PRECONSTRUCTION IN CONSTRUCTION
MANAGING CHANGE IN A BILLION DOLLAR HOSPITAL
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#BIMForumED
WHAT IS BIM WITHOUT THE “I”? 
- A COORDINATED MODEL IS ONLY AS GOOD AS THE INFORMATION GOING IN TO THE MODEL.

- MODELS ARE LIVING DOCUMENTS

- CONSTRUCTION DOCUMENTS ARE DERIVED FROM THE MODEL

- WE DO NOT PLAN CHECK MODELS, WE PLAN CHECK CONSTRUCTION DOCUMENTS
VISCOUS WALL DAMPERS
- Change management relating specifically to IPD.
- Change management relating to a project with design, coordination & construction occurring simultaneously.
- Level of development (L.O.D.) in modeling CPMC.
- Representing current design in the construction documents & future changes in the model, at the same time.
- Innovative methods for communicating change to others, both within the company (DEGENKOLB), and externally (IPD partners)
CHANGE IS (USUALLY) GOOD

ADEQUACY & CONSISTENCY OF DESIGN
AS-BUILT CONDITION
CONSTRUCTABILITY
DESIGN UPDATES
ADDED SCOPE
COST
INFO

EVALUATION/ANALYSIS

MODEL \rightarrow COORDINATION

DRAWING

APPROVAL

CONSTRUCTION
IS THE DESIGN CHANGE FINALIZED?

WHO DOES IT AFFECT?

PRIORITY?

IS THERE TIME/RESOURCES?

IS IT CONSTRUCTABLE?

HOW BIG IS THE CHANGE?

HOW DOES IT AFFECT THE DRAWINGS?
- STRUCTURE MODELING (REVIT) IN-HOUSE AT A 300-350 LEVEL.

- STRUCTURAL FABRICATORS’ MODELS (TEKLA) TO 400 LEVEL.
  - MISCELLANEOUS METAL MODELED TO 400 AS WELL, HOWEVER, SOME GAPS IN SCOPE REALIZED ALONG THE WAY

- ARCHITECT MODELING (REVIT) TO 300-400 LEVEL.
  - TRADE PARTNERS (EXTERIOR PANELS, CURTAIN WALLS, STONE FEATURES, PLANTS AND TREES, ARCHITECTURAL FEATURES, ETC) BRIDGE THE GAPS IN MODELING TO 400 (MIX OF REVIT, AUTOCAD 3D)

- MEP MODELING (AUTOCAD 3D) AT 400 LEVEL THROUGH IN-HOUSE DETAILING.

- ALL TRADES WILL HAVE 400-500 LEVEL MODELING (COORDINATED TOGETHER IN NAVISWORKS) AFTER INSTALLATION. EVERYONE'S MODELS ARE INTENDED TO SERVE AS AS-BUILTS.
CHANGE?

WHAT CHANGE?
OH...

...THAT CHANGE
# Model Revisions Matrix

<table>
<thead>
<tr>
<th>Structure Level of Change</th>
<th>MEP Level Impacted</th>
<th>Sheet No.</th>
<th>DESCRIPTION OF ITEM CHANGED</th>
<th>POSTED DATE</th>
<th>STRUCTURAL ENGINEERS NOTES</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>11</td>
<td>$2.12, $2.12A</td>
<td>Added W12x53 for added pipe stanchion.</td>
<td>5/24/2015</td>
<td>Change to existing Design Option: &quot;L1 - PIPE CHASE SLAB FILL IN&quot;</td>
<td>E/8.3</td>
</tr>
<tr>
<td>1</td>
<td>P2</td>
<td>$2.23.1</td>
<td>Replaced rectangular slab opening with two individual penetrations for mechanical pipes.</td>
<td>6/1/2015</td>
<td>E/9</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td>$2.5A</td>
<td>Increased thickness of curbs from 6&quot; to 8&quot; and adjusted layout in plan. Slab opening size increased to match mechanical EOS.</td>
<td>6/1/2015</td>
<td>B/14, K/4, A/12</td>
<td></td>
</tr>
<tr>
<td>6</td>
<td>6</td>
<td>$2.6B</td>
<td>Increased thickness of curbs from 6&quot; to 8&quot; and adjusted layout in plan.</td>
<td>6/1/2015</td>
<td>H/5</td>
<td></td>
</tr>
<tr>
<td>3</td>
<td>3</td>
<td>$2.2, $2.2A, $7.13.3</td>
<td>Adjusted top of curb condition on west side of drive through per integrated exterior curb model. Provided additional curb from C.1 to B and removed jog in elevated slab near B/8.8.3.</td>
<td>6/1/2015</td>
<td>D/3</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>$2.2, $2.2A</td>
<td>Added 6&quot; curbs around column.</td>
<td>6/1/2015</td>
<td>Change to existing Design Option: &quot;L1/L2 - RAMP WALL ADJUSTMENT&quot;</td>
<td>B/3</td>
</tr>
<tr>
<td>P2</td>
<td>P2</td>
<td>$2.23.1</td>
<td>Added 6&quot; pad for water heaters, medical vacuum, medical air compressor, laboratory vacuum pumps, and laboratory air compressors.</td>
<td>6/8/2015</td>
<td>8.3-D.3/8.3-10</td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>$2.1, $2.1B</td>
<td>Added/adjusted 6&quot; concrete curbs per architectural model.</td>
<td>6/8/2015</td>
<td>vPlanner Task 36409</td>
<td>H/10</td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>$2.1, $2.1B</td>
<td>Adjusted N-S curb to match pilaster height per architectural model. Adjusted length of E-W curb per architectural model.</td>
<td>6/8/2015</td>
<td>vPlanner Task 36407, 36408</td>
<td>H/13</td>
</tr>
<tr>
<td>2</td>
<td>1</td>
<td>$3.2.3</td>
<td>Adjusted location of vertical jog at southern ramp wall at northern ramp to align with column flange. Added 1&quot; hold back for drywall.</td>
<td>6/8/2015</td>
<td>J/10-11</td>
<td></td>
</tr>
<tr>
<td>3 - 12</td>
<td>3 - 12</td>
<td>54.1.1-10</td>
<td>Adjusted sizes of WTs for easier damper installation.</td>
<td>10/13/2014</td>
<td>Added New Design Option: &quot;ADJUSTED WT SIZE&quot; throughout</td>
<td></td>
</tr>
</tbody>
</table>
THERE ARE 6 DIFFERENT FRAMING ELEVATIONS IN THIS DRAWING. FIND THEM.
Please review framing elevations in this area. Do we need detail cuts for slab transitions?

PARTIAL FRAMING PLAN - LEVEL 1/ P1 LOBBY
- A ‘COORDINATED’, CLASH-FREE MODEL IS ONLY AS GOOD AS THE INFORMATION USED TO BUILD THE MODEL.
- BIM IS A TOOL. IT’S ONLY AS GOOD AS THE PEOPLE MANAGING AND POPULATING THE INFORMATION.
- IF YOU ARE DEFERRING MODELING L.O.D. 350-400 TO A TRADE PARTNER, MAKE SURE YOU KNOW WHO IS, AND WHEN.
- IF CHANGES ARE MADE IN THE SHOP DRAWING REVIEW PHASE, MODEL THEM, NO MATTER HOW SMALL.
- MODELS ARE LIVING DOCUMENTS. THE FUTURE IS 3D FOR COMPLEX, HIGHLY COORDINATED PROJECTS, BUT WE’RE NOT THERE YET. 2D DRAWINGS ARE STILL THE PERMIT DOCUMENTS.
- BE CREATIVE IN COMMUNICATING YOUR NEEDS TO OTHERS. REAL DOLLARS, FRUSTRATION, AND MISUNDERSTANDING CAN BE REDUCED BY USING BIM TOOLS TO COMMUNICATE IDEAS.
QUESTIONS ?