Constructive Change: Assembling Revit Models for Data Management Success

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Assemble	CRB	CRB
@AssembleSystems	@mr76er	@EpicBIM

Class summary

One of the biggest challenges faced by firms today is accessing and managing the multitude of model data generated on a project. Each week the team makes adjustments to the model and its information and you hope to capture those changes and understand how they affect various downstream activities. But even in the age of technology, most model changes are performed by old-fashioned page turns, which is too late and already out of date. Can you quickly and easily find changes between versions of a Revit software model? Can you easily coordinate and identify those changes in your Navisworks coordination model? What is the cost of the change you didn't catch? This in-depth session introduces effective practices for managing Revit model changes in coordination with the various software packages you may be integrating with your Revit model for creating cost estimates, schedules, work breakdown structures, bid packages, and so on. Join us to understand how you can constructively manage for model change.

Key learning objectives

At the end of this class, you will be able to:

- Learn how to use your model to track model and information changes throughout the project lifecycle.
- Understand effective practices for model use in downstream activities, particularly as progress effects the model and its data.
- Understand how to easily move information between Revit software model iterations in all phases to include design development.
- Learn how to identify solutions for managing external data sets with your Revit software model for greater efficiency in your modeling activities.

Introductions

John Grady

Matt Edwards

Nancy Clark Brown

Agenda

- Review best practices for setting up a model in anticipation of change
- Introduce workflows for managing model changes
- Review CRB case studies

The “I” in BIM

- A building information model, if used most effectively, is a robust database of information that is flexible, adaptable, searchable and extensible
- The information should be managed with the same care as the geometry
- Managing a few key parameters can significantly increase the use of the model, model communication, quality and ESPECIALLY for change management

The “I” in BIM

The “I” in BIM has not been fully realized, for a few key reasons:

- Difficulty in accessing and managing the “I”
- Interoperability of the “I”
- Limited number of people and roles with access to the “I”

Key Aspects of Managing Model Change

- Version Control
  - Regular record of model development or baseline model
- Parameter Conditioning
  - Identification of model properties for tracking model development and model change (for downstream activities)
- Change Reporting & Documentation
  - Fast, effective reporting for insight into the scope of change and communication of the change

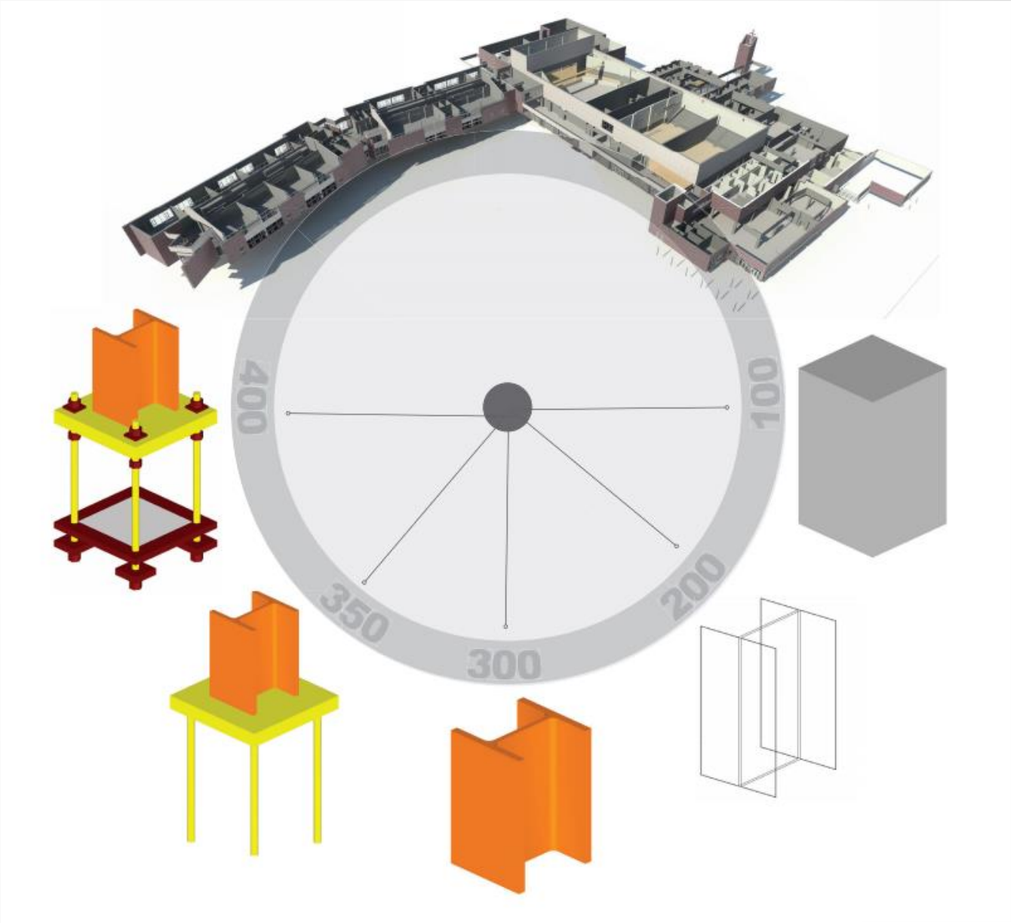
Parameters for Communication

> Level of Development

> Assembly Codes

> Naming Conventions

> Other Parameters

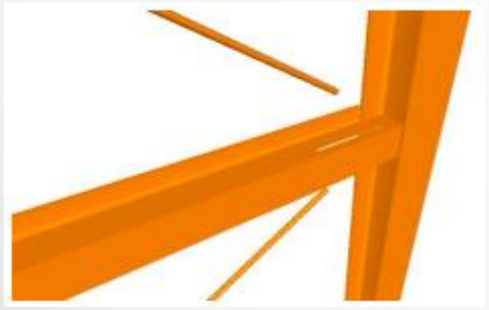


http://bimforum.org/wp-content/uploads/2013/08/2013-LOD-Specification.pdf

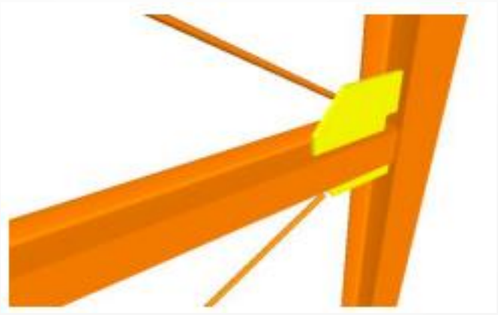
Level of Development

> LOD is a clear way of communicating which objects *CAN* be used for downstream activities and which objects *CANNOT*

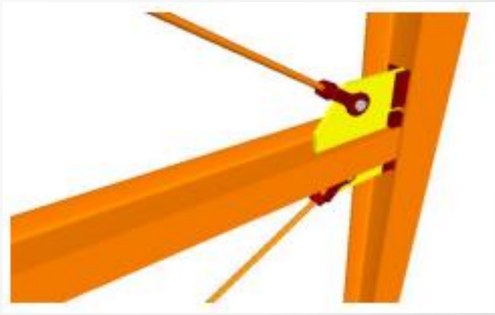
> Level of Development is about information *NOT* just detail



LOD 300



LOD 350



LOD 400

B2010 – Exterior Walls

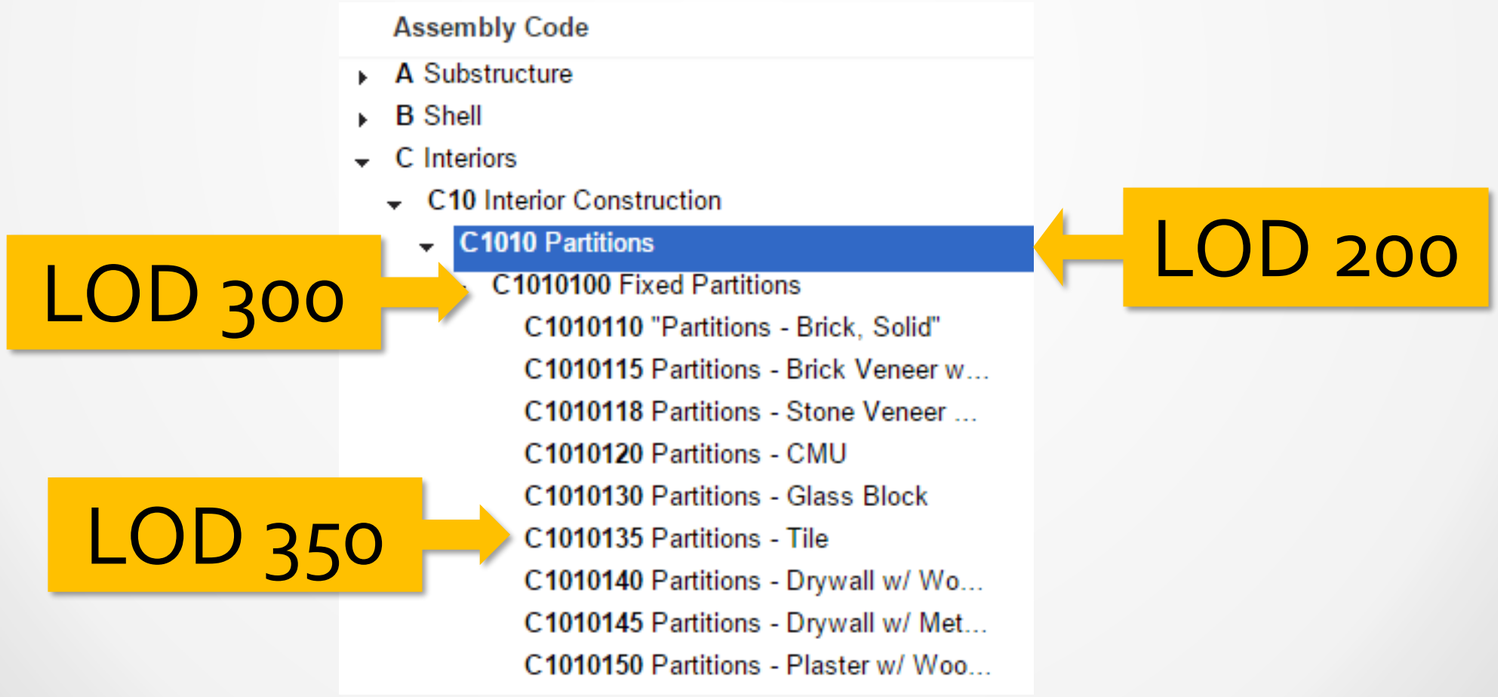
Solid wall construction that is composite in nature; in other words, multiple layers of materials to form an overall assembly.

100	See B20	
200	Generic wall objects separated by type of material (e.g. brick wall vs. terracotta). Approximate overall wall thickness represented by a single assembly. Layouts and locations still flexible.	
300	Composite model assembly with specific overall thickness that accounts for veneer, structure, insulation, air space, and interior skin specified for the wall system. (Refer to LOD350 and LOD400 for individually modeled elements) Penetrations are modeled to nominal dimensions for major wall openings such as windows, doors, and large mechanical elements. Required non-graphic information associated with model elements includes: • Wall type • Materials	
350	A composite wall assembly may be considered for LOD350 only if hosted objects such as windows and doors are provided at a minimum of LOD350. Main structural members such as headers and jambs at openings are modeled within the composite assembly.	

http://bimforum.org/wp-content/uploads/2013/08/2013-LOD-Specification.pdf, pg 36

Assembly Codes

> Coding schemes can serve as a way to further clarify the definition of a component beyond the geometry



http://www.csinet.org/Home-Page-Category/Formats/UniFormat

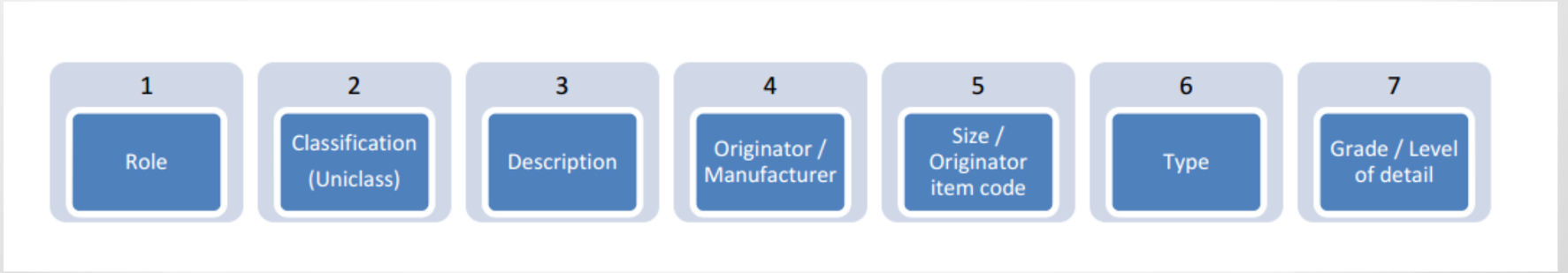
Naming Conventions/Standards

> Communicates the status of the object/assembly development (generic vs. specified)

> Clarifies use (fire rating, function, classification, etc)

> Denotes size

> Does not provide redundant information



http://aecuk.files.wordpress.com/2012/09/aecukbimprotocol-v2-0.pdf

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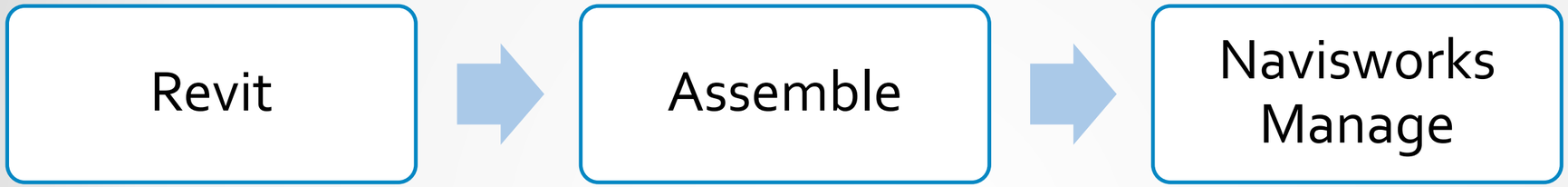
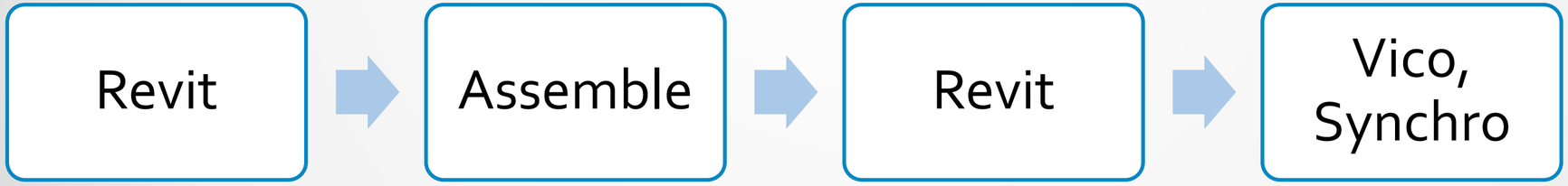
Workflows for Managing Model Change

> For Coordination Model Workflow



> For Downstream Estimating/Scheduling Workflow



Assembling your Revit model and Changing the “I” in BIM

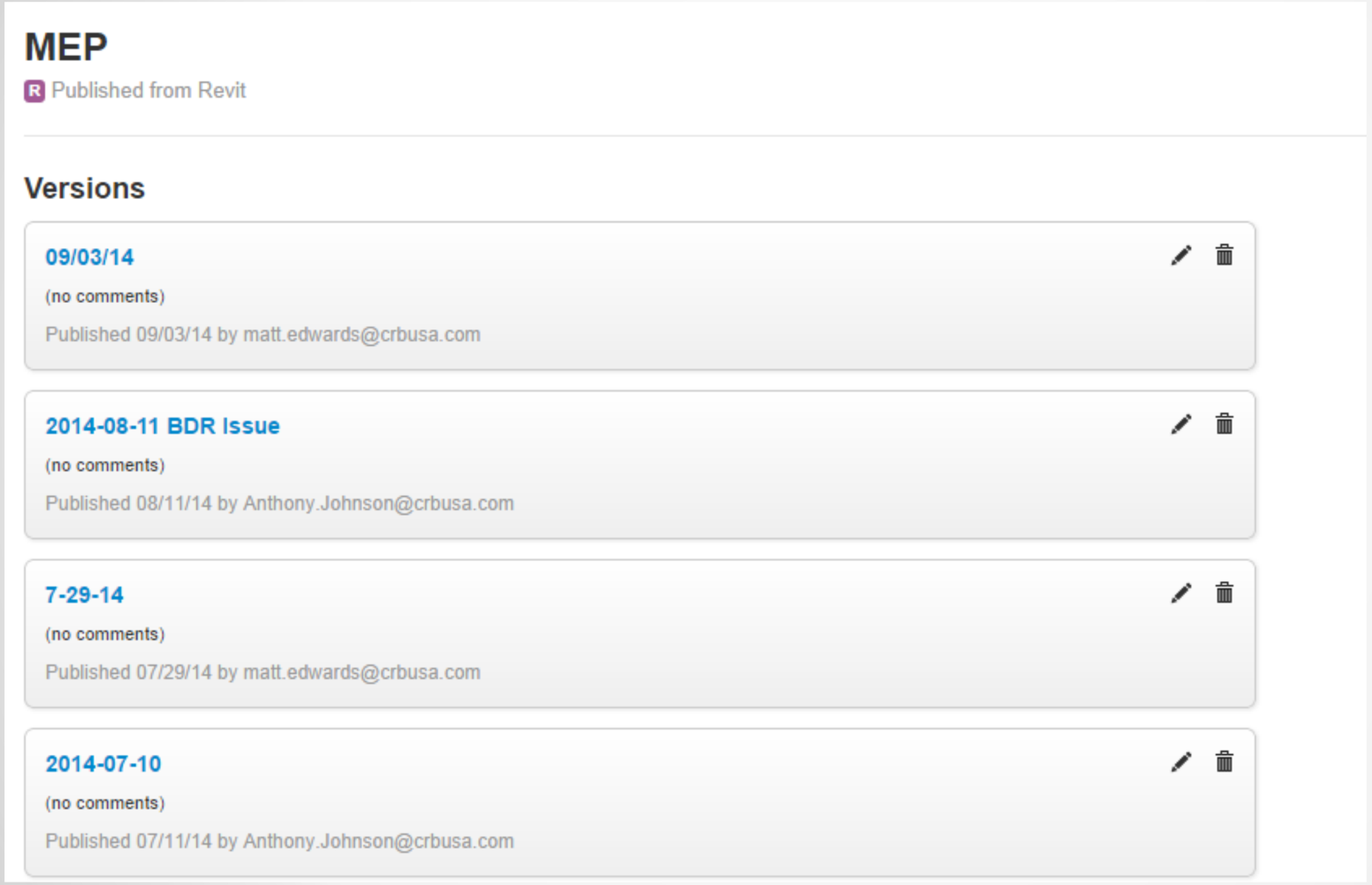
- Anyone can add information to the model
- Maintain information inside or outside of a model, even as the model develops
- Flexibility to share information with others in a variety of formats
- Fast, searchable information for quick answers and decision making
- Robust, high quality, accurate BIM deliverable in less time
- Ability to expand your services

Workflow Demonstration

See class handout for detailed information on how to practice workflows outside of class.

- Workflow demonstration
- Change Management in Practice – CRB Use Cases

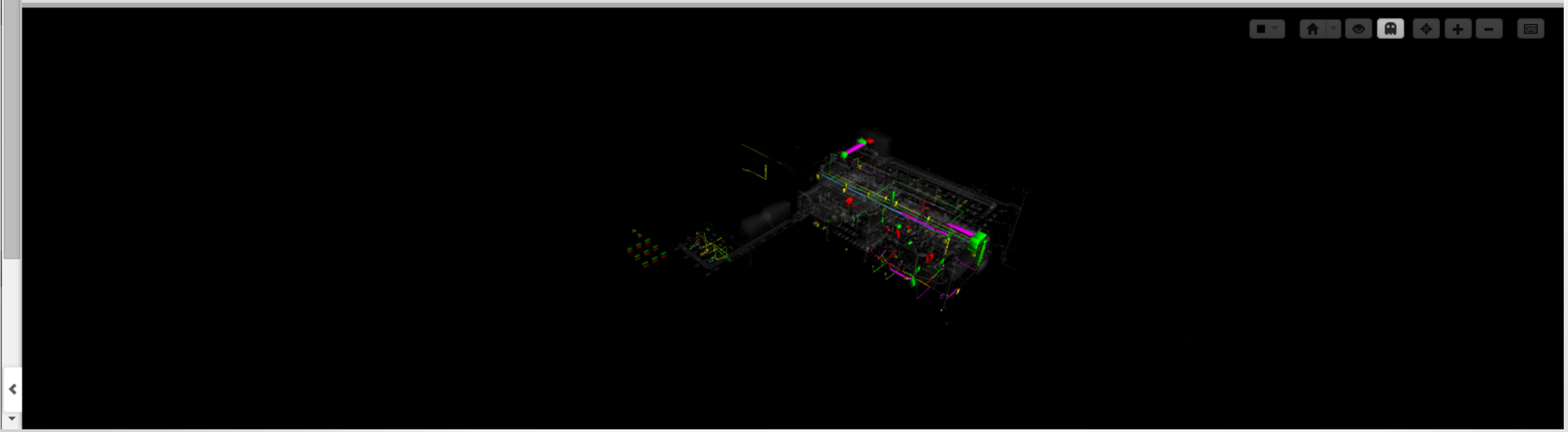
What's in a Name?



How many hours did you charge?

2014-08-11 BDR Issue compared to 7-29-14 | Group By: Category | Add/Remove Columns...

	Quantity			
Name	2014-08-11 BDR Issue	7-29-14	Variance	Unit
Air Terminals	3	2	1.00	EA
Duct Fittings	9	5	4.00	EA
Duct Insulations	11	4	7.00	EA
Ducts	107.91	70.71	37.20	LF
Electrical Equipment	17	17	0.00	EA
Electrical Fixtures	12	2	10.00	EA
Fire Alarm Devices	0	1	(1.00)	EA
Lighting Devices	0	1	(1.00)	EA
Lighting Fixtures	38	35	3.00	EA
Pipe Accessories	4	3	1.00	EA



That doesn’t go there!

2014-08-11 BDR Issue compare to…

Name	Quantity	Unit	Count (EA)	Ar
Instrumentation Equipment	1	EA	1	
Instrumentation Process	25	EA	25	
PIPE BRIDGE	2	EA	2	
Piping Fire Protection			3,888	
Cable Trays : Cable Tray with Fittings : Ladder Cable Tray	1.35	LF	8	
Duct Fittings : Rectangular Duct Transition - Angle : 45 Degr…	1	EA	1	
Flex Pipes : Flex Pipe Round : Flex - Round	1.64	LF	2	
Generic Models : Viking 8 F-G Model J-1 Alarm Check Valv…	1	EA	1	
Mechanical Equipment : Design Block_Rect-Mech_EQ-CRB…	1	EA	1	
Mechanical Equipment : Fire Department Inlet Connection - …	1	EA	1	

Questions?

Thank you for your attention.

Please take a moment to fill out the course surveys.

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