AUTODESK UNIVERSITY 2014

Greater Accuracy of Structural Models with Revit 2015

Desirée Mackey, PE, SE
Martin/Martin, Inc.

SE6348-R This class will discuss and demonstrate the new features and tools in Revit 2015 software that enable structural engineers to create far more accurate physical models. Whether the intent of the model is comprehensive design or as-built conditions, the new features in Revit 2015 software greatly enhance the user's ability to achieve greater precision and accuracy. This class will cover these many new features, from fine-tuning the ends of framing members to controlling the joining of members. Furthermore, this class will discuss how these new tools enable structural models to provide greater accuracy in the physical model while still maintaining greatly accurate analytical models.

Learning Objectives

At the end of this class, you will have:

- Understood the new features in Revit 2015 software that allow for greater accuracy in structural models
- Learned how to use the new Revit 2015 software tools to adjust the ends of framing members
- Learned how to use the new Revit 2015 software tools to control joins of framing members
- Discussed how the new features in Revit 2015 software help with physical model accuracy without affecting the accuracy of the analytical model

About the Speaker

Dezi Mackey has been in the architecture, engineering, and construction industry for more than 15 years. After obtaining her bachelor's and master's degrees from University of California, Davis, and Massachusetts Institute of Technology, she perpetuated her nerdy tendencies with Revit software. She started her career in California with a construction company, she continued with a structural engineering firm, and now she is a practicing structural engineer and Building Information Modeling (BIM) manager at Martin/Martin in Denver, Colorado. Dezi is a regular speaker at many conferences. She is the co-founder of the Rocky Mountain Building Information Society, the chair of the Structural Engineers Association of Colorado's BIM Committee, and she is currently serving as an Autodesk User Group International (AUGI) board member and vice president. Finally, as if that is not enough Revit software in her life, she is married to "The Revit Geek" and acts as a partner in his BIM consulting firm, BD Mackey Consulting.

Email: dmackey@martinmartin.com
Twitter: @DesireeMackeySE

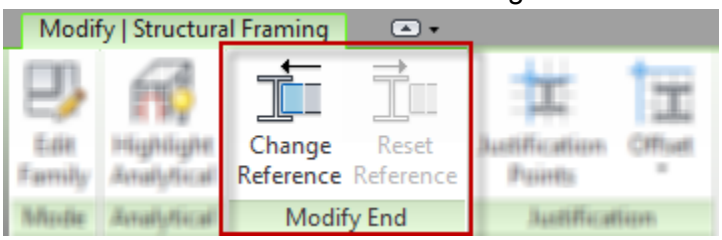
Introduction

This roundtable session will consider and discuss several new features in the Revit 2015 release, with an emphasis on how these new features aid in creating more accurate structural models. While there are a great deal of important new tools, this discussion will focus on the new features related to structural framing.

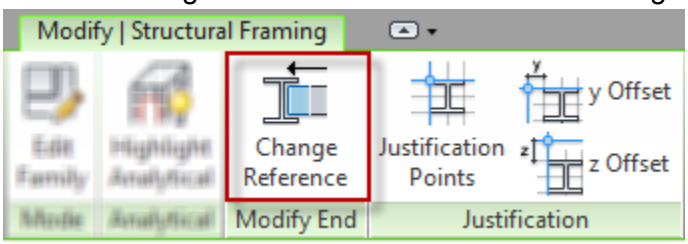
Discussion Topics

The following are a list of several new structural framing features. This discussion will focus on these topics, but may not cover all of them, or others not listed here may find their way into the conversation.

1. Change Reference of Beam Ends
   References to which beam ends will align can now be changes, and reset.

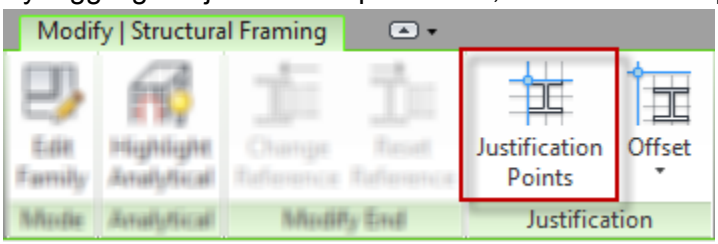


   If 2015 Release 2 has been installed, multiple framing members can be selected and their alignments can be changed to a common reference. Also, multiple references can be reset at once. However, to reset the reference, there is no longer a reset button, instead the same “Change Reference” button is selected and then the bounding box of the referencing element is selected to reset the alignments.



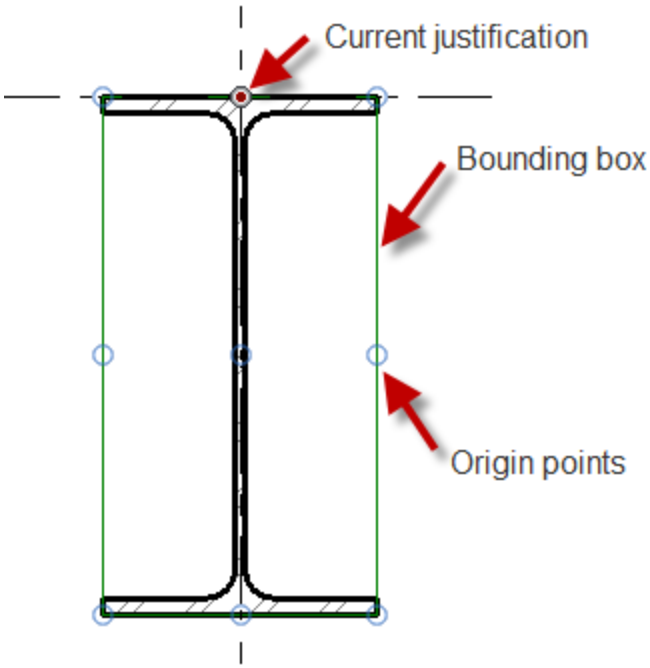
2. Justification Points

By toggling the justification points tool, various colored points and lines will appear.

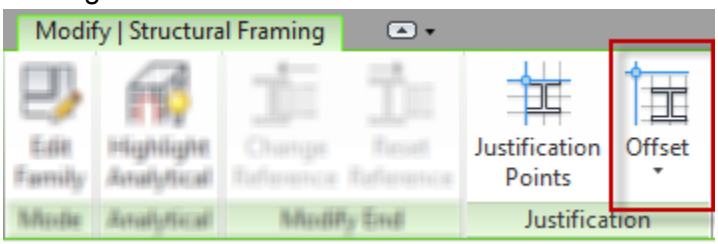


Selecting the points or lines (depending on the view) will allow the user to quickly change the justification of the framing member. Also the various colors represent the following:

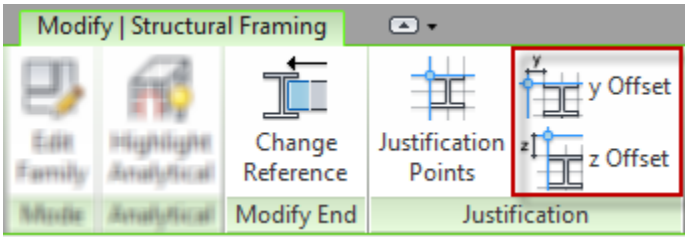
- Red = The current justification of the framing member
- Blue = The origins of the framing member
- Green = The bounding box of the framing member



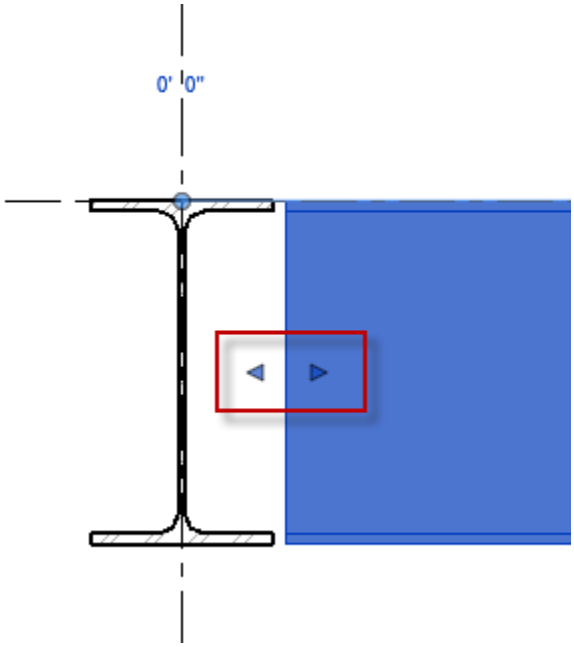
3. Offset Y or Z
   Quickly edit the Y and Z offsets of a framing member. Instigating this command essentially works like a constrained move command that edits the Y and Z offset of the framing element.



If Release 2 has been installed, the tools for the offsets are no longer a drop=down menu, but two separate buttons. All other functionality of the tool remains unchanged.

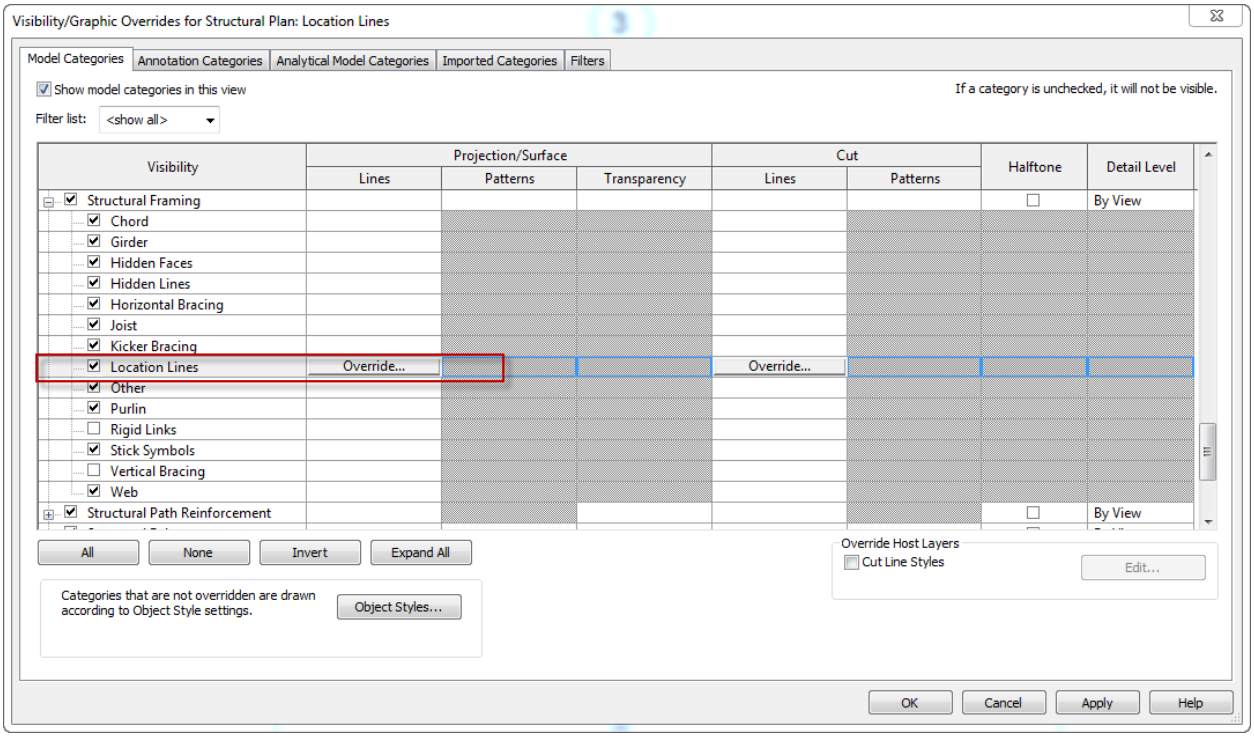


4. Extension Shape Handles
   Selecting a framing element reveals shape handles that can be used to change the extension/cut back of a framing member.

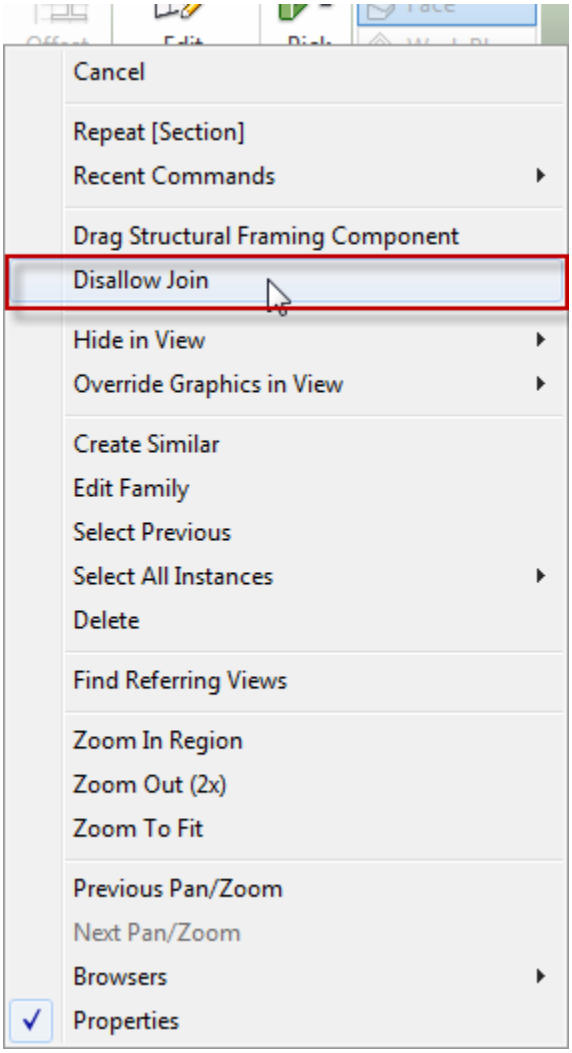


5. Location Lines

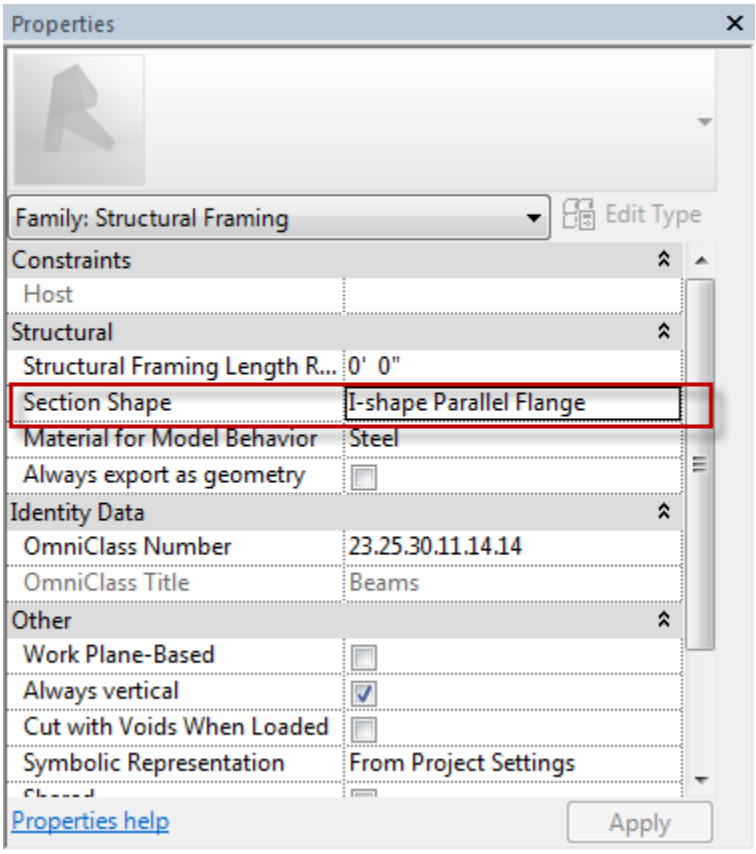
   Location lines are now a subcategory under Structural Framing. Their visibility can be toggled on and off to view them and their relation to the stick symbol locations.



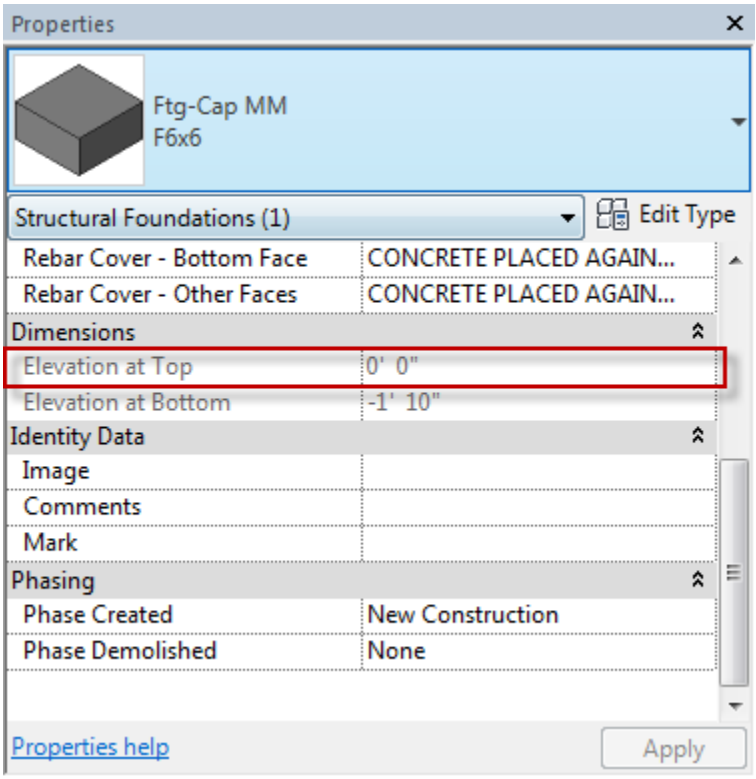
6. Disallow Join
   Once framing elements are disallowed to join, they can snap to various points of other framing elements.



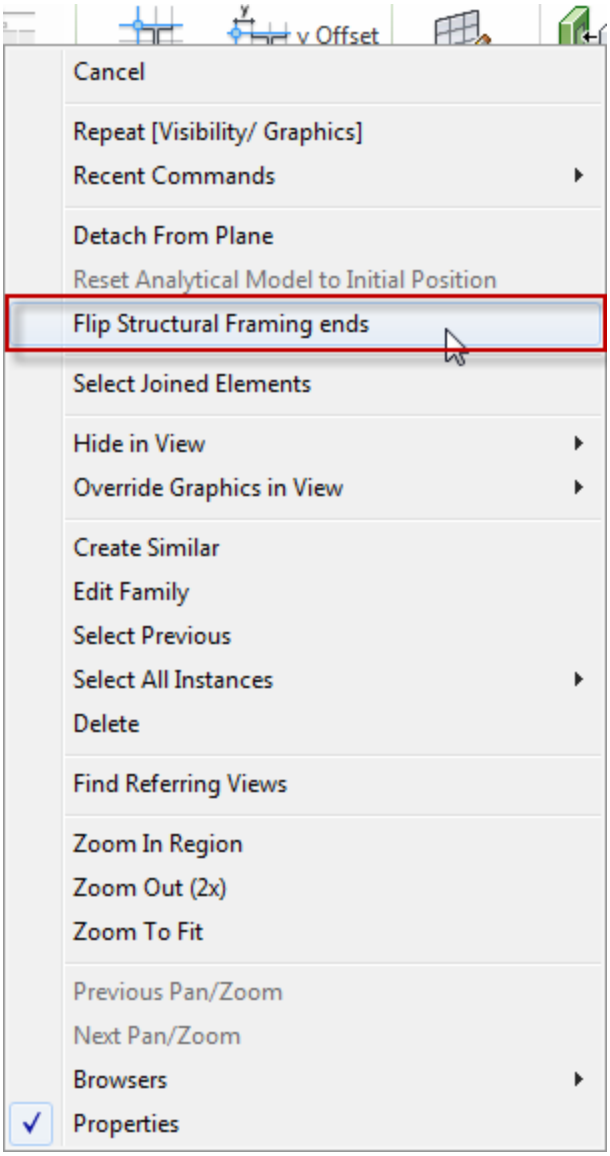
7. Section Shape category
   When defined, the new section shape category creates new type properties and section dimensions for the framing element



8. Elevation at Top
   Top of footing elevations are now available for all foundation elements. This parameter can now be included in tags. (Project parameters only)



9. Structural Framing Orientation
   If Release 2 has been installed, the start and end of framing elements can now be flipped by right clicking on a framing member and selecting “Flip Structural Framing Ends”. This flips the ends of the member while still maintaining all previously specified geometry modifications.



Conclusion

Roundtable discussions are often the most interesting and rewarding sessions at Autodesk University – hopefully this one was no exception. The follow up summary will be available on the AU website shortly following the conference.