurement
- Stakeholder

CLOSING
- Integration
- Procurement
BIM Execution Plan - The Why and The How

• Uncertainty
• Clarity
• Communication
• Guarantee
BIM Execution Plan - The Why and The How

- BIM deliverables
- Collaboration Process
- Owner Expectations
- Contract Documents
  - Amendment/CO
  - Original project scope
  - Contract Document
  - BIM

4.6.8 The BIMs and any portion of them are works for hire for the benefit of Owner and will be provided to Owner as a contract deliverable that may be used by Owner without restriction. In the event that any court of competent jurisdiction finds that the BIMs or any portion of them, do not constitute works for hire, then Contractor hereby grants to Owner a license in perpetuity to use and reproduce the BIMs and any portion of them for any purpose whatsoever.

4.6.9 BIMs are not Contract Documents.
BIM Contract Deliverables

• 3 Main Categories:
• Coordinated Model
• As-Built
• Facility Maintenance
BEP – Lessons Learned / Keys for Success

• Ask questions
  • Don’t leave unanswered questions

• Do it, don’t procrastinate

• Keep it concise, avoid rubbish

• Work on Communication and Trust
HANDOFFS
# MODEL WORKFLOW / HANDBOFFS

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MODEL WORKFLOW / HANDOFFS
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DATA HANDOFFS

- **Design Team**
  - Model Data / Attributes

- **Construction Team**
  - Model Data / Attributes

- **Other Teams**
  - Managing Data
  - O&M Manuals, Procurement, FM, etc.

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HANDOFFS – Keys for success

• Identify the requirements (model as well as data)
• Ask Questions!!!
• Focus on fewer high-quality models
  • Identify redundant models sooner than later
• Communication/High level of trust
• Right Tools – Identify, Document in the BEP
• Training – Just ask and Plan for it
LOD – Level of Development
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• For the current projects, we have used the AIA LOD Standard – modified to include a few items.
LOD – Level of Development

- Use what works best for you and the team
- HGA prefers to use description instead of numbers
  - LOD Numbers are interpreted differently by different entities
- Being Prescriptive

4.1.4 Minimum Modeling Requirements

**General Requirements**
- Model clearance requirements - Areas which must remain clear for code or service consideration including but not limited to: insulation, mechanical, equipment, access clearance around piping or other systems requiring a code specific clearance.
- All in-wall system equipment and devices to be modeled.
- Model wall and ceiling access doors where required.
- Model working area around A/V equipment.
- Model window area around panel doors.
- Elaborate access areas to be modeled as the floor below.
- Prefabrication - Anything that will be pre-fabricated should be included in the BIM. This will ensure proper spacing and connections.
- Support or framing devices will be included in the BIM.

**Cold Steel Framing Model**
- Top and bottom truss to be used for coordination.
- Framing blocking out for MEP trades as needed.
- Stair framing and landers.
- Head of wall conditions.
- Any not-to-scale items required for installation or representation of an object.

**Structural Model**
- Beams and columns - required for coordinating above ceiling MEP/FPP utilities.
- Rods and gusset plates - required for coordinating above ceiling MEP/FPP utilities.
- Miscellaneous supports - required for coordinating above ceiling MEP/FPP utilities.
- External wall framing connections - required for coordinating with MEP/FPP and Architectural trades.
- Beams penetrations - required for coordinating above ceiling MEP/FPP utilities.
- Decking layout, Bent plates and deck closures.
- Base isolates with required clearances and access paths for removal.
Data Management in BIM – Why & the How

• Lack of Standard for BIM Object
• Low level of collaboration
• Non sustainable workflow
• Owner Expectations
Data Management in BIM – Why & The How

• Defining what needed for quality BIM Object
• BIM objects access to anyone
• Right level of information
• Common data environment
• Information Exchange
Data Management in BIM – Cost Estimation
Data Management in BIM – Standards

• Meaningful information – don’t need everything
• Need a Standard
• Common data environment – open source data
• Reliable data
BIM Data – Design Parts to Fabrication Parts
BIM Data – Process

- Align and provide Standards for Manufacturer and Trades
- Manufacturer BIM Objects
Data Management and Implementation

• Standards accessible to everyone and anywhere
BIM Data Management – Keys for Success

• Right skills and Experience
• Get people on-board early
• Plan to train people
• Plan for change
• Measure performance
BIM beyond 3D visualization – Data!

Façade Analysis

Daylighting

Illuminance

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BIM beyond 3D visualization – Data!
Future – BIM beyond 3D visualization – Computation/Automation!
BIM beyond visualization – Computation/Automation!
BIM – Computation/Automation!
Closing Thoughts..

• Quality of BIM – People + Process + Technology
• More and more emphasis on BIM as a database – BIM beyond Visualization
• Technology is constantly evolving (VR/AR, etc) but think in terms of useful data...and focus on Process..
• However, don’t forget to ....
  • focus on LEANing the current workflows; and
  • find opportunities to collect, analyze and use DATA
Thank You!

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