AUTODESK UNIVERSITY 2013

Customizing the Graphical Column Schedule: Adding Parameters

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SE3338: The graphical column schedule (GCS) in Autodesk® Revit® Structure may be a system family that cannot be edited in the Family Editor, but this does not mean that it cannot be customized. This class discusses how the graphical column schedule can be customized to suit your needs. We demonstrate how to create parameters within the column families so that information, such as base plate sizes and detail information, shows up dynamically in information boxes within the GCS. We also cover how to create custom column tags. The main focus of the class is to show how to schedule steel columns; however, the fundamentals of this class can also be applied to concrete, concrete masonry units (CMU), or even timber columns.

Learning Objectives

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

- Describe the limitations of the graphical column schedule and explain how it can be customized
- Describe column schedules used at John A. Martin & Associates Learning
- Create parameters within column families that comply with company standards
- Use creative solutions to develop customized column tags for automated repetitive tasks

About the Speaker

Felix Olmos is the BIM Assistant Manager at John A. Martin & Associates Structural Engineers in Los Angeles, CA. With over 15 years of expertise, Felix has become proficient in Autodesk products including AutoCAD and Revit Structure. His profound knowledge has been used on many projects that have incorporated complex geometry including the Los Angeles County Museum of Natural History New Building, Memphis Pyramid Arena and the Tom Bradley International Terminal Expansion at LAX. He considers himself very fortunate to have worked with a variety of consultants and a wide diversity of clients on challenging projects throughout the country. In addition to experience, he also plays a key role in Revit training and customization. He values education and embraces the opportunity to educate colleagues and clients on aspects of the Revit structural as a means of maintaining his own knowledge and being a part of their goal fulfillment. Felix Can be reached at folmos@johnmartin.com

About the Co-Speaker

Art Padilla is the BIM/CAD Manager at John A Martin and Associates based out of the Los Angeles office. he has 30 years Structural Drafting experience which includes the last ten years specifically related to BIM with emphasis on Revit Structure.

Introduction

The graphical column schedule (GCS) is a system family. The major disadvantage with system families is that they can NOT be edited in the family editor. Therefore, the GCS is not customizable other than the settings that are already available to you in the properties box. The major problem arises when you want to customize the column schedule differently than the settings will allow in the properties box. So, what do you do?

Well we could wait around for Revit to produce a column schedule that is more customizable, keep in mind that the graphical column schedule was introduced in version 2009 in Revit Structure and there has been no enhancement to date, or could take matters into your own hands and customize your own content within the graphical column schedule. This class will explain how to do the latter and satisfy your GCS needs.

Class Outline

What are Other Companies Doing

GCS Facts

Project Description

Pre-Class Exercise 1 – Create a GCS and Adjusting Properties

- Add levels
- Remove unwanted columns on column schedule
- Adjust Widths and Heights of Rows and Columns
- Adjust general line thickness of the GCS
- Adding Splices and Base plate symbols

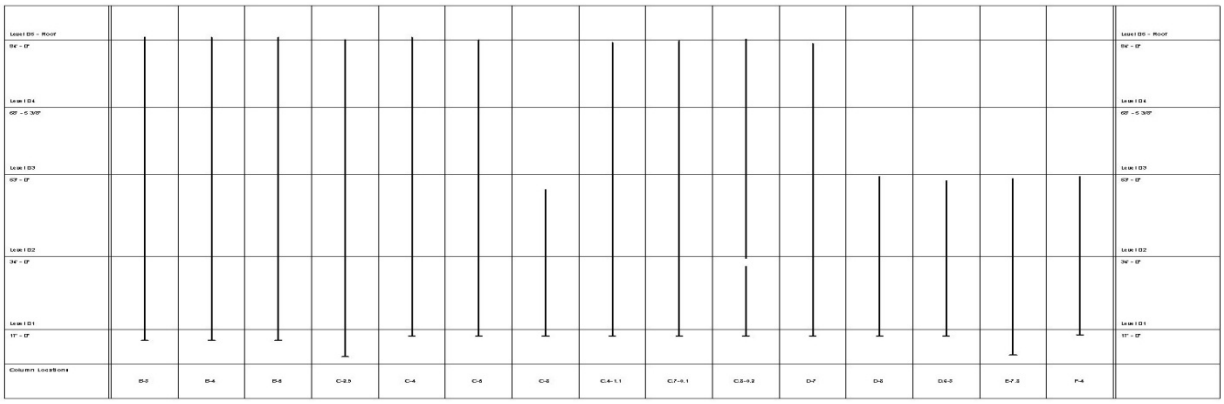
Class Exercise 2 – Adding Parameters (Base-Plate info)

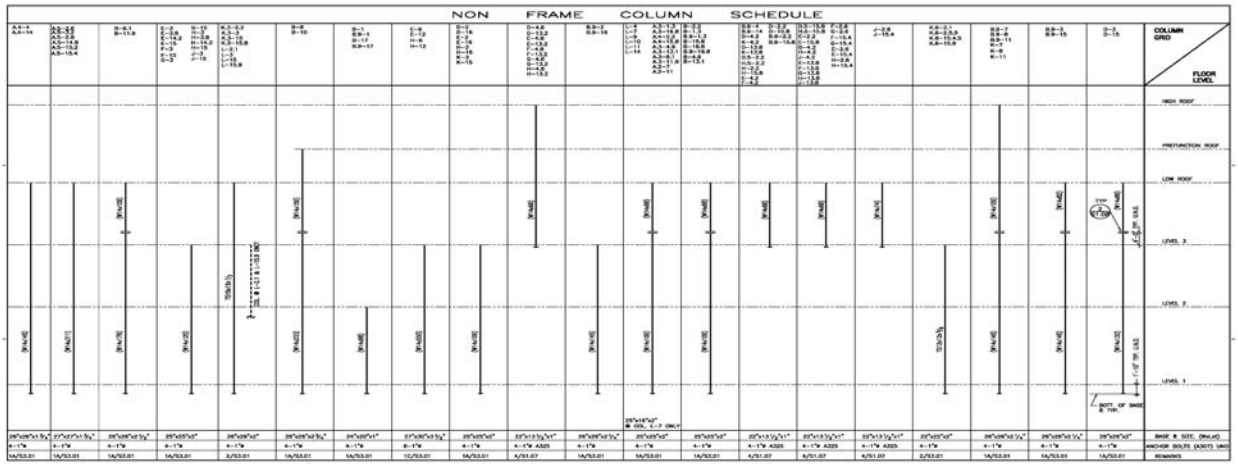
- Building the Base Plate
- Creating parameters in the column tag family
- Tagging the GCS

Tips / Tricks

What are Other Companies Doing

- Linking AutoCAD files to drafting view
- Using Revit GCS Default with detail lines in the plot sheet view.
- Linking AutoCAD files to drafting view

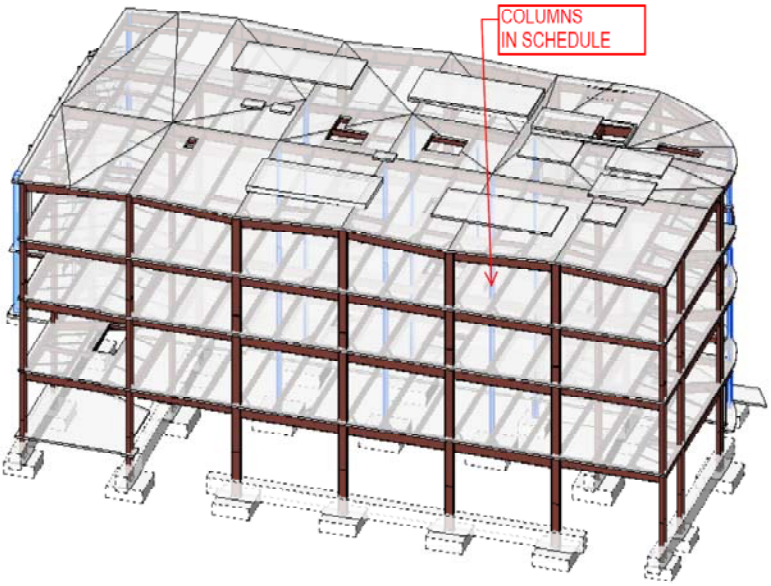




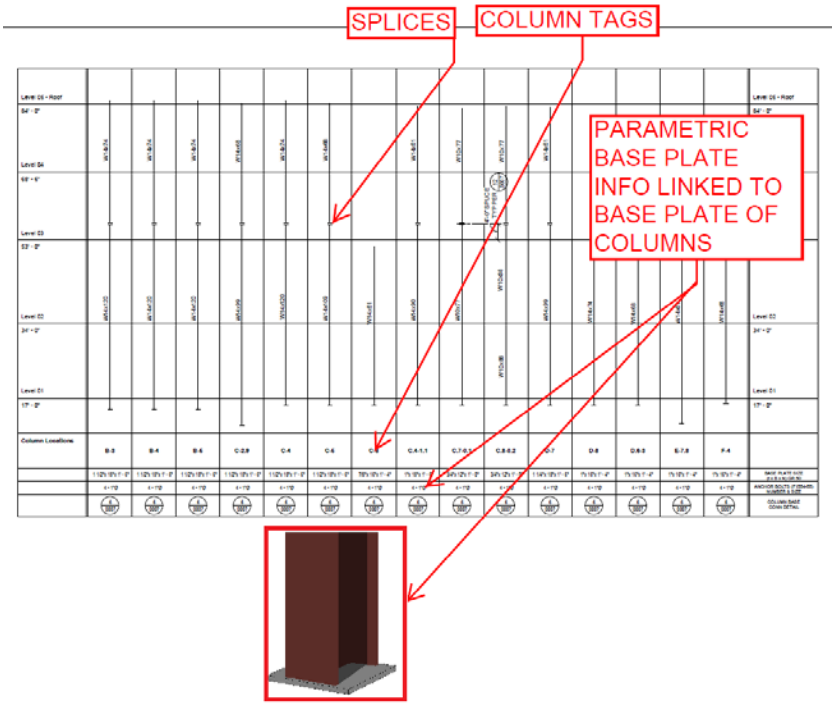
GCS FACTS

- Unique to Revit Structure – not many enhancements in recent years
- The GCS is a system family
- Architectural Columns will not display in the GCS
- All Columns displayed in the GCS are viewed from the South
- Revit creates the GCS as soon as you model your 1st Column
- The GCS references all columns by grid locations
- ONLY the following annotation elements can be added to the GCS
    - Text
    - Spot elevations/coordinate/slope
    - **Tags**
    - Keynotes
- Column location marks show up at the bottom of the GCS by default
- **Structural Columns are the only model elements displayed in the GCS**
- Structural Columns in Linked Revit Models will not display in the GCS
- Level names are project default names and cannot be changed

Project Description

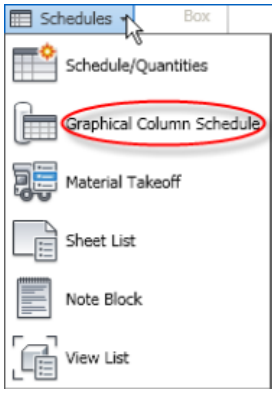


This Class will explain how to get a column schedule to look like the one in the image below using the sample steel building above.



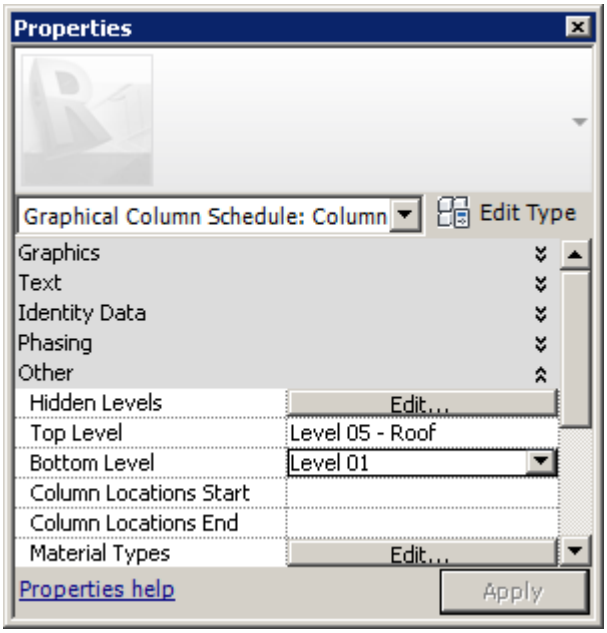
Pre-Exercise 1-Create a GCS

Start creating a schedule from “View” - “Schedules” - “Graphical Column Schedule”.



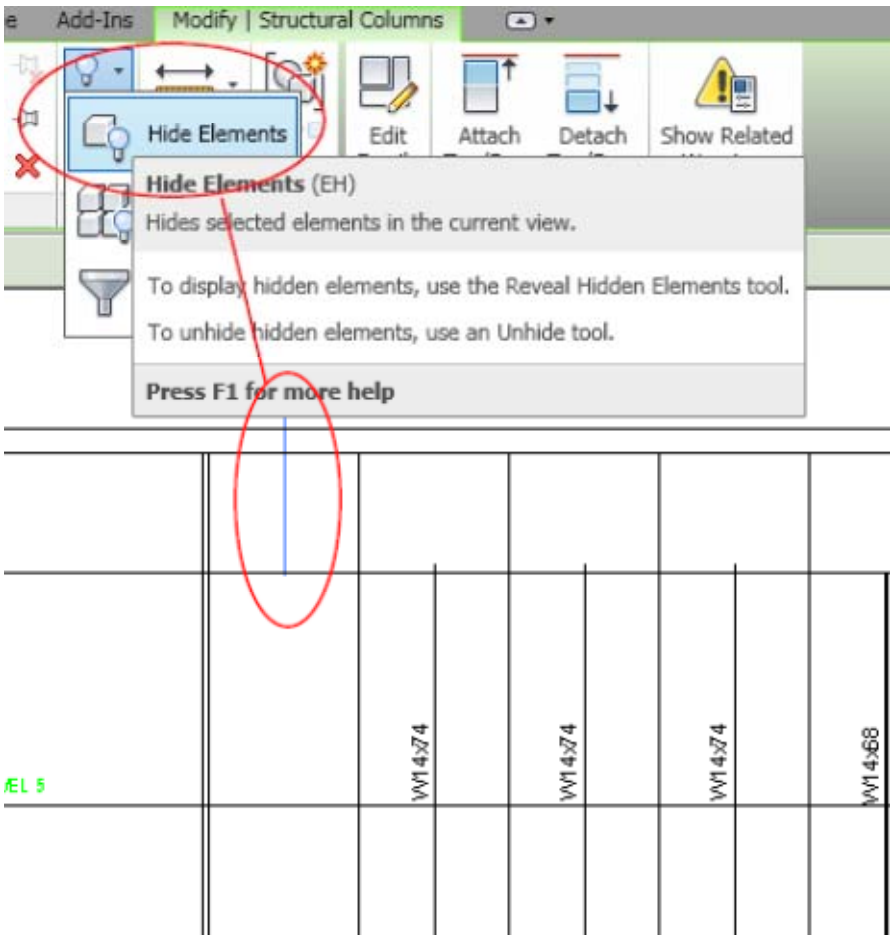
Add levels

Open the properties box. Add or remove levels with the “hidden levels” property as shown. To set the range of the level, or what level to start and stop the column schedule use the “top level and bottom level” properties as shown.



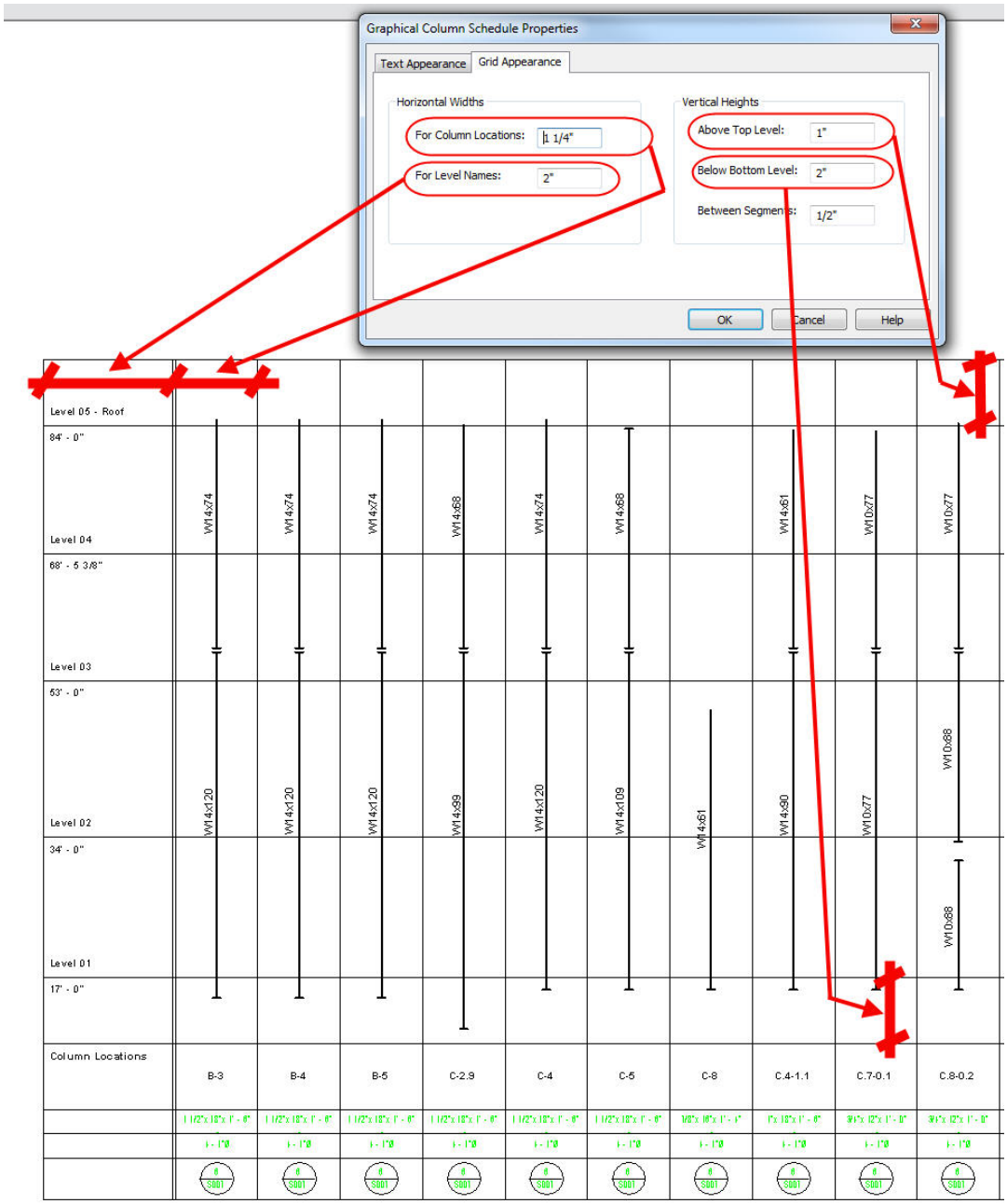
Remove unwanted columns on column schedule

To remove unwanted columns from column schedule simply permanently hide column as shown. Hidden columns will disappear and the column will auto adjust to accommodate the hidden column.



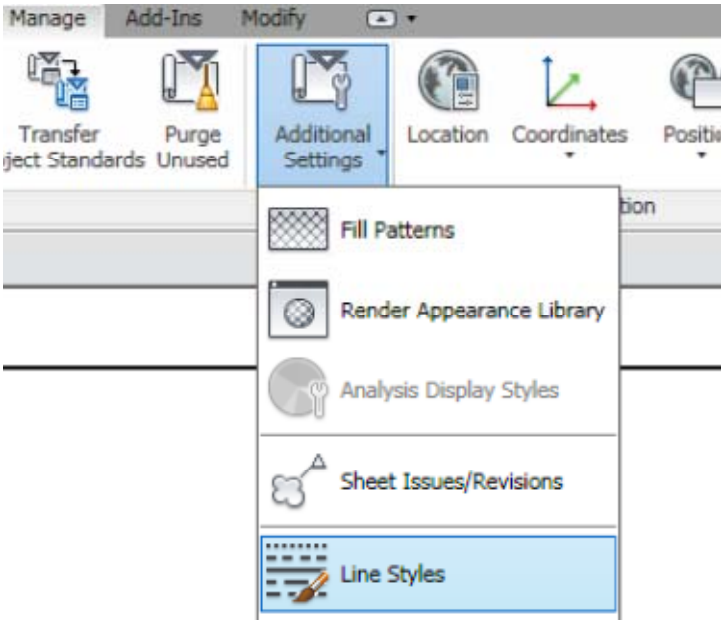
Adjust Widths and Heights of Rows and Columns

Open the properties box. The Text Appearance in the properties box controls the shapes of the column schedules in the GRID TAB as shown and the text properties TEXT TAB as shown.



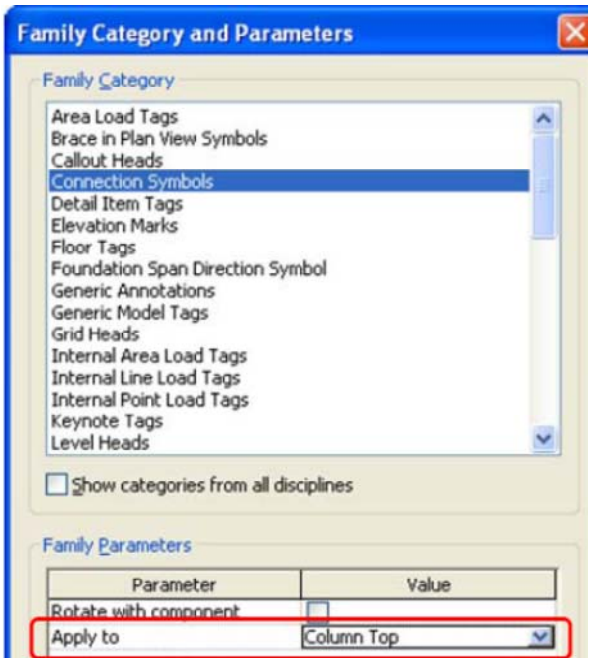
Adjust general line thickness of the GCS

There are no settings in the GCS properties box to change the line thickness of the GCS boundary lines. The GCS system family uses the thin line setting from the global project settings. To change the line thickness you will need to change the thin line settings. To do this, open the visibility overrides dialog box for the GCS view. In the model categories tab select the lines category. Navigate to the thin lines and override the line weight to desired line thickness. Note that you are only changing the thin line weight for this particular GCS view and not the project thin line weight. Also note by default the thin line thickness is 1. If you want to change the entire projects thin line thickness go to manage/additional settings/line styles/thinlines as shown below.

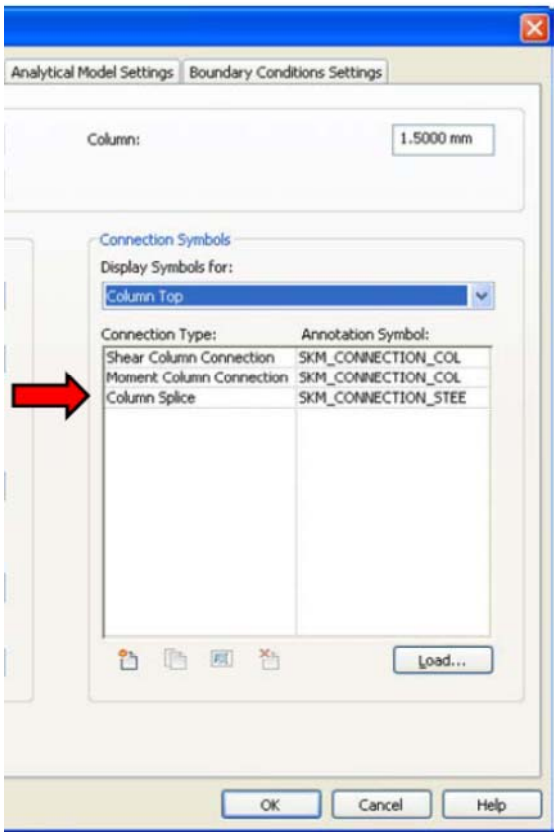


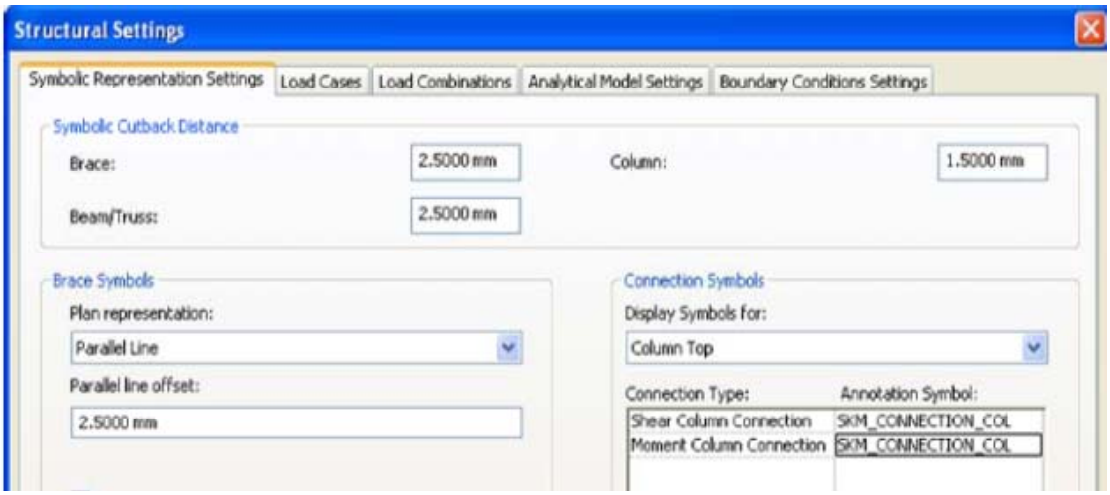
Adding Splices and Baseplate symbols

Create a new symbol using the “Generic Annotation” family template and set family category to “Connection Symbols” set top for top of column and bot for bottom of column.

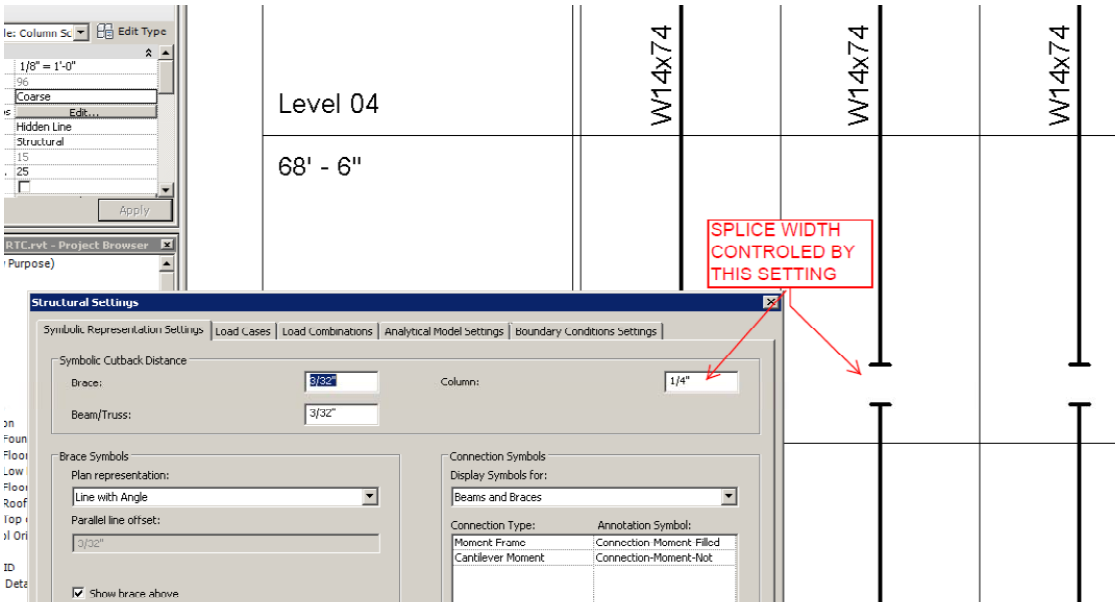


Load new connection type in “Structural Settings under “Symbolic Representation Settings”



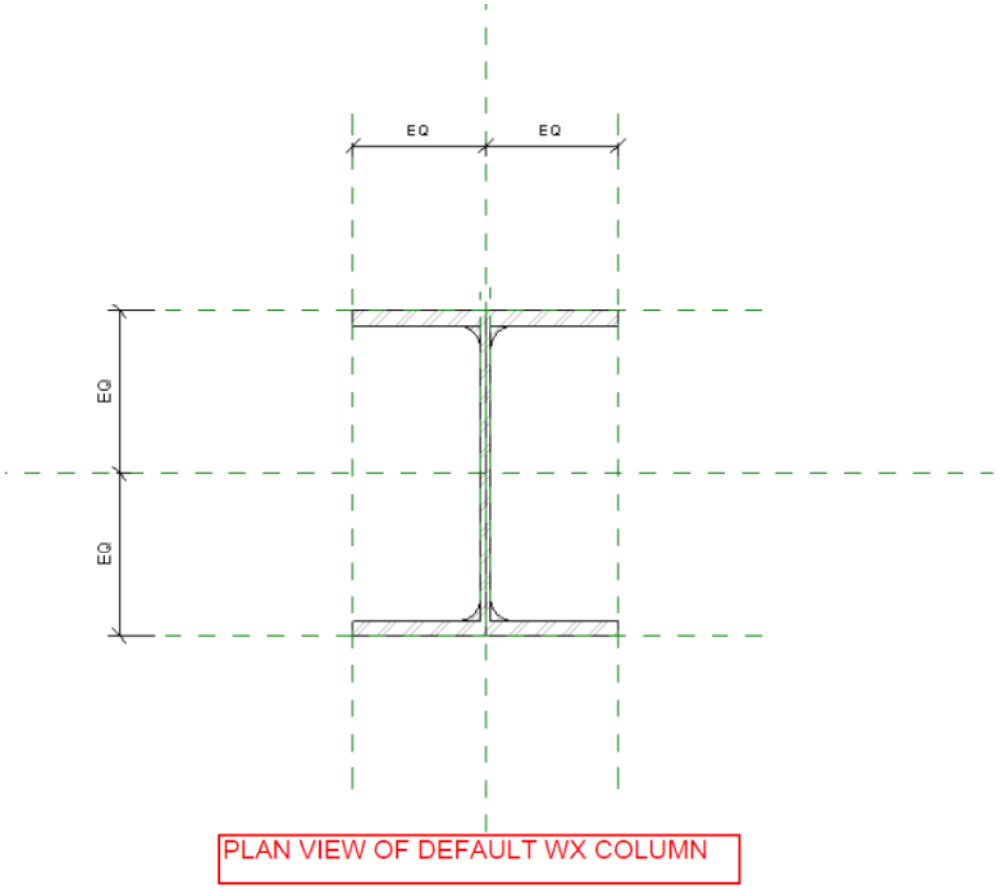


Control the width of the splice by the following setting in the “manage-structural settings” properties box. Note that only the top of the column will be adjusted the bottom of the column will remain at its modelled location.

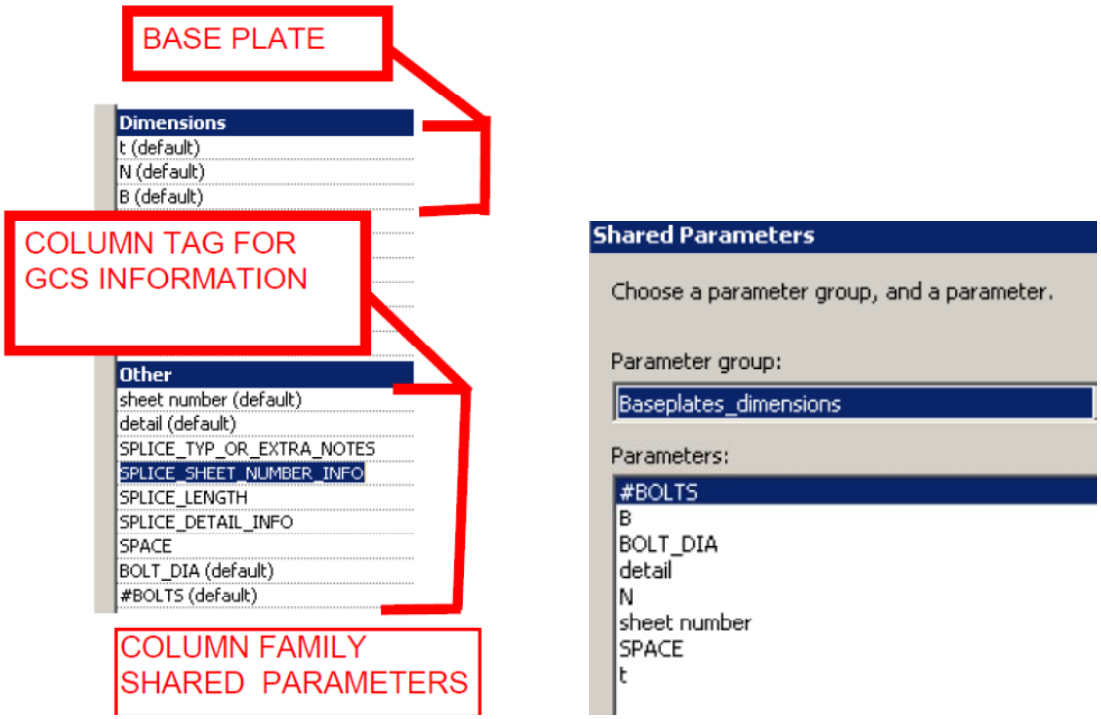


Class Exercise 2 – Adding Parameters (Base-Plate info)

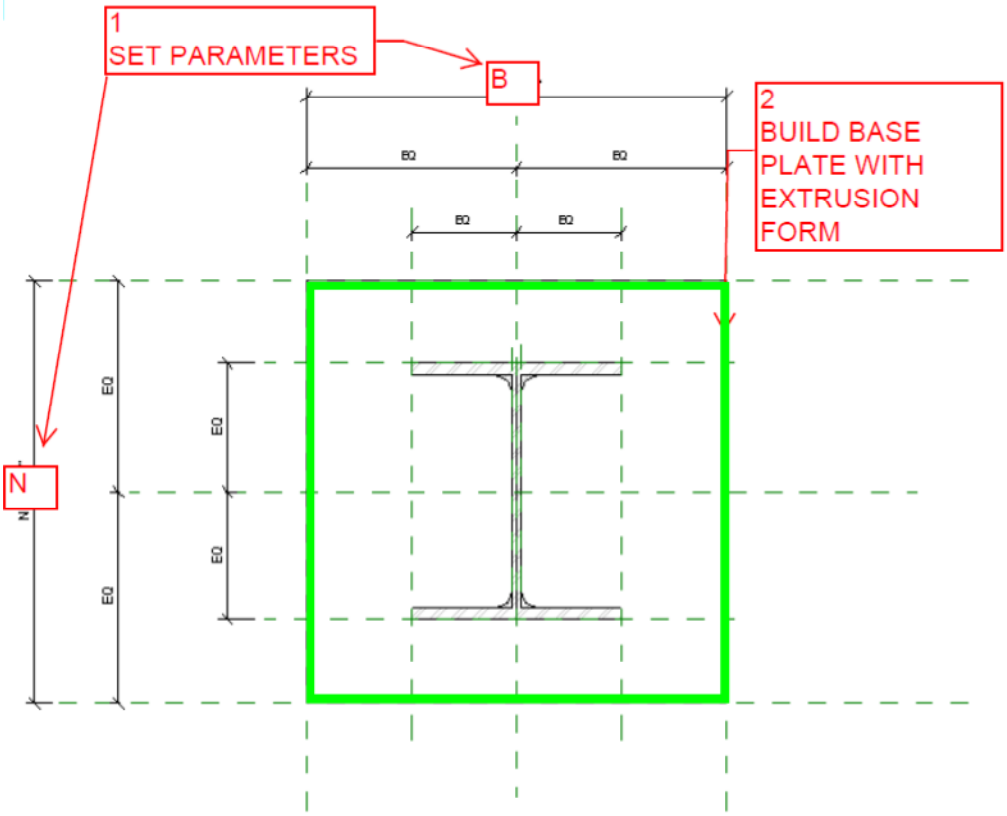
The base plate table is a tag family linked with shared parameters to a column family. Follow the steps below to create a parametric baseplate and information box in the GCS.



1. Open the Column family titled “W Wide Flange Column.rfa”
2. Go to the reference plan view. It should look similar to the view above.



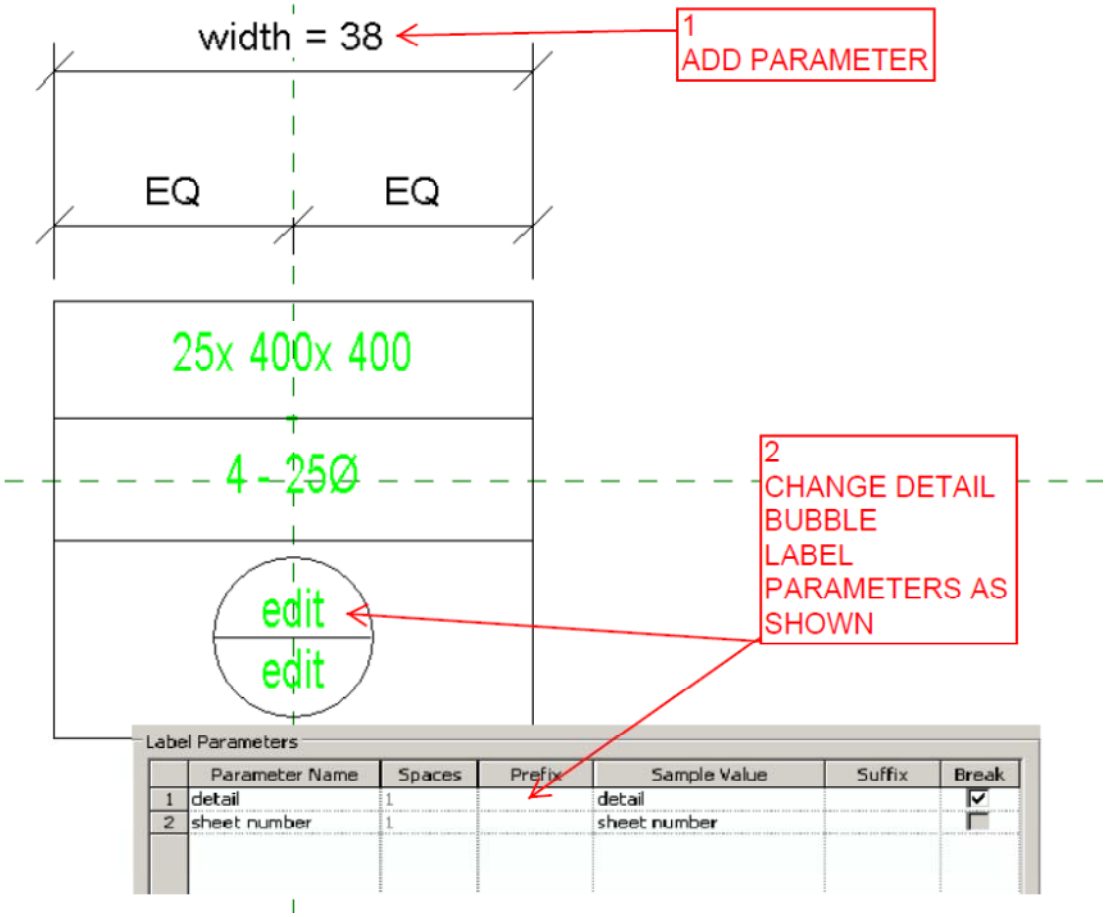
3. Open the family parameters and notice the difference types of parameters already created as shown above. All the parameters are shared parameters so they could be shared between the column family and the column tag that will both be displayed in the GCS.



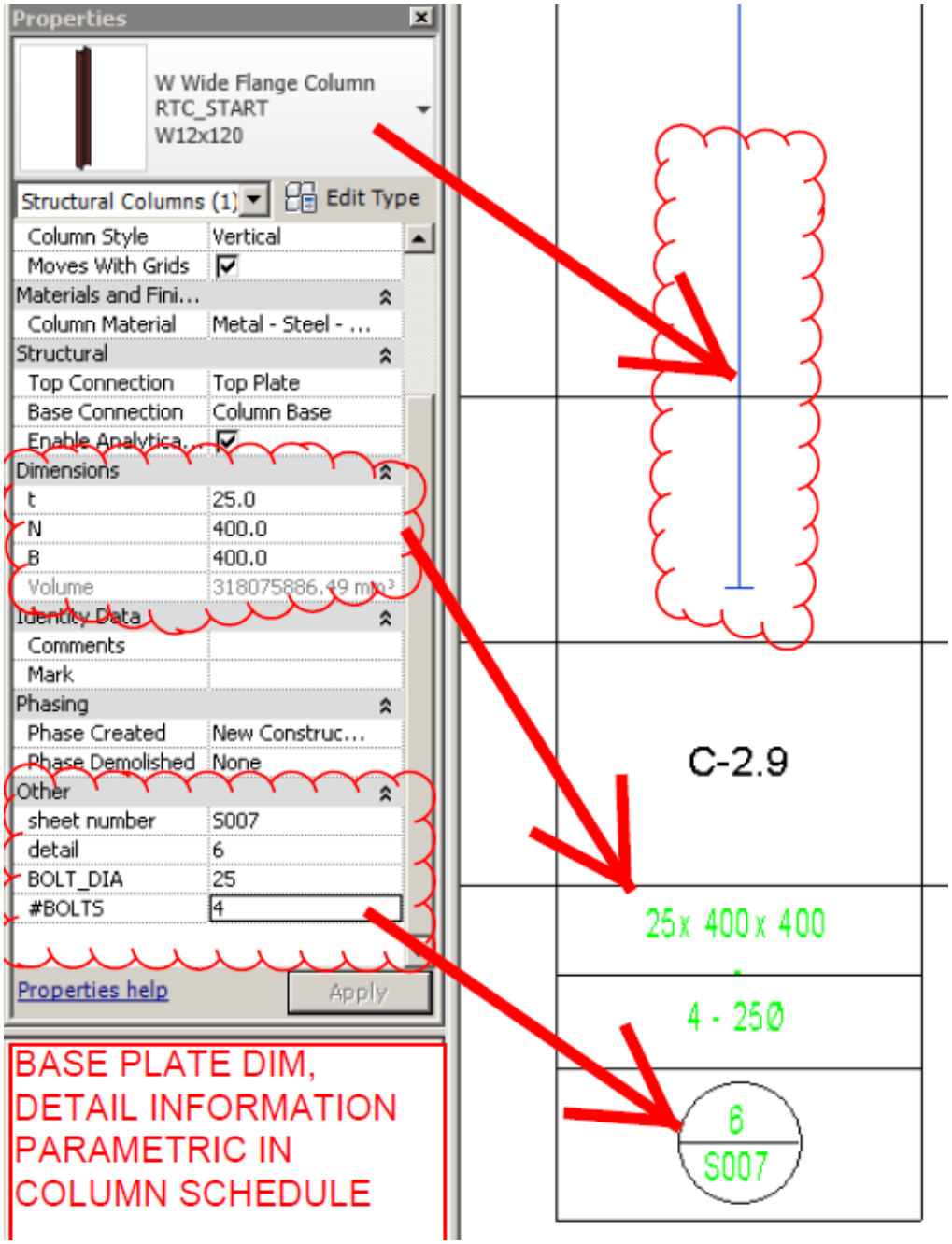
4. Change the B and N base plate parameters to B and N as shown.
5. Create a base plate using the extrusion form and lock the base plate boundaries to the reference planes.

6. Go to the 3D view and assign the thickness of the baseplate “extrusion end” to the “t” parameter.
7. Load the column family into the project.

Note: it is more stable to use the extrusion pre-set parameters in lieu of the linear dimension parameters.



8. Open up the column tag family titled “Column schedule Box_RTC_START.rfa”
9. Notice there are pre-drawn boundary lines in the tag family.
10. Change the width parameter to the pre-set “width” parameter.
11. Change the detail bubble label parameters to “detail and sheet number as shown”. There may be a need to open up the shared parameter file “column_shared_parameters.txt”.
12. Load the Label into the project



13. Tag the new column and move the new parametric tag boxes into place. They should snap into place. The final text box should look like the image above.

Tips / Tricks

- **Column Schedule Maintenance**
  The most important thing to realize about the “smart” column schedule is that it is live. This means whenever you add or remove columns it will be affected. For the most part it is an easy fix but it can be disastrous if not reviewed prior to sending the files out.

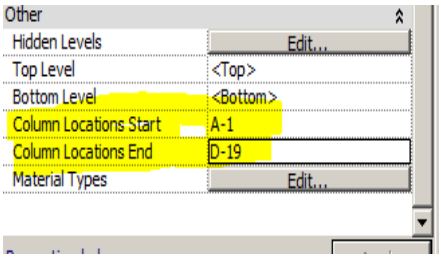
- **Filters**
  Apply filters to columns that you want to show up in your GCS.

- **Worksets**
  Create workset and add columns that you want to show up in your GCS.

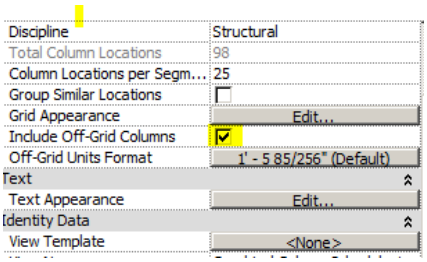
- **View Templates**

- **Override By Element the Projection Line color in the view**

- **Control Column By Grids**



- **Off Grid Columns**
  To include off grid columns the box as shown below needs to be selected.



- **Hide a level Datum on the GCS**

- **All Modify families have been uploaded to the AU web site**