Revit Management Training

"Revit your CAD Standards"

WILL 2 PLAY
focused training.

"Lecture Topics"

Fall Series 2009 : Autodesk® Revit® 2010

Course Syllabus: "Revit your CAD Standards"

Key Software:	Revit Building 2010	Starting:	Fall 2009

Instructor:	William C. Harris
Session Time:	TH 1:00PM - 2:00PM (GMT–08:00) Pacific Time
Webinar Link:	https://www1.gotomeeting.com/register/730235670
Email address:	Connect@Will2Play.com

Week	Date & Day	Session Number and Title	
1	Sep-29 : Tuesday	01	Revit User Manual
1	Oct-01 : Thursday	02	Revit Manager Manual
2	Oct-06 : Tuesday	03	Central files / Local Files
2	Oct-08 : Thursday	04	Loaded Family Standards
3	Oct-13 : Tuesday	05	Title Blocks
3	Oct-15 : Thursday	06	Managing System Families
4	Oct-20 : Tuesday	07	Project Templates
4	Oct-22 : Thursday	08	Detailing
5	Oct-27 : Tuesday	09	Design Process and Workflow
5	Oct-29 : Thursday	10	Phasing
6	Nov-03 : Tuesday	11	Design Options
6	Nov-05 : Thursday	12	CD Standardization
7	Nov-10 : Tuesday	13	Printing Archiving
7	Nov-12 : Thursday	14	Changing Releases
8	Nov-17 : Tuesday	15	A BIM Manager Guide to Success
8	Nov-19 : Thursday	16	Q&A

Course Objectives:

Over the 16 session class you will learn both the conceptual and practical process of standardizing all of the Revit product solutions. Each session addresses key topics first conceptually, then in the product, followed by open discussion. Each Sessions Major and Minor topics additional Class Resources are provided for some sessions.

Required Materials:

1. Web Access

2. Audio Device with Mute Control

3. Autodesk Revit Building 2010

Missed Live Presentation:

Should you have an emergency and miss a Session you will have access to that Session until the end of the Series. You are responsible for scheduling time to view the Archive, review and understand the material. Questions specific to the Session should be emailed to the instructor in a timely manner.

GreenBoard:

The course syllabus, important course announcements, Presentation Outlines, Briefing Notes, Instruction Manuals, or Additional Session Resources, will be made available via GreenBoard. Please contact the Instructor as soon as possible if you cannot access the website or if you have any technical difficulties.

Table of Contents

Session01 BIM User Manual

Topics

- ☑ INTRODUCTION & CAD STANDARDS CONCEPT
- ☑ BEST PRACTICES
- ☑ HOW-TO'S
- ☑ DETAIL LIBRARY
- ☑ PLOTTING
- ☑ ACKNOWLEDGEMENT FORM

Introduction & CAD Standards Concept

- Who
- What
- When
- Why – the big one

My thoughts

If they don't understand your position, your reasons and the value to their **own working environment** they will not follow your standards

KISS / Path of least Resistance

Best Practices

CAD v. Revit

Job Numbers, Project Folders & Project Setup

All these are the same / however; you will want to specific who sets up the new project

- Key points
- Folder location / Structure
- Project Template
- Title Blocks
- Loading
- Using
- Local File / Central File issue

File Naming AND Sheet Numbering

- Now Sheet and Sheet number naming

- I suggest building these into the project template
- However have documented Examples of names / prefixes / numbers

Layers

- Becomes Categories for basic modeling views
- Becomes linetypes for Drafting views

Standard Color Table

- Explain that this doesn't matter
- When you are printing in black and white
- Understand / explain Gray scale equivalent
- LOCATION FOR PRINT SETUPS
- WHO IS IN CHARGE OF THEM

Best Practices

Project open and close

- Opening a Project = opening all Views that were open when the project was saved
- Window>>Close Inactive Windows
- [TIP: The Open/Close or Welcome Page](#)

Central File / Local File

"Save before Standing"

- Save locally
- Save to Central
- Relinquish All

Dimensions locations

- Include picture
- Keynotes

Tips and Tricks

- Create Similar (CS)
- Select All Instances
- Project Browser View Settings
- "Activate View" on Sheets
- View Templates
- Family Creations

Text Style, Fonts & Drawing Scale Factors

- Scaling is irrelevant in Revit.
- All Model Categories scale based on the view settings
- All Annotation is Scale independent

How-to's

Loading System Families

- Loading
- FILE>Transfer Project Standards
- Bothe the Current and the Standard Content Project have to be open!
- Location
- Server\BIM Standards\2009\Revit Templates\System Families
- File Information
- Include a Screen shot of files
- Include a table with file names and families contained

Loading Standard Families

- Default
- Company
- Internet

Process for bringing in CAD drawings

- Always bring in from sub folder under Revit.

Import/Link Dialog

- I suggest you take a screen capture of this dialog

Always

- Use link
- Origin to Origin
- Invert colors

Sometimes

- Scaling
- Orient to view
- Know what level you are placing at

Detailing

- One of Two ways

The Good Process – Using the Revit Model and Views

- Use Sections and Callouts of the Model
- Set Detail Level and Scale
- Finish up detail using
- Masking and Filled Regions
- Detail Components
- Detail Linework
- Text with leaders

The Real Process – Using Imported CAD Details

Real Process - Start with a Blank Drafting View

- Import CAD Drawings (see "Import link Dialog")
- Finish up detail using
- Masking and Filled Regions
- Detail Components
- Detail Linework
- Text with leaders
- Placing the CAD Detail location
- Use Sections or Callouts
- Before placing the Section / Callout
- In the Options Bar Check "References another View"
- Select the Drafting View
- Place the Section /Callout appropriate to the detail

Detail components

Are Revit Families that are 2D representations of 3D objects? Use these in Drafting / Detail Views of the model to convey specific Design Intent.

- Loading
- FILE>Load from Library>>Load Family
- Location
- Revit Standard Content> Detail Components
- Placing
- Drafting Design Bar >> Detail Component

Multi-category tag

- This is up to you.
- This is a Tag that can reference parameters common to all families

- Quick Demo…..

Detail Library

- Location / folder name
  - o [\\Server\Revit_Standards\Revit Details](#)
  - o Instruction Documentation
  - o Revit Details.rfa
  - o \CAD Details
- Who can update it?

Plotting

Revit

- Plotting Standards Project location
  - o Contains plot settings for all printers a`d print types
- View/Sheet Sets
  - o Reasons for using
  - o Saving

Exporting to CAD / PDF

- Uses Same View/Sheet Sets
- Archiving / Saving location

Project Development - PD –DD – CD

Primary Design Key Points

- Minimal custom content – Place Holders
- Almost no new families
- Shell and Core
- Design Intent
- Form and Function
- Schedules and Costs can be generated
- Project Information flushed out

Design Development

- Flushing out the Model
- Cleaning major construction components
  o Wall and Floor/Roof Joins
- Moving "Placeholders" to Final Components
- Project Browser showing "Views not on a Sheet"
- Sheet layouts built

Construction Document

- Use of Drafting tab for View Specific Content
- Use of "Lines" for 3D Linework
- Lots of Sections and Callouts
- Drafting Views Created where necessary
- Importing Revit Details
- Project Browser showing "Views on a Sheet"
- Use of "Activate View" for "White Space Management"

Acknowledgement Form

- BIM Standards - Acknowledgement Form
  o Team member signature
  o BIM Manager Signature

Session02 Revit User Guide

Topics

- PROJECT TEMPLATES
- VIEW TEMPLATES
- OPTIONS
- RENDERING
- IMPORT/EXPORT SETTINGS
- FAMILIES AND FAMILY TYPES
- SHARED PARAMETERS
- WORKSETS
- PROJECT SETTINGS

Project Templates

- File location
- Template Types
- Settings within them – Project Unit

View Templates

- System Family – Separate Project
- Location: Office BIM Standards \ Revit Templates\System Families
- Best Practices = each view has a "Default View Template"
- I'm wondering about naming the folder "System Families"

Options

- General
- Saving interval
- User Information
- Journal File Clean up
- File Locations

Rendering

- SteeringWheels
- ViewCube

Import/export Settings

- Don't change export to CAD
- IFC Import/Export settings

Families and family types

- System Family – Separate Project
- Location: Office BIM Standards \ Templates \ Settings
- Standard Families
- Location: Office BIM Standards \ Office Content \ division?
- Naming: + W2P
- Be aware of Schedule names….

Shared Parameters

- Danger! Check/ Read/ understand them
- Location: Office BIM Standards \ Shared Parameter files
- Group appropriately
- Once created, can't be modified
- Some need to be added to "Project Parameters"

Worksets

- The hardest of all to understand
- Best Practices – Don't open Sets not in use
- Editable v. useable
- Naming issues
- Management of worksets
- User Name
- Local File – Location – server / Project / Project Standards_ADMIN
- Don't relinquish

Project Settings

- Pre-work for project
- Advancing the CD will set object styles
- 3 projects to finalize
- See excel file

Session03 Central files / Local Files

New vocabulary, new ideas, new ways to work.

- There are two project file types for Revit
- The Central File
- The Local File

The Central File

The Central file is the Holy Grail; Users never ever open, move, edit or touch it!

Local File

This is the file that users will open and work on everyday

At times, users will have to recreate the local file from the central file; this will keep the local file error free.

You will want to set up a company standard for creation of a local file

Topics

- Naming and file locations
- Worksets, the how and why
- Management issues
- New Project Setup

Naming and file locations

File location

The Central File

- The Revit Project will reside inside the Project folder
  - P:\year\project# project Name\Dwg\ Architectural\Revit\CentralFile
- Example:
  - P:\2006\12806 Rockstar\Dwg\Architectural\Revit\CentralFile

Local File

- The local file will reside on your C: drive. NOT your Desktop or "My Documents!"
- Create a Folder on the root of your C: drive, "C:\Revit Projects"
- You may be working on multiple Revit projects at the same time, please created a sub-folder for each project.
  - C:\Revit Projects\Project Name\Project Name_<YourInitials>
- Example:

   o   C:\Revit Projects\Rockstar \

File Naming

Central File Name

- All Central files will be saved with _CentralFile at the end of the file name.
- Example:
    - Rockstar_CentralFile

Local File Name

- All local files will be saved with your Initials at the end of the file name.
- Example:
    - Rockstar_WH

Worksets, the how and why

Worksets are Revits way of breaking a project up so that multiple people can work on it. There is no "Right" way to use worksets to a project. I will give you some guidelines to conceder while creating worksets for a project.

Red Pill, Blue Pill

Once you enable works sets you cannot go back.

Not all projects will need to have worksets enabled. – Groups. Most project will have to have worksets enabled for the following reasons: project management; office workflow; standards adherence

Necessary Worksets:

- User Created - Shared levels and grids
- Project Standards – always have checked out
- Views – View Templates, working v. CD v. Temporary
- Families – System v. Standard

Possible Worksets:

- Level Based
- Building Based – Shell & Core
- Project Area Based – East, West, North, South
- Room Based – Bathrooms = Group?
- Job type Based
- Other

Help File Information

Decisions you make when using worksharing and setting up worksets can have long-lasting effects on the project team. AutoCAD users will recognize some of these implications from setting up xref structures for projects. In general, when setting up worksets, you should consider the following:

- Project size

- Worksets and templates

- Team size

- Team member roles

- Default Worksets visibility

Management issues

The Central File

- Folder Permissions

- Who creates these?

- Who modifies these?

- Backups – always backed up!

Local File

- C:\Revit Projects\Rockstar\

Detach From Central

Worksets

- Worksets are crap!

- They don't control the location of the objects created

- I don't have to be in the Worksets to edit it

- Worksets are great!

- The "Open" Option

"When opening a shared project, you can select which worksets to open. When you open only selected worksets and leave others closed, program performance improves. Because Revit Architecture does not display closed worksets, less time is required for common operations such as opening files, opening new views, redrawing the screen, and snapping." ~ Help File

The "Gray Inactive" setting

New Project Setup Revit

Overview

- There are two project file types for Revit

    o The Central File

o The Local File

The Central File

- The Central file is the Holy Grail, never ever open it or move it or edit or touch it!

Local File

- This is the file that you will open and work on everyday

- At times, you will have to recreate the local file from the central file; this will keep the local file error free.

- Please follow company standards on creating a new local file

File location

The Central File

- The Revit Project will reside inside the Project folder

- P:\year\project# project Name\Dwgs\ Architectural\Revit\CentralFile

- Example:

    o P:\2006\12806 Rockstar\Dwgs\Architectural\Revit\CentralFile

Local File

- The local file will reside on your C: drive. NOT your Desktop or "My Documents!"

- Create a Folder on the root of your C: drive, "C:\Revit Projects"

- You may be working on multiple revit projects at the same time, please created a sub-folder for each project.

    o C:\Revit Projects\Project Name\Project Name_<YourInitials>

- Example:

    o C:\Revit Projects\Rockstar \

File Naming

Central File Name

- All Central files will be saved with _CentralFile at the end of the file name.

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Local File Name

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- Example:

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Session04 Loaded Family Standards

How do you standardize standard families? We'll talk file location, naming and best practices. What about the upcoming move to 2009? Did you plan ahead?

Topics

- Standard File locations and setup
- Audit Process and Upgrades
- Best Practices for Creating Families

Standard File Locations and Setup

Family Content Folders

Who has access

- Creation
- Modify the Family
- Create new types

Audit Process and Upgrades

Audit Process – Increasing your Standard Library

Checking for

- Usefulness
- Parameters
- File size (save as)

Best Practices for Creating Families

Training

1. Basic – Family types
2. Advance – basic creation / updates
3. Expert – formulas and trouble shooting

Who can Create Families

- BIM Manager, Project Manager, Senior Drafter
- One v. Many debate
- The "Family Person"

Issues

- Categories
- Subcategories (big issue)
- The "rabbit hole"

2D – 3D Toilette Setting up for Speed

- Settings>>Options>>File Locations

Session04 Resource Family Content Folders

Topics

- 3 mandatory & 2 optional Content Folders
- In-House Content
- External Content
- Optional Content Folders

3 Mandatory & 2 Optional Content Folders

Breaking this down into in-house content and external content

In-House Content

Any content

Company Standard Content

- Information
    - This content is COMPANY standard for all projects
    - Use Families from this folder when your project dictates
    - All Title Blocks and Annotation Families are stored here
- Permissions / Responsibility
    - This folder is READ ONLY
    - The CAD Manager is responsible for all content
    - ONLY approved content may be added to this Folder
- Location
    - DriveLetter:\Revit Building <ReleaseVersion>\ COMPANY Content
- Example:
    - R:\Revit Building 2009\Rockstar Content

Project Specific Content

- Information
    - During the development of a project you will have to create some custom families this is the location for all content created for the project
    - Please follow Family creation guidelines when creating these families.
    - These Families DO NOT have to be perfect; we may only have to use them once.
    - If you need to pull a family from another project, DON'T

- o Please advise the CAD Manager, who will approve the content to be moved into the Company Standard Content Folder

- Permissions / Responsibility

  - o You may create, edit, and save any content in this folder

  - o You are responsible for any content you create here

  - o At the end of project, please advise CAD Manager of potential Company Standard Content

  - o This will allow us to build/improve our Company Standards

- Location

  - o R:<Project Number>\ Revit Project Content

- Example:

  - o R:\2009\100101\ Revit Project Content

External Content

- You don't ever have to manage the default for Autodesk. If you ever modify any Autodesk content, then it has become Project content. If you modify download content you should create an audit process for it. Either create a sub folder under the "Downloaded Content" folder or some other process. Don't just move it into your Project Content, you don't know what it does; you don't know what release it was created in.

Revit Default Content:

- Information

  - o This is default content that is release specific. Every new release all of the content gets updated to the current version of Revit

  - o The more content you use from here the less content YOU will have to manage!

- Permissions / Responsibility

  - o This folder is READ ONLY

  - o Nothing EVER gets saved here

  - o The CAD Manager is responsible for all content

- Location

  - o DriveLetter:\Revit Building <ReleaseVersion>\Content

- Example:

  - o R:\Revit Building 2010\Content

Optional Content Folders

- Be aware of these possible content locations it's up to you as the BIM manager to decide how you would like to handles them.

Downloaded Content - Project specific

- Information
    - o If you want to keep your project "clean" I would suggest that you also have a folder for any family that is download from internet sites. Although most downloaded families should not cause problems with will at least allow you to audit your office's download practice.
- Permissions / Responsibility
    - o You may download and save any content in this folder
    - o You are responsible for any content you create here
    - o At the end of project, please advise CAD Manager of potential Company Standard Content
    - o This will allow us to build/improve our Company Standards
- Location
    - o R:<Project Number>\ Revit Project Content
- Example:
    - o R:\2008\100101\ Revit Downloaded Content

Downloaded Manufacture Content - Project specific

- Information
    - o By keeping your manufacture content separate you have create some things.
    - o You know what manufacture you are pulling content down from
    - o You create an Audit Process for their content
    - o The next time a manufacture comes by to sell you their goods, well. Show them your content.
- Permissions / Responsibility
    - o You may download, and save any content in this folder
    - o You are responsible for any content you create here
    - o At the End of project, please advise CAD Manager of potential Company Standard Content
    - o This will allow us to build/improve our Company Standards
- Location
    - o R:<Project Number>\ Revit Project Content
- Example:
    - o R:\2008\100101\ Revit <ManufactureName> Content

Session05 Title Blocks

We have them for CAD, we need them for Revit. Get from A to B, ASAP! You have to understand the process and path before you start this journey; here is your Road Map.

Topics

- Labels and Text and Lines (why are these all together?)
- Parameters
- Best Practices
- AutoCAD to Revit Drawing Problems
- Scale, text, labels (attributed blocks bat) Sizes
- CAD line work v. Revit Line Styles
- Dynamic Title Blocks

Labels and Text and Lines

Key Points:

- Naming Convention for EVERYTHING!
- Line Types, Text, Label, Type, Family
- NEVER USE "AutoCAD based" TITLE BLOCKS

Revit Title Blocks

This will cover the concepts of Labels, Text and Lines you use in Revit's Title Blocks

Naming convention for: Text, Labels, Line Types, Family Types

- Text – ex: W2P-Arial-1/8-1.10
- Labels – ex: W2P-Arial-B-1/4
- Company Name – Text Name – Bold – Size – Width Factor
- Line types – ex: Title Block-Thin
- Controlled/Created with OBJECT STYLES
- Reason: Export to AutoCAD Line types and Weight
- Family Types
- Design Phase?
- Sheet Type?

Parameters

There are only two "kinds" of parameters in Revit Title Blocks: Dimensional and Visibility. Yes, of course you still have access to all possible parameters, but you're only going to use the two I mentioned.

Dimensional

If you need to change sheet sizes, you will have to Dimension and Label the extents of your sheet. Any "Relational Distance" between line work will have to be changed parametrically too

- Adding Dimensional Parameters Steps

- Dimension

- Label

- Add Parameter (Naming Convention)

Visibility

This parameter allows you to turn on and off objects. Think about your SEAL. You want to have it turned off for all of your plotting during DD and CD phase. Then at 100% CD, you will turn on your SEAL.

Uses for Visibility

- Architect's Stamp (SEAL)

- Title Sheet v. General Notes v. Drawing Sheets

- AND THE BIG ONE – **TEXT and LABELS**

- Text and Labels, unlike Linework, cannot be moved parametrically.

Adding Visibility Parameters Steps

- Create the Element

- Edit it's Properties

- Label the Visibility Parameter

Using the Parameters

- Family Type Dialog Box

- Create New Types

- Instance v. Type Parameters.

- What should your SEAL be?

Best Practices

There are both Use and Creation Best Practices.

USE

How do you move from PD to DD? What about the creation of your entire CD package, Title/Cover Sheet, General Notes, Details and Schedules?

A number of companies use multiple sizes, do you?

The Issues and Possibilities

Sizes

Two different Families v. Two different types in one Family

- Two different Families
    - W2P Titleblock – E1: Cover Sheet
    - W2P Titleblock – D: Cover Sheet
    - Two files to manage and maintain less types in a given project
- Two different types in One Family
    - W2P Titleblock: E1 Size – Cover Sheet
    - W2P Titleblock: D Size – Cover Sheet
    - One File to manage and maintain more Types in a given project

Types

- Type Parameters for Sheets:
    - Title/Cover Sheet
    - General Notes
    - Details and Schedules
- Instance Parameters for:
    - Grid lines?
    - Revision Schedule?
    - SEAL?

Creation

Now here is where you don't like what I have to say: "RECREATE EVERYTHING!" I know you just spent a ton of time making your CAD Titleblock look great and you can use it as a reference; however, you still want to recreate it all in Revit. DO NOT EXPLODE!

You only have to create your Titleblock once and it will be used a number of times in each project, for all your future Revit Projects! Don't risk bringing in bad CAD data.

The Loop from scratch

- New "Scratch" Titleblock Family
- Insert your CAD file
- Explode or draw over
- Copy and Paste into New "W2P Titleblock" Family
- Insert into "TEST" Project to check
- Repeat loop for all Titleblock Types and Information.
- Insert into project

Dealing with Issues

Text and Labels

- Match as best a possible but use real Sizes
- 1/4
- 3/8
- Text and Labels each have their own types: it doubles the work
- Copy and Paste for duplicate text and labels

Line Types

- Color may or may not matter
- "Redraw" your CAD Linework using "Pick"
- If you explode, you may get pieces of Linework.
- Uses trim/extend TR for cleanup.

Apply Visibility

- All at once, or one object at a time

Printing

- All elements must fall within the boundary of the size

Session06 Managing "System Families"

Families… You got those. Now let's talk about System Families, View Templates, and other key template information you need to address.

Value: clear and concise sets of Revit Standards for System Families. Make use of standards easier for end user. Makes managing System Families standards extremely easy. Makes the update process quicker and isolates failure points.

Topics

- Yes they are different than "Standard Families"
- File location / Content / Reason
- Using Standard Families & the "Audit Process"

Yes they are different than "Standard Families"

Differences

- Standard Families = loaded into a project
- System Families = created in a project
- System Families = part of "Template Files"
- Edit/New – Duplicate

File location / Content / reason

File location

- \\Server\BIM Standards\Revit Templates\System Families
- Protected?
- Update process?

Possible Project Names

- Wall Standards - W2P.rvt
- Object Styles Standards - W2P.rvt
- Roofs + Floors Standards.rvt
- View Templates Standards.rvt
- Annotation Standards.rvt
- What about materials?

Reason behind it all

- Separation for easy management
- Audit process

- Material Types

Using Standard Families & the "Audit Process"

Tools

- Transfer Project Standards
- Copy and Past
- Setting Loc Lines and using Create Similar

Audit Process

- Walls
- Layer function
- Material
- Thickness
- Identity Data

Upgrading to 10

- All projects should be copied to a 09 folder
- Why
- What about Central Files
- Open the original in 10
- Save to 10 folder structure
- Double check the function
- Time, Time. Time!
- Standard Families
- If you created them, update them, with the same process
- If default 09 content, leave alone
- If default 10 content, use in 10 projects
- Note : Autodesk's Web Library

Session07 Project Templates

Depending on your firm's project types you may need multiple templates. In the days of yore, the CAD days, we saw template files as, typical floor or ceiling or detail drawing templates. Now, with Revit, we must see not the sheet that determines the template but the project type.

Value: by the end of this session you will understand what makes Revit project templates critical to your success. You'll see where they should be stored and what should be contained within them. Keep in mind how Revit "place holders" will affect what's "default" in your project compared to what will be used in CD's.

Topics

- Check list for Project Templates
- Template Location / Content / Reason
- Other

Check List for Project Templates

Include

Graphical Standards

Content

- Titleblocks
- Default PD/SD content
- Wall Types (drawn in FP with Labels)

Views

- Project Browser View Types
- Schedules
- Legends
- Level Naming / View Template Default
- View Template for Exporting
- Filters
- Other?

Exclude

- Details
- DD/CD Content
- Titleblocks
- Other

Why

- Project Speed and Size
- The Revit Design Process
- Place Holders
- Milestone Based Content

Template Location / Content / Reason

- \\Server\BIM Standards\Revit Templates\ Project Templates
- What about System and Standard Families
- Sub Folder under Project Templates

Other

Other Disciplines

Import / Export Templates

Quick Conversion between Design Phases

Session08 – Detailing

Topics

- Detail Overview
- Detail Concepts
- "Tools and Process"
- Long-term Management

Detail Overview

In Revit there are three ways to detail your building

- Create Details for scratch in Revit "The Wrong Way"
- Importing details that have already been drawn "The Real Way"
- Creating the detail from the model and embellishing it using 2D detailing tools "The Right Way"

Detail Concepts

Creating drafting Views

It isn't feasible to model every construction detail in 3D Revit

Drafting Views are used for detail drawings or importing details or creating legends, maps, text or any of a variety of things necessary for a construction documentation set.

Importing or linking CAD formats

The data you import or link into your model can be view specific.

Linking v. Importing

Linking

- Linking creates a live connection to a file.
- If you link a file, any changes made in the original file will be apparent in the Revit file.

Importing

- Import inserts the data into the project
- Allows you to explode the file and modify the objects directly in Revit

Linking CAD formats

- File>> Import/Link >> …..
- File>> Manage Links
- Reload, unload, import, and remove

"Tools and Process"

In Revit there are three ways to detail your building

- Create Details for scratch in Revit "The Wrong Way"

- Importing details that have already been drawn "The Real Way"

- Creating the detail from the model and embellishing it using 2D detailing tools "The Right Way"

Detail Tools

Detail Groups

- Collections of 2D Graphics

Detail Component

- Parametric 2D families

- Created in a Family Editor

Regions

- Filled Region - 2D hatch and solid fill shapes

- Masking Region - "Whiteout"

- Invisible line style

- Other Line Styles

Repeating Detail

- Takes a "Detail Component" and arrays it along a straight line

- Combines Standard Family "Detail Component" with System Family "Repeated Detail"

Custom line types using repeating details

- You can use the detail component tool to create custom line type

Miscellaneous line tools

Insulation

- Symbolic Representation for Batt insulation

Show Hidden Lines

- Shows "hidden lines" for recognizing obscured elements and representing the portion that is hidden with dashed lines.

- Show hidden lines applies to 2D and 3D elements in all possible combinations

Importing CAD Details

1. Copy the CAD file to a subdirectory of you project

2. Project00102\CAD Details

3. Delete all superfluous data in the CAD file before importing

4. Annotate the detail in Revit using text

If a CAD drawing has a series of details in it, then:

1. Break the CAD drawing up into multiple drawings
2. W-Block
3. Insert the individual files into Revit
4. Never Explode the CAD File in Revit

Adding Information to your details

Adding detail components

- Some elements are going to be used in multiple views, make them detail components
- File> load from library> Load Family
- You can use Detail Components at every scale
- What do you use to edit Detail Components?

Finishing the Detail

- Detail Tools
- Generic Tags – material
- Think about nesting
- Naming / Scales / Detail number on sheets

Long-term Management

Revit – CAD Detail Standardization process overview

4. **COPY** details from your CAD detail library to "BIM Standards\Details\CAD Details – Import" or "Project\CAD Details" folders.
5. Clean out superfluous data – ALL DATA
6. Change CAD layers names to "Thin Lines" exc.
7. Link "Revit – CAD Detail" drawing into "Revit Details.rft" project
8. Annotate the detail in Revit using text and data

Revit Detail.rft

- This file will always have linked CAD files in it.
- ONLY linked CAD Files
- Set the View scale and view name appropriately here

Revit Project Details

- File>>Insert from File>>Views . . .   Revit Detail.rft
- CAD files were "Linked" in Revit Detail.rft
- CAD files are "Inserted" in the inserted Drafting View
- Explode – WHAT?

- See Step "2. Clean out superfluous Data – ALL DATA"

Cleaning the CAD drawing

- Superfluous Data?

- Layer Translator

- W-Block to be sure

Side Note

- Detail Component from CAD Drawings?

- W-Block, Copy & Past into new "Detail Component" Family

Session09 Design Process and Workflow

Topics

- Key points for SD
- Key points for PD
- Key points for DD
- Key points for CD
- Key points for
- Key points for Archiving and milestones

Before we begin

- Data disconnect!!!
- Create similar
- Select all instances
- Edit>Past Aligned> Select Levels/ views by Name
- 559-917-3146

Key points for SD

Key points

- Don't waste time; if the designer is not using Revit; you are not using Revit!
- Use masses for building the building; then major changes happen: update the mass; "REMAKE" the elements
- Keep it as "cartoon" as possible – manages client expectations
- Almost nothing custom give them as much as they need; no more
- think data disconnect = loss of time/work/$$$

Sustainable isn't going away

Incorporate a sustainable approach from project inception

Track recycled materials and other sustainable strategies using schedules

- Based on element properties
- Any view regardless of type
- Always synchronized
- Non-type specific
- Multi-Category

- Area gross
- Area rentable
- Other Schedules VIEW>>NEW>>SCHEDULE
- Material takeoff
- View List
- Drawing list
- Note block
- Keynote legend

MASSES

Other Tools

- Floor Area Faces
- Floor by Face
- Wall by Face
- Roof by Face
- Curtain System by Face

-REMAKE-

Feasibility tools with masses

- Area calculations – FAR , LCR
- Multi-Family TAG
- Room Tags
- Area Plans
- Area Tags
  - o Gross Area
  - o Rentable Area
- Sun studies – project north / v. True north
- Mass based cost estimating

Site Data

- Scale – Problems?
- Orientation
- Shared coordinates
- "Shared Positioning" – Revit Help file

Other SD Points

- Design Options

- Imported Geometry
- Green Building Studio

Key points for PD

Key points

- Designers in other software = use links and SAT/IFC files
- Talk more! Explain that the shell is all you need, the "guts" are not important
- Wait for major envelope changes to be resolved before moving into Revit
- Check project standards / folder locations / printing for office compliance
- Project information page build
    - http://irevit.blogspot.com/2008/05/tip-openclose-or-welcome-page.html

Form and Function

- Default content
- Revit + Company
- Downloaded content
- Design Options & Final Design Solution
- Never "Accept Primary" except…
- Schedules - YES You Can

Key points for DD

Key points

- Major building types (walls/floors/roofs) finalized
- Extensive use of "Place Holders"
- Managing expectations of design set – looks different than CAD
- Levels and gridlines finalized
    - Application of view templates to all "views on sheets"

Schedule Keys

- Uses
- Hardware Schedules
- Room Finish Schedules
    - Shared Parameters
- Shared Parameter Notes and Cautions
- Once Added it can't be changed
- GUID – Global Unique Identifiers

Groups v. Links

- Issues
- Linked Walls do not clean up with Model Walls
    - o "Binding" a link makes it a group and Walls Clean up
- Changing a Group to a Link
- File size
    - o Groups = bigger file size than Links
- GroupsEdit the Group Instance
    - o <mark>TAB IS YOUR FRIEND</mark>
    - o <mark>Exclude from Instance</mark>
    - o <mark>Restore to Instance</mark>
- Detail Group
- Inserting the Group
- Edit>Past Aligned> Select Levels by Name

Key points for CD

Key points

- Switching "Placeholders" to final Objects
- Choosing CAD v. Revit Details (often Both)
- Drafting Views / Detail Components / Drafting Lines
- Tons of Family editing / updating / creation
- Survive the project DEADLINE anyway possible

Annotation your views

- Tags, dimensions, text and key
- Edit>Past Aligned> Select Views by Name

Displaying Information about rooms

Rooms in Section View

- Tag Rooms
- Additional information based on the room object
- Room Height Tag

Text

- Large amounts of text.
- Use drafting views to control layout issues

- Using schedules "unused categories" to create your own

The keynoting issues

- Keynotes file
- Other ways to

Families

- Modeling parametric 3D Families = Design Intent?
- Smart Workflow: Nesting One Family into Another
- Conditional Visibility – Fine , Medium, Corse
- Kinds of Families
- Detail / Line Based
- Host-Based / Generic Model

Key points for Archiving and milestones

Printing = archiving

Saving the Central file

1. Create the Archive Location
2. Open with "Detach from Central"
3. Save the File in the Archive Location
4. Naming = Project_Archived_Central_Date
5. DO NOT MOVE OR COPY THE ARCHIVED FILE

Other Archiving thoughts

- Purge the project
- Accept Primary
- Move linked files

Session10 Phasing

Phasing is critical for TI projects. This will review how to setup phases in your project and project template. Then show a quick demo on how to apply phases both to objects and to views. The session ends with a big bang "how to make Revit make you more money."

Topics

- ☑ What is Phasing
- ☑ Using
- ☑ Naming Convention – Why
- ☑ Value Added

What is Phasing

Help File:

Many projects, such as renovations, proceed in phases, each representing a distinct time period in the life of the project.

Revit Architecture tracks the phase in which views or components are created or demolished, and lets you apply phase-specific filters to views so that you can define how the project appears during various stages of work. You can also use phase filters to control the flow of building model information into views and schedules. This allows you to create phase-specific project documentation, complete with schedules

Project Phases

- As many as you need
- Start Small, and Grow!
- Combining

Phase Filters

- Linear process
- Naming helps
- The Bits and Pieces

Graphic Overrides

- Set them once!

Transfer

- File >> Transfer Project Settings >> Phase Settings
- Filters and Overrides only

Using

Elements

- Each object is built at some point in time
- You can Demolish an Element
- If build and Demolished in the same Phase = Temporary Object

Views

- Views are Phases specific
- Controlled in View Properties
- Phases - What "Time" is this view looking at
- Phase Filters – How do you want to see the present and past

Naming Convention – Why

KISS. If all your doing is TI, great, you'll only need Existing and New.   If you what to move past the basic, naming based on construction Phases may be a good solution.

Value Added

Here is where phases really show their strength. Look at your project as a General Contractor. How would they construct that project? What materials would they need and when? What about manpower?

This is a sellable package.

- Schedule of Materials
- Costs per phase
- 3D Models
- 3D Walkthroughs
- Animated "Buildup" – Navisworks

Session11 Design Options

You know it. I know you know design options but….   While working with a firm in San Diego I realized that there is a lot to manage. Did you know you can work on two projects at the exact same time? Now that's using multipliers to make money!

Topics

- What are design Options
- Naming Convention - Why
- During PD/ DD Phase
- Forward thinking
- Project work

What are Design Options

Design Options

Design options provide a way to develop alternative designs in a project, whether to adapt to changes in project scope, to review other designs, or to show different options to a client.

Option Concept

Master Project for Options

- Commercial
- Shell and Core

Levels

- Lobbies
- Floor layout
- Rentable Area Layouts

Residential / Track Homes

Overarching

- Floor Plan Layouts
  - o   2 bed 1 bath
  - o   3 bed 1 ½ bath

Specific

- Garages

Level Layouts

- Kitchen Design

- Bathroom Layouts

Views / Schedules

Under the VG and VP dialogs you can select the option that is seen in the view.

Oh, and this is also true for Schedules!

The key points here

- Always leave your Sheet Views to "Automatic"
- Automatic will display whichever option is "Primary"
- Don't be confused – if a Option is "Primary" and you set that Option to be displayed in a view, that view will always display the Option you selected!
- Always Name your Views appropriately

Naming Convention - Why

Design Options

Naming Convention is important; however, not critical like most things having to with CAD/BIM. Design Options are stored and seen only in projects. There is just one dialog box that you use to create/edit Design Options. Naming becomes an issue when "Pushing" Objects to specific Design Options. Naming is also seen in the VP & VG dialog boxes.

Views and Schedules

Any View that is Option "Specific" should be named with that in mind. Think about, your view names will only matter when they are printed on sheet. The only views on a CD Set will be the views set to primary.

During PD/ DD Phase

- where you are still deciding what option to go with….
- You will create Multiple Views, one for each option or combination of option
- You will print Multiple Options on one sheet for side by side comparison
- Your view name will then have the specific option information on the sheet

Forward thinking

Many Companies already use their first project as their template for future projects. Same with Design Options, once you have Design Options, Keep them!

- Never, Never, Never "Accept Primary"
- Unless you are "Archiving" or sending Project out
- You cannot "Transfer Design Options"

Archiving

File Save As – "reason for archive"

- Save project under sub folder
- Accept all Primary Options
- Purge all unused Data
- = no confusion

Project work

- Always work in the Project with all design options available.
- Our clients Never change their minds right!
- Easier to clean out data at the archive than to recreate tomorrow

Session12 CD Standardization

Revit from Box to Paper; addressing the myth that you can't make Revit look like your CAD drawings.

Topics

- 🔰 Object Styles
- 🔰 Line Styles
- 🔰 Workaround / Tips
- 🔰 How to Deal with Details

Object Styles

First, let's break down what object styles are… straight from the help file: **"Object styles"**

Help File:

The Object Styles command specifies line weights, line colors, line patterns, and materials for different categories and subcategories of model objects, annotation objects, and imported objects in a project.

You can override project object styles on a view-by-view basis. For more information, see Visibility and Graphic Display in Project Views.

Topics in this section

- [Creating Object Style Subcategories](#)
- [Modifying Object Styles](#)
- [Deleting an Object Styles](#)
- [Renaming an Object Styles](#)

What you need to know: THEY ARE PROJECT BASED!

When I say project based, you need to understand that this creates management issues.

- How do you create them
- How do you maintain them
- Where are they (the project) save

This also brings your network and your BIM Standard Files into question

- Do you have multiple servers hosting your Company Standard files – please say no!
- Do you want to hold all your system families in one file or break them down?
- How to you Use / Protect / Audit these Project files?

Line Styles

Well this is so close to AutoCAD that it should be a review for you; however, as with all things, there are "gotchas"

Let's knock one thing off the table right now!!! Do not mess with line weights.

- What is the point? Is it -
1. worth your emotional effort
2. worth your time/money

Issues

- Creation
- Inserting Families (yes, this is a problem)
- Importing CAD files!!!!! (The BIG ONE!)

Creation / Inserting Into Projects

- No one should know but you!
- AND apply a naming convention to your line styles so you know you created them
- Inserting: File>>Load into Projects
  - o   Run this from your "LineStyles.rvt" Project
  - o   This may get you more than you bargained for

Inserting Families (yes this is a problem and a solution)

When creating families, if you create new Object Styles for Lines or Symbolic lines, you are creating new "Subcategories" in that families' "Category." When you insert that family into a project you now have more "Subcategories" the project.

Importing CAD files!!!!! (THE BIG ONE!)

There are two ways to looking at this. The "oh that's horrible" way and the "sweet, just what I wanted" way. You will have to know your CAD Detail Library status to choose one of the two ways.

Useable text and verbiage

When you insert and explode a CAD detail in Revit, it will create new line styles in the Revit project. These line styles are based off the CAD file's layer name. Be sure to use the same layer names in all your CAD details. Then control the weight of the printed line from the one line style in Revit.

CAREFUL   ***   CAREFUL   *** CAREFUL

You have to know what is inserted when you explode CAD files.

- Line Styles
- Line Patterns
- Fill Patterns
- Materials
- Text Types

Workaround / Tips

- Template Project files… no, not Project Template Files… Template files that are project based.

- There are two KINDS of Family's in Revit:

- Standard - doors, windows exc: these can be loaded at any time

- System - Walls, Line Styles, text types exc: these should be Template Projects

- These two things are going to create issues. Files management issues, we will address these in future BMSS sessions.

How to Deal with Details

Don't use your CAD Details Library, I'm not saying don't use the DWG's that are there! Under your Revit Project Folder, create a "CAD Details" Folder. Then, LINK in the CAD details as DWG. This will allow you to, modify the CAD detail's layer standard and then, Explode the Detail. Again, be aware of what happens when you explode the DWG file.

Session13 Printing Archiving

How many hours have we wasted printing in AutoCAD? Did your company start to use the sheet set manager? Printing in Revit is so easy and uncomplicated that you may miss some of the key features Revit has for your printing process.

Topics

- the project browser - sheets
- the print dialog box
- managing it all

The Project Browser – Sheets

Using Sheets

- Drag and Drop Views
- View/Sheet/Project – Information
- WYSISYG

Sorting sheets

- Default Parameters
- Custom Parameters
- Folder v. Filter

The Print Dialog Box

- Printers = Windows System Printers
- Settings (Printing Defaults)
- Save /Saves!

Print Range (Print Sets)

- Views / Sheets
- Save /Save As!
- Naming Convention

Managing It All

Outside the Project

- \Revit Standards\Print Defaults.rvt
- File>>Transfer Project Standards
- \Revit Standards\Default Sheets

- File>>Insert from File>>Views

Archiving:

- Project\50%CD\
- Purge/Accept Primary
- Export to DWG (Same Print Range)

Inside the Project

- Blank Sheets for Consultants (parameters)
- View>>New>>Drawing List

Other Cool tools

- Batch Printing
- Default Windows printer
- All Caps
- Font or …

Session14 Changing Releases

The title speaks for itself

Topics

- Installation issues
- Deployment location
- Moving your content
- Moving your project
- People issues

Installation issues

- Check your media
- Install tips(login, AV and 3rd Party apps)
- Installing times, on XP   v. Vista
- Deployment v. stand alone
- Don't forget to configure(tools and content locations)
- New to, 08, 09 and 10, license server option

Deployment location

- Storage organization
- Log files (troubleshooting)
- Permissions to the install dir
- Modifying
- Moving…..don't do it

Moving your content

- Revit Shipping Content
- Office "Standard Family" content
- Office "System Family" Content
- Other Family Content
- Title Blocks
- Materials

Moving your project

- Check with consultants
- Save a Backup
- Separate Revit 2009 Project Directory?
- Testing and upgrading
- Error Messages

Other Key Points

- New Tools
- New Training
- New Dimension Styles 2009
- New Processes
  - o Central/Local File 2010
- Online content

People issues

- Who Pulls the Trigger?
- Layout the Plan
  - o Hardware
  - o Software license
  - o Viewer of the Model – PM's
- When to Pull the Trigger
- Why People Cry.

Session15 A BIM Manager Guide to Success

Opening

You are not alone. You are not alone. You are not alone! This entire industry is changing completely. BIM has created a paradigm shift similar to the paradigm shift of CAD, moving from pen and paper to CAD. Companies that see BIM as a trend and try to ride it out will (fill in the blank with an image of doom and despair). You, my overwork CAD manager, are about to embark on a quest for job sanity. Today we'll give you a rock-solid outline to cling to as we set off for this distant treasure.

Topics

- To Do List / Action Items
- The Outline
- The Meaning, story time to make it all eatable
- Resources to hold close while you

Alvin Toffler: "If you don't have a viable strategy, you will be defeated by someone who does."

To Do List / Action Items

- Revit Standards Check List
- Template Files
- Project Templates
- System Families and Settings Templates
- Project Folders Updated to a BIM Paradigm
- Project Families Folder
- Talk to Subs about Revit
- What Release are they own
- Get on Subscription
- Revit User Groups (AUGI)
- Implement DWF for Revision Checks
- Update Next year's Budget: 1 user = $10,000
- Software Cost
- Training Cost
- Opportunity Cost
- Standardize Hardware (Joe Duran – W2P)
- Allows for Ghosting

- Start In-house Training Video's and Archives
- Snagit
- Camtasia
- Go To Meeting

The Outline

Managing turbulent times

1. Mission
2. Confront Brutal truth
3. Ambiguity/ Order
4. The Bus : Jim Collins
5. Post Action Briefing : "Monday morning quarterback"
6. Cassandra and Polina
7. Speed (Jack Welch)
8. Resilience : getting back after being knocked down
9. Risk Taking
10. "Celebrate for a nanosecond"

The Meaning

Mission: Mission   = North Star (unchanging)

Good: Johnson and Johnson Tylenol Crisis of 1982

"Our reason for being is the men, women, and children, that use our products"- Johnson and Johnson mission statement

"Empower people through great software, anytime, through any device." –Microsoft mission statement

Bad: Kodak ignored digital

- Camus "not to choose is also to choose"

Bottom Line:

- Your company must grow to survive and change is a necessary part of growth. Perhaps, Revit will not line up with your companies mission statement. Perhaps, you are unwilling to change for either, lack of resources, lack of desire, or, an inability to overcome fear. I cannot change that for you; however, if you are willing to move forward with Revit, NOW is the time to start.

- Revit will not be a part of your mission statement. It should be a Strategic initiative "Implement Revit Building/Structure/Systems" on your company's Strategic Plan (see resources).   Each Strategic initiative will have its own Strategic Plan and the Mission statement on that plan should be something like the following:

Your Mission Statement for Revit: though a Kaizen approach for implementation, achieve a 100% Revit Based Project environment

Confront Brutal truth

- This is a 10X Event for our industry
- What happens when you don't?
  - o Merrill Lynch = Sub Prim Mortgage

Why People CAN'T

- Psychology of it all
- I don't need to change
- I'm making Enough
- I don't have the resources to change
- What happens if I fail
- Real or an anomaly
- THIS IS AS BIG AS CAD was....

Andy Grove "only the paranoid survive"

Ambiguity/ Order

Andy Grove" you need a high tolerance for ambiguity but must strive to order that which is around you."

- Managing Expectations
- Changes Work Flow / Design Process / Standards
- Michelangelo 's David
  - o This is a big hunk of Marble
  - o This will not come easy
  - o It will not be linear

How do you eat an elephant?

The Bus: Jim Collins

- The right people on the bus, the wrong people off the bus and everyone in the right seats!
- first ask who not what
- PS: Read / listen to his book ~ Good to Great
- Jack Welsh - 600 … knows firsthand people…
- 60% of his time on people working on people relations = HR

Post Action Briefing: "Monday morning quarterback"

- What worked, what didn't, and WHY
- Suggested Time Interval

- Post Training event
- Weekly project prints
- Monthly Progress Reports
- Entire Project

Cassandra and Polina ~ the "Fall of Troy"

- P = outgoing / trusting / never doubts / bring it in
- C = skeptical / trusts no one / people are failed / leave it out
- You must be P in the ultimate outcome, u need the C to get there.

Speed

- Speed exhilarates and energizes   (Jack Welsh)
- Test fast, fail fast, adjust fast
- Ready, fire, aim

Resilience: getting back after being knocked down

- Steve jobs.
- Apple
- Pixar

Risk Taking

- GE Financial 1930
- For you…   Key Financing
    - Software
    - Training
    - TT your Sales Rep.

Celebrate!

"Success is the progressive realization of a worthy ideal" Earl Nightingale

"After the victory, tighten your helmet cord." Bushido (Japan)

Resources

Strategic planning model   (blueprint)6 steps (elements)

Mission

- North Star (unchanging)
    - Johnson and Johnson Tylenol Crisis of 1982
    - Wal-Mart   Sam Walton Died 1992 = He Saw the vision of where Wal-Mart would be today.

Satellite Snap Shot

- Current operating environment (detailed way) SW/PEST

Future scan

- What will tomorrow's opt environment will look like OT CCS   PETC

Strategic initiative

- < 10 words
  - One reason = to achieve the mission
  - 3words + 1 sentence
  - Long term, Mission critical, Heavily Resourced, Action plan, HW^4

Performance target

- Test the effectiveness of strategies
- Review just how well they are working (quarterly)

Required resources

- Labor / Capital / Time

10 X Events

Hedgehog

- Boeing, Cessna, Embracer -specialization

Oil

- $100+/B was $30 3yAgo, US 80 MBD

Big box:

- Power shift from manufacturers to retailers. To fight: sell direct, buy other brands open their own stores.

Sarbanes Oxley

- CEO / BOARD Sign financial data. Response to Enron and WorldCom

Discerning customers

- Internet/ Competitors / Distribution

Demographics

- 77 M baby boomers, inherit $10 T   300 M - US   6.3 B - Earth

Meritocracy

William Perez (Wrigley), Antonio Perez (Kodak), Carlos Gutiérrez (Kellog)

Books

- From The Battlefield to the Board Room - Chip Parker
- Good to Great - Jim Collins
- The Art of War - Sun Tzu

Audio files

- Earl Nightingale –The Strangest Secrete (audio file only)

- Here is a link to the file; this is the only free recording I can find of the speech. There are actually two speakers: Earl and someone else. I would skip over the other speaker; he is just selling the speech. Oh yeah and you may want to have a pen and paper handy.

- Background on the speech and speaker

- http://www.markvictorhansen.com/strangest_secret.php

A poem to explain the amount of work ahead

Stopping in the Woods - Frost

Whose woods these are I think I know.

His house is in the village, though;

He will not see me stopping here

To watch his woods fill up with snow.

My little horse must think it queer

To stop without a farmhouse near

Between the woods and frozen lake

The darkest evening of the year.

He gives his harness bells a shake

To ask if there's some mistake.

The only other sound's the sweep

Of easy wind and downy flake.

The woods are lovely, dark and deep,

But I have promises to keep,

And miles to go before I sleep,

And miles to go before I sleep.

Session16 Series Question & Answer