AUTODESK **UNIVERSITY** 2014

New Features – Revit 2015

Michael “Zee” Zeeveld – Applied Software

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In this lecture you will learn about the exciting new features in Revit Architecture 2015 software. Discover new concepts of Building Information Modeling (BIM) and efficient, easy-to-use tools for parametric design and documentation.

Learning Objectives

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

- Describe the new features, concepts, and benefits of BIM
- Discover the fundamental concepts and features of Revit Architecture software
- Learn how to use the parametric 3D design tools to start designing projects
- Develop an initial level of comfort and confidence with the new tools in Revit software

About the Speaker

Michael Zeeveld, a senior application specialist at Applied Software Technology Inc., has more than 19 years of experience in CAD management, commercial and architectural drafting, 3D modeling, visualization, 3D laser scanning, and 3D printing. He had the distinct honor of presenting and teaching at Autodesk University (2006, 2010, 2012, 2013, and 2014) as well as serving as a presenter at multiple AUGI CAD Camps and the RTC-Revit Technical Conference 2012. Michael is an associate member of the American Institute of Architects, and he is an Autodesk Certified Instructor, an Autodesk Consulting specialist, and an Autodesk Professional. Prior to joining Applied Software, Michael owned and operated both Focus CAD and Zinc Visualization, 2 CAD consulting companies specializing in creating animations; high-end, photorealistic renderings; and construction documents for architects and engineers. He has taught college courses and served as a member of the Technical Community College Advisory Board in Raleigh, North Carolina.

mzeeveld@asti.com

Architectural enhancements

Visualization tools

Sketchy lines

> With the addition of the Sketchy Lines feature you can apply a hand-sketched graphic style to the current view, or define the settings in a view template to apply the style to multiple views for a soft hand drawing look.

Jitter

Extension

Anti-aliasing improvements

> To improve the appearance of sketchy lines in a view, use the Smooth lines with Anti-Aliasing option. The Use Anti-Aliasing option has been changed to Smooth lines with anti-aliasing. You now have the ability to enable anti-aliasing for all views in the project or for selected views. Corresponding settings in Revit.ini allow you to predefine these options for users.

Architectural enhancements

Ray Trace interactive

> The Ray Trace interactive rendering visual style for views has been enhanced to provide a faster, higher quality, smooth rendering, improved color accuracy, and improved shadows with all backgrounds.

rendering visual style

Platform enhancements

Documentation tools

> With enhanced schedules/material takeoffs the following parameters can now be included in a wall schedule or material takeoff, Base Constraint, Base Offset, Top Constraint, Top Offset, and Unconnected Height. In addition to these you can specify custom text to display for the Grand totals title in the Custom grand total title field.
>
> You can now create schedules that include images to convey graphical information for elements. An Image instance property and Type Image type property have been added to many elements to allow you to associate an image with an element instance or type. These images can then be included in schedules and will display when the schedule is placed on a sheet. The Manage Images dialog has been enhanced to support managing the images in the model. This includes images associated with families and elements.

After working with an active view on a sheet, you can now double-click outside of the view to deactivate the view, and display the viewport.

With the improved Duplicate View functionality when you duplicate a view, the default name for the copy is “view name” with a “Copy 1” added to the end. When you duplicate a view as a dependent, the default name for the copy is “view name” with a “- Dependent 1” added to the end. The copied view has focus in the Project Browser, so you can easily rename the view, and the copy of the view is open in the drawing area.

In View references, you can now change the referenced view after a view reference has been created. You can also change the view reference in reference callouts, reference sections, and reference elevations after the reference has been created, as needed.

The Keynoting Setting tool is now available on the Annotate tab directly from the Keynote drop-down, rather than from the Tag panel drop-down. The keynote file can reside on a local server or a remote server and icons display in the Keynoting Settings dialog to indicate whether the keynote table is loaded or needs to be reloaded.

The View parameter list has been expanded for view title families to include additional shared parameters in View Titles. An Add Parameter button is enabled so shared parameters can also be added.

Enhanced schedules/material takeoffs

Views on sheets

Duplicate views

View references

Assembly code settings

> You can now specify the assembly code file to use for assigning a Uniformat code to the Assembly Code type property of model elements. The file can be stored on a local server or a remote server. A Uniformat 2010 Classification text file is also now installed.
>
> You can link an IFC file to the current project, use the new Link IFC tool. If you later change the IFC file and reload the project, the project updates to reflect the changes.
>
> When opening an IFC file, you can specify whether elements join automatically (walls to walls, or walls to columns).

In the Open IFC File dialog, the Auto-Join Elements option is turned on by default. Turning off this option provides more control over the results, and may improve performance during the import process.

In the Import IFC Options dialog, column headings have been revised to improve clarity. The enhancements to improve the quality of linked IFC data result in better visual fidelity and improved performance during the import process.

IFC imports

Keynoting settings

Shared parameters in view titles

Enhanced hidden lines

Structural and MEP users now are able to turn off/on their hidden lines for an entire view. Now you can show or hide the hidden lines of your geometry independent of what discipline your view is set to.

In view properties, you can use the new Show Hidden Lines parameter to control the display of hidden lines in the current view. You can also define this parameter for view templates.

You are now able to see the hidden lines of openings in Walls and Floors very easily. Now you can also display all hidden lines automatically in 3D views for better documentation.

New parameter to control the visibility of hidden lines

Display all hidden lines automatically

Revision improvements

You can now delete revisions and better sketch revision clouds shapes. Deleting a revision removes the revision and all of the revision's associated clouds and tags from the model.

You can use standard draw tools, such as a line or rectangle, to sketch the revision cloud shape. Pressing the spacebar you can flip the arc direction in the cloud shape.

You can also specify the minimum arc length for revisions clouds in a project on the Sheet Issues/Revisions dialog.

This feature is a top customer request.

Deletion of revisions

More tools to sketch the revision cloud shape

Minimum arc length for revision clouds

Images in schedules

You can now create schedules that include images to convey graphical information for elements. An Image instance property and Type Image type property have been added to many elements to allow you to associate an image with an element instance or type. These images can then be included in schedules and will display when the schedule is placed on a sheet.

This feature is a top customer request.

Image instance property

Type image type property

Building element energy analysis*

You are now provided with greater precision, handling and recognition of your energy analytical model.

The algorithm that automatically creates an energy analytical model directly from Revit building elements and sends it to Autodesk Green Building Studio web service* for analysis has been improved to provide greater analytical surface precision, handling of certain Revit elements, and better recognition of ceiling void spaces.

Improved algorithm

Greater analytical surface precision

Better handling of Revit elements

IFC linking

Now an IFC file can be linked into an existing Revit project. To link an IFC file to the current project, you can use the new Link IFC tool. If you later change the IFC file and reload the project, the project updates to reflect the changes. Linked geometry has much better fidelity and associated parameters come into the Revit environment with the correct values and units.

New Link IFC tool

IFC tab in Manage Links dialog box

Ability to reference IFC geometry without overhead of conversion to Revit

Improved geometry handling and performance

Manage Links dialog box

Now multiple Revit, CAD and point cloud links can be added directly in the Manage Links dialog. Use the new “Add…” button to insert a new Revit, CAD or point cloud link directly from Manage Links and the file will be automatically placed.

Add from Manage Links

Revit models

CAD files

Point clouds

Pinned elements enhancements

Now pinned elements are prevented from being deleted unless you specify. Elements must be unpinned before they can be deleted.

You can delete elements by unpinning them and deleting, or deleting through the expanded warning dialog. Instead of permitting the deletion and providing a warning, Revit will now warn you that the element is pinned and instruct you to unpin the element before using Delete. You can also delete objects in a non-graphical context, such as deleted from Schedule.

Prevent pinned elements from being deleted

Delete elements by unpinning them first

Delete objects in a non-graphical context

Family parameter order adjustment

By default, new family parameters are now added in ascending alphabetic order to the parameter list, within the group that you selected when creating the parameter. When creating or modifying a family, you can now control the order of the family parameters in the Family Types dialog. Use the Sorting Order buttons to modify the order by selecting a parameter and use the Move Up and Move Down buttons to change the order of the parameters within a group. The parameter order is maintained in the Properties palette for instance parameters and Type Properties dialog for type parameters of the family when it is loaded into a project.

Move parameters within parameter group

New parameters added to end of group

Customer request

Tooltips for family parameters

Improve learnability by customizing tooltips for Revit Family Parameters.

You can now customize Revit Family parameter tooltips to help describe and communicate parameters and their intended use, to help improve overall product learnability. So that when you hover your mouse over a Revit family, the customized tooltip will appear, alleviating the need to select it and then go to the Properties palette to get the information.

Customize tooltips

Write intended use, key info, etc.

250 characters

Tag improvements

Now when you move a tagged element, or drag the tag head, the tag leader and elbow adjustment behavior is now consistent with that of text leaders.

When you move or adjust the tag, the portion of the leader from the element to the elbow is flexible, while the portion from the elbow to the tag remains fixed.

Additionally the instance property Elevation at Top has been added to isolated foundations, wall foundations, and foundation slabs. Elevation at Top specifies the elevation of the highest point or plane of the foundation. You can use this information in tags when documenting a project.

Consistency with text leaders

New parameter 'Elevation at Top'

For structural engineers

Enhanced analytical model

The structural analytical model was improved in several different areas. You can use Analytical Model Categories visibility settings to display Local Coordinate System (LCS) widgets along structural analytical elements in a view. The LCS for Columns is now consistent with the LCS for beams and braces.

Hosted Loads and Boundary Conditions now can be oriented to the Host LCS. They also respect host LCS direction and rotate as the LCS is changed.

Analytical link improvements include additional functionality of the auto-detect feature.

Display local coordinate system (LCS) widgets

Loads and boundary conditions orientation according to LCS

Improved analytical links

Reinforcement for parts

Surface part elements can host rebar

Rebars follows parts' shapes and changes

New parameters 'Can-host-rebar' for parts and 'Host category' for reinforcement

Reinforcement numbering

Numbering automation & customization

Annotating for shop drawings

Rebar scheduling

Pouring sequencing

Single fabric sheet placement

New tool in the Reinforcement panel

Manual positioning

Ability to extend outside of the host cover and edges

Presentation for rebar sets

Showing a representative subset

Diffent bar presentation for a rebar set in each separate view

Enhanced multi-rebar annotation

Grouping and sorting

Annotaion update

Greater accuracy of as-built model definition

Location line visibility

Graphical justification

Shape handles & snapping improvements

Setback improvements

Switching on/off Auto-Join

Structural section properties

Catalog profiles

More accurate quantities

Analysis and code check directly from Revit models

MEP engineering enhancements

Calculation methods for pressure drop

Haaland equation

Colebrook equation

Duct and pipe

Specify calculation method

MEP engineering enhancements

Tapped duct and pipe tags

Tag values before / after tap

Actual value based on location

Multiple values in tag

Electrical API enhancements

Create wire shapes

Add/modify wire properties

Remove vertices

Additional country-specific content

US AWWA content

Japan MEP electrical content

Revit 2015 R2

Architectural Enhancements

Dynamo

Solon Integration

Energy Analysis

Wall Joins

IFC references

Shaft Opening

Site Design

Select host Tags

Dynamo

dynamobim.org/

Solon

Personalize Dashboards for Building performance analysis experience in Autodesk Revit® software by defining a dashboard with charts and results that are important to you.

The central web-based Solon management environment allows you to create charts and configure dashboards for all of your company Revit users from a central collaboration environment in Green Building Studio .

Energy analysis

Large model support

Reduce memory usage

Wall joins

Select multiple intersected wall joins with a single click, and choose to allow or disallow joins on all the selected walls with a single click

IFC references and phases

Use existing geometry in a linked IFC model as references for dimensions, alignment, snapping, and hosting of some face-based families.

IFC references and phases

Shaft openings

Base Constraint value now defaults to the level of the current activated plan view.

Instance properties have been reordered to be consistent with families with similar properties

Adaptive point orientation

Verbiage change “Orients to”

Site design

Performance enhancements result in improved edit and regeneration times for complex toposurfaces, subregions, and building pads.

Perspective views

Certain modeling capabilities are now available in perspective views

Editing tools: Move, Align, Pin, Unpin

Reset Target tool

Toggle between the perspective

Reference other view

“Search” the list of available views for reference

Shows in Reference Panel vs. Options Bar

Reveal constraints

See all dimension constraints and alignment constraints in a view

View updates

Faster updates

Views with Multiple Instances of Families

Revit links

Improved performance for cases where Revit link instances are loaded but not visible in the view

PDF Export enhancements

Share designs as electronic PDF files with automatically linked views and sheets

Hyperlink to jump to that view or sheet

PDF Export enhancements

Print Warning

Schedules

Easily add a data row to a schedule

Select host for tags

Specify the host element for a tag

Annotate stair treads and risers

Streamline the process of adding number annotations to treads or risers

Thin lines

Thin Lines tool setting now stored in the **Revit.ini** file

Lines that Coincide

Exporting to CAD..

Maintain model lines that coincide with other lines in the same space

Revit 2015 R2

Multi-Disciplinary Enhancements (MDE)

Search

File upgrades

Edit/load a family

Properties palette

Pin/Unpin icons

Import/link position

Revit link in a closed workset

Search

Model Upgrade

“Hey FYI” we are upgrading

Edit/load a family

Close a family automatically after it is loaded into a project

Properties palette

Keep your context in the Properties palette when you scroll, select a property, and then click outside the palette

Pin/Unpin icons

Import/link position

Default positioning is now Auto - Origin to Origin

Software remembers

Revit link in a closed workset

Status In Closed Workset now displays for a Revit link that is in a closed workset

Additional Features

Skyscraper

Labs

Renamed: Revit Collaboration

Available: Dec 7, 2014

Skyscraper

Communicate

Skyscraper

Lighting Analysis

Site Designer - Extension

Import/Export LandXML

Convert Toposurface

Locate

Report

Family Manager

Site Designer – Extension

The Autodesk® Site Designer Extension for Revit® 2015 software helps architects, designers, and planners convey building site planning concepts to engineers. Site Designer runs inside Revit software and uses native families, components, and toposurfaces, so site designs become part of the overall model. You can model alternatives for mass grading, building pads, streets, sidewalks, parking lots, and retaining walls all within the Revit environment. More easily convert a sketched line into a street, sidewalk, curb and gutter, retaining wall or parking lot in the model. You can manipulate Site Designer components using editing tools to change their location, elevation, grade or geometry, and Site Designer automatically updates and maintains the underlying toposurface.

- Report and schedule areas, volumes, and cut and fill volumes to better understand the impact of site design changes on requirements to move or add fill.
- Iterate conceptual designs and create more realistic visuals of the building site by incorporating grading features directly into the Revit model.
    - Better communicate conceptual design ideas about the building site to engineers who can then complete the detailed site design using professional civil engineering tools like Autodesk® AutoCAD® Civil 3D® software.
    - Share the appearance of site plan designs for better communication with everyone involved in the project, including owners, architects, designers, planners and civil engineering firms.
- Share a site model between Revit and Civil 3D through Land XML files, improving collaboration between architects and engineers working on a project.
- More quickly add design elements to your site such as berms and drainage swales, minimizing the time required to mass grade a site and to try alternatives at the design development stage.
- Special terrain families within Site Designer provide you with parameters that control widths, cut and fill slopes and other projection settings.
- Locate hardscape components such as streets, intersections, sidewalks, curbs and walls that can follow the existing terrain and have controlled elevations and slopes - all while the toposurface is automatically maintained.

COBie

The Construction Operations Building Information Exchange (COBie)

…is a data exchange standard to allow information gathered during the building design and construction process easily transferred to the operations and maintenance (O&M) team.

COBie Toolkit

The Construction Operations Building Information Exchange (COBie)

COBie

Revit Add-In

Future and 2016?

Future

Bitsquid

Future

Cloud based application

Beta and testing already inplace

Future

2 releases per year

Spring – speed and capabilities

Fall – user based tools, new features, user wishlist

Contact:

Michael “Zee” Zeeveld, Assoc. AIA, ACI

Project Manager | AEC/BIM Senior Application Specialist

404.564.1837 office

mzeeveld@asti.com