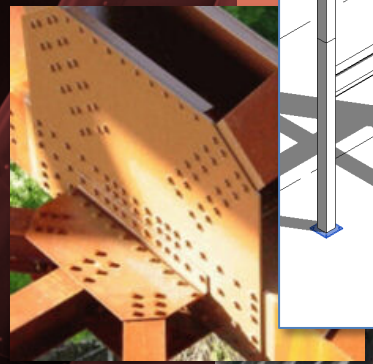
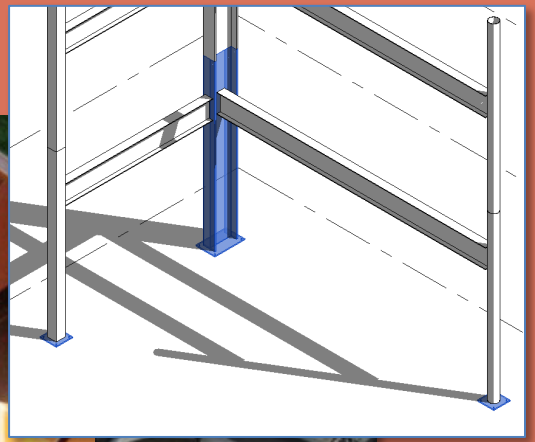
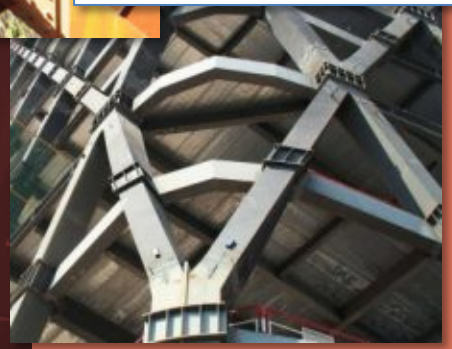
ARCH 2431
Building Technology III
Steel Assembly & Building Information Modeling (BIM) with Revit







Steel Connections Series

- #1 Introduction to Columns & Beams
- **#2 Column Base Plates**
- #3 Photos & Videos – Connections & Fasteners
- #4 Concrete footing to baseplate connection
- #5 Fin & Splice Plates – Notched Beams
- #6 Diagonal Bracing

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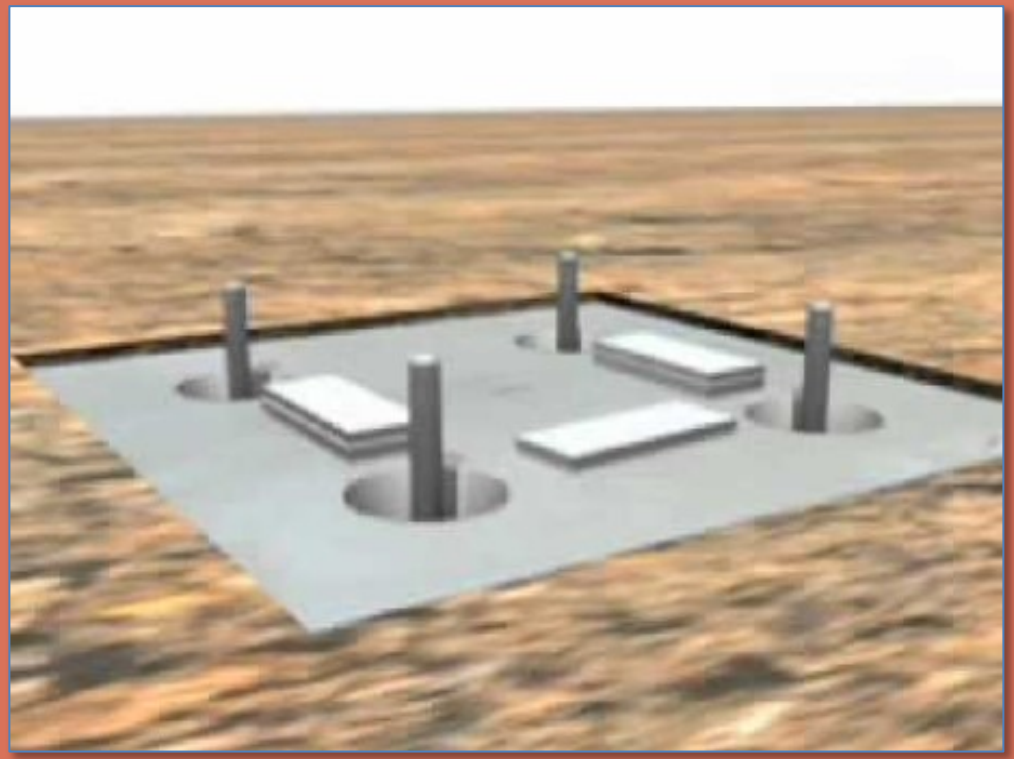
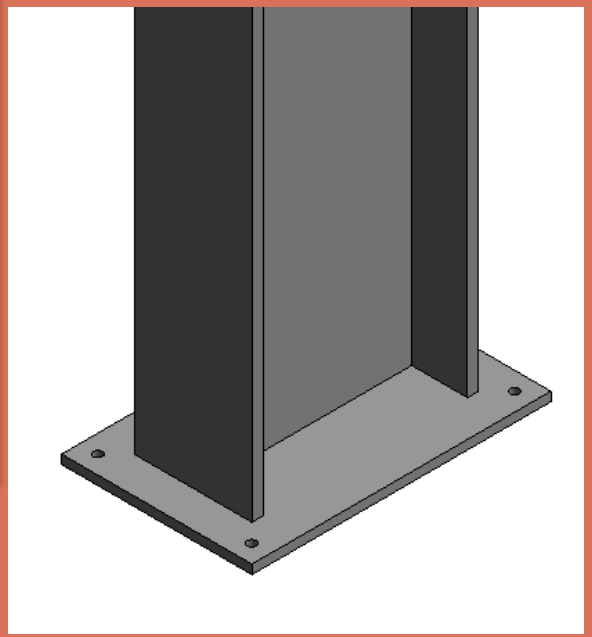
Concrete Footing to Baseplate Connection

https://www.youtube.com/watch?v=F4Lo5Z_eH9U

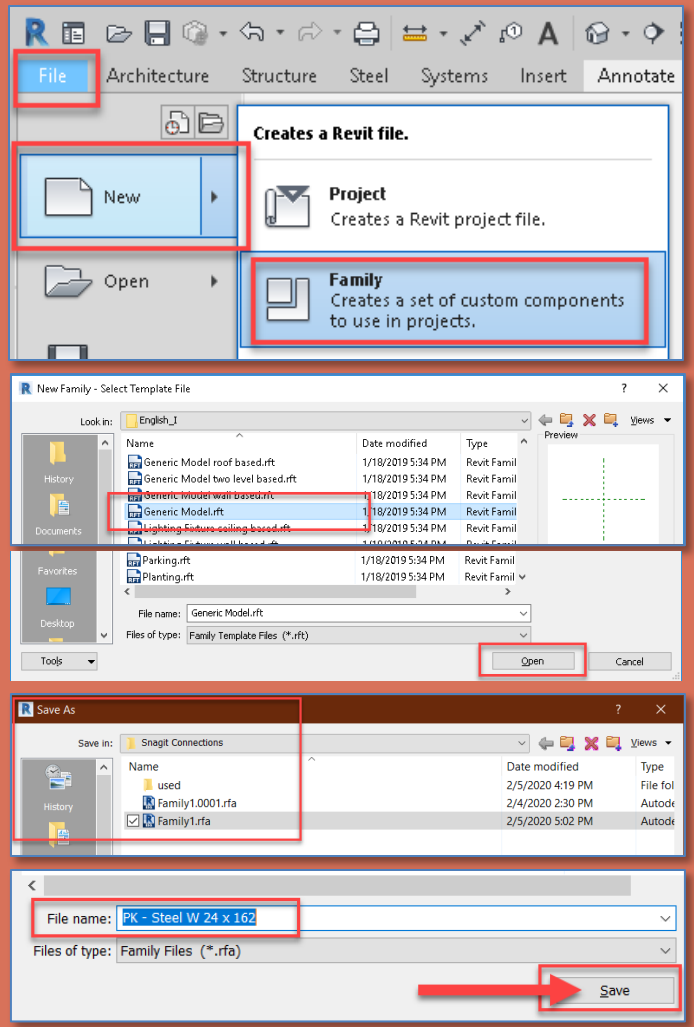


➢ *Watch the Video*



➢ *Column Base Plate with holes*

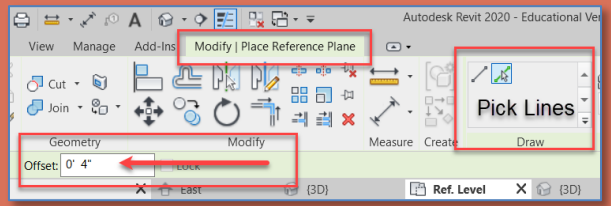
Creating a new 3D Family File



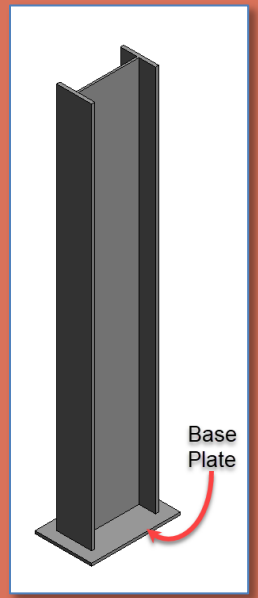
- We will repeat this for each component of the Steel Connection Assembly
- **Create a new Family**
  - File > New > Family
  - Generic Model Template
- **Save and Name the File**
- Select an appropriate directory
- Name the files as follows:
  - *Initials- Description*
  - *PK – Steel W 24 x 162 baseplate*
  - *PK – Steel baseplate*
  - *PK – Steel Fin*
  - *PK – Steel splice double*
  - *PK – Steel Notched Beam*

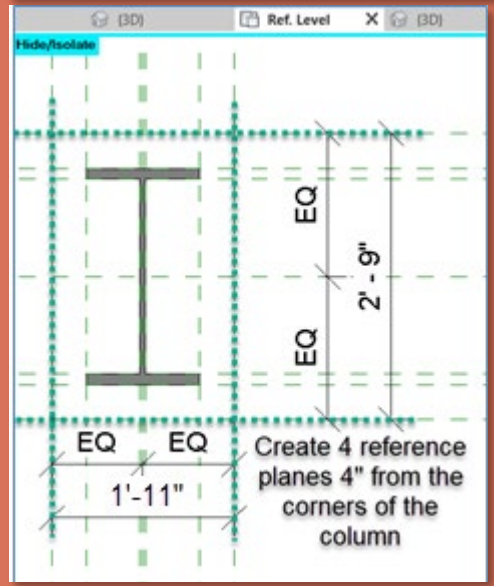
Add Base Plate to Wide Flange W 24 x 162

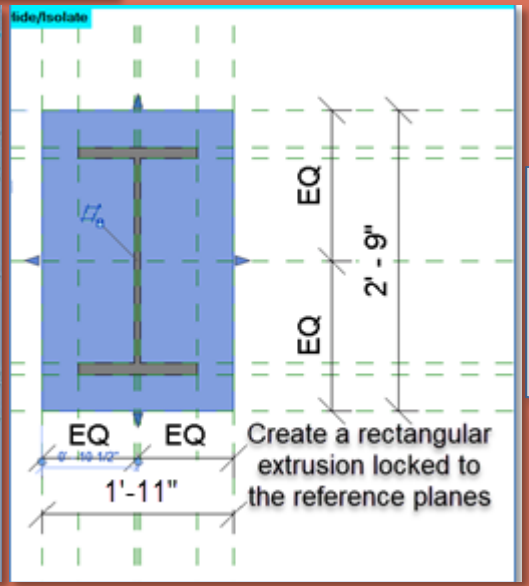
- *Open family*
  PK – Steel W 24 x 162
- *Save-as*
  PK – Steel W 24 x 162 baseplate

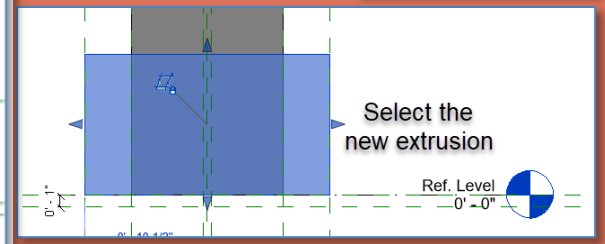


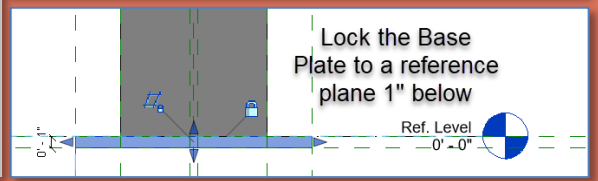
- *Create 4 reference planes –*
  - *4" from the corners of the column for the baseplate*
- *Create > Extrusion > Rectangle & lock to the reference planes*
- *Front View > Reference Plane @ 1"*
- *Edit Extrusion to snap to Ref. Level and Reference Plane for 1" Thickness*



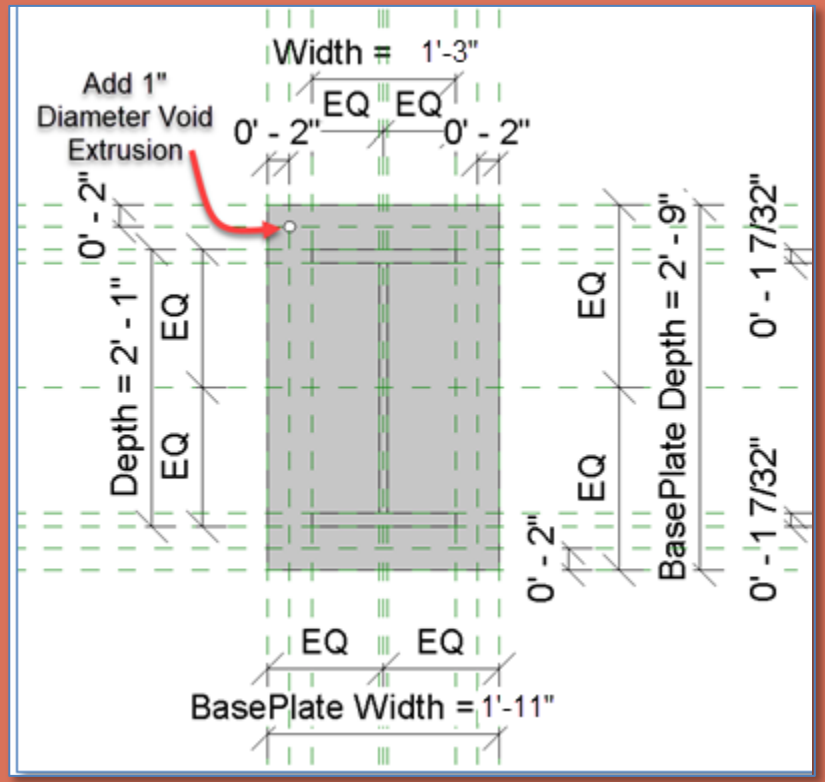


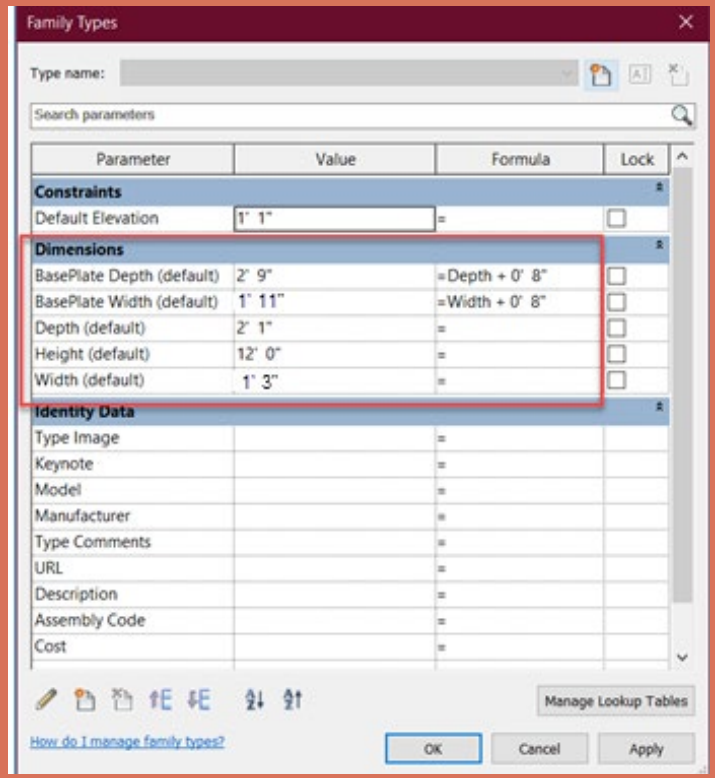






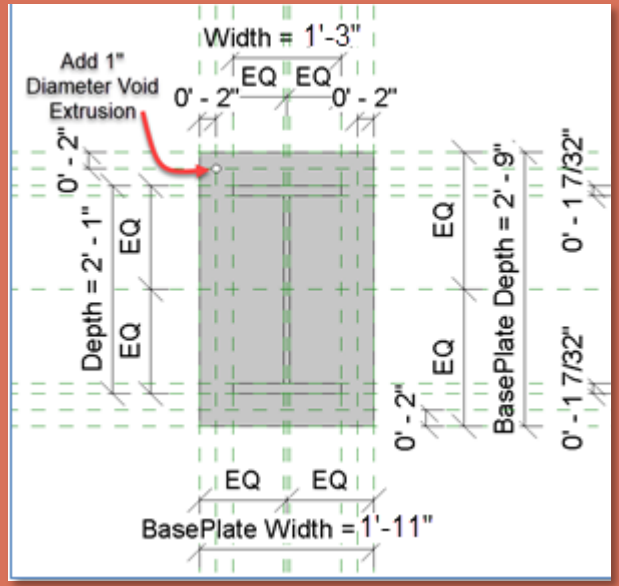
Baseplate uses parameter formulas

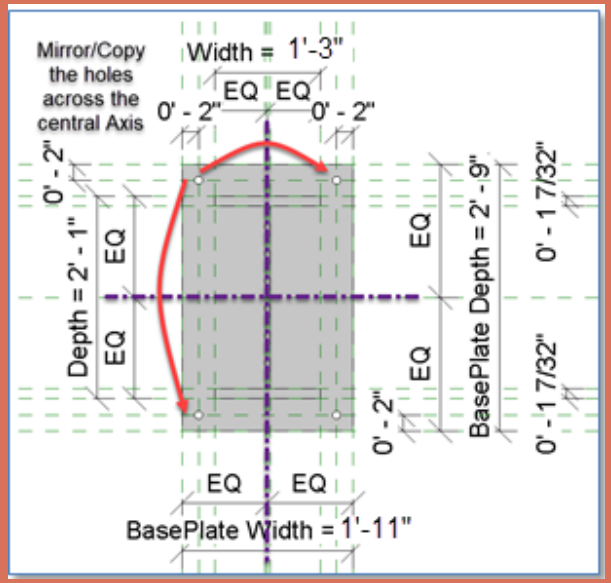


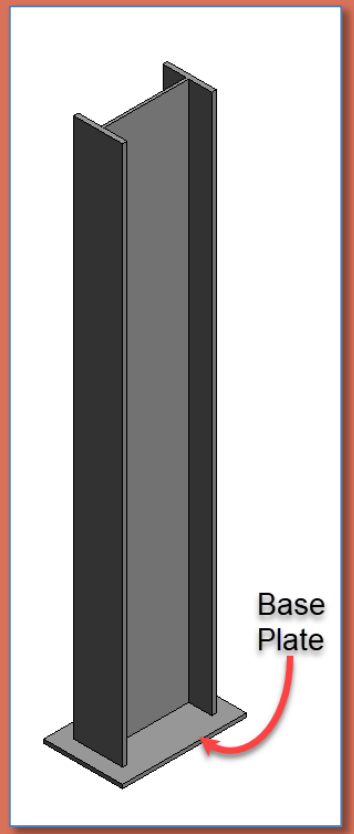


- *The base plate is 4" beyond the corners of the column and uses parameter formulas*
  - *BasePlate Depth = Depth + 0' 8" 2' 1" + 8" = 2' 9"*
  - *BasePlate Width = Widtch + 0' 8" 1' 3" + 8" = 2' 1"*

Add holes for anchor bolt to footing connection

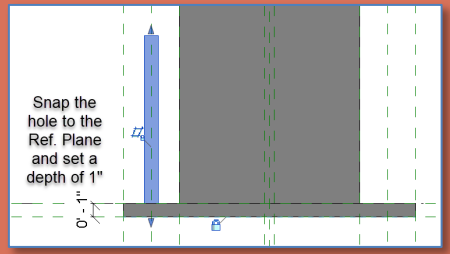


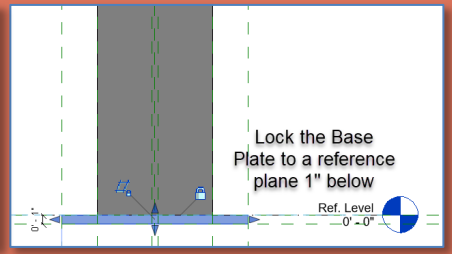




- *Create > Void Forms > 1" Diameter holes*
- *Snap to Reference Planes 2" from edge of base plate*

- *Mirror/Copy the holes across the center axis*





- *Snap the hole height to match the top and bottom of the baseplate*

Steel Connections

Column Baseplates

- Video
- New 3D Family
- W24 x 162 with baseplate
  - Parameter Formula
  - Add Void Holes
  - Load into Project
- New 3D Family
- Independent Baseplate
  - Load into Project
  - Align & Lock
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  - Columns w/ Base Plates
- Sheet View

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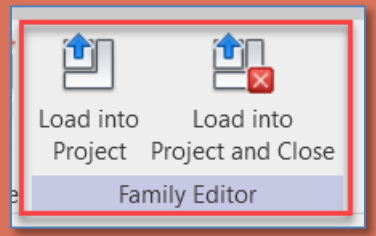
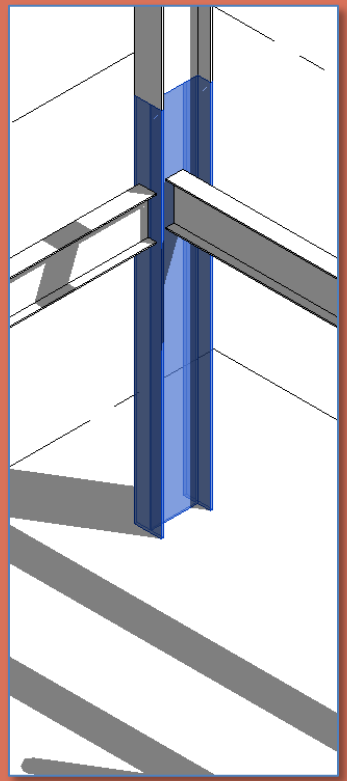
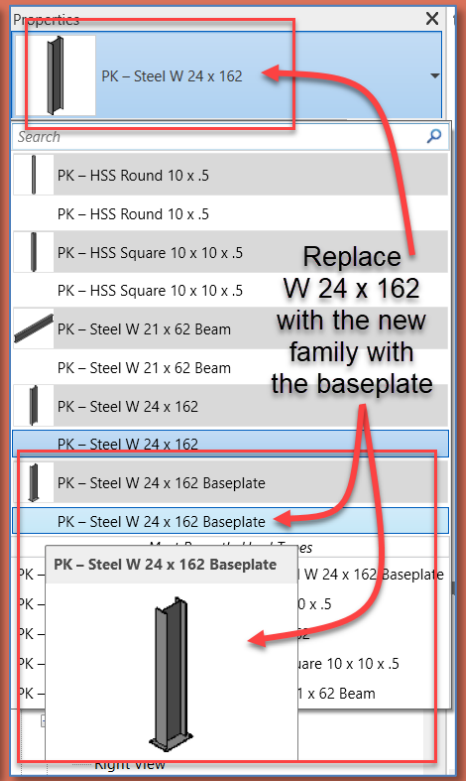
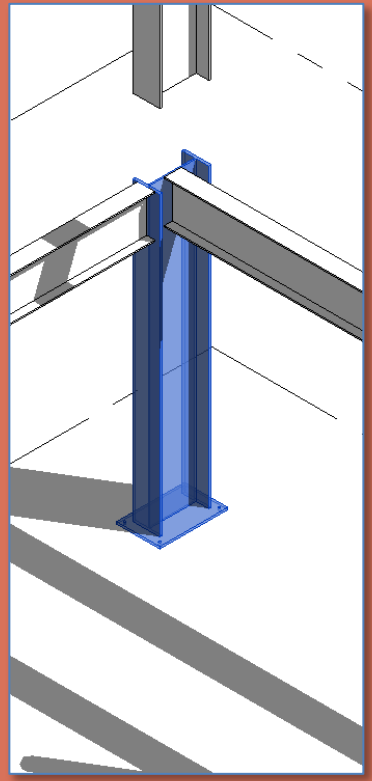
Load new column with baseplate into project

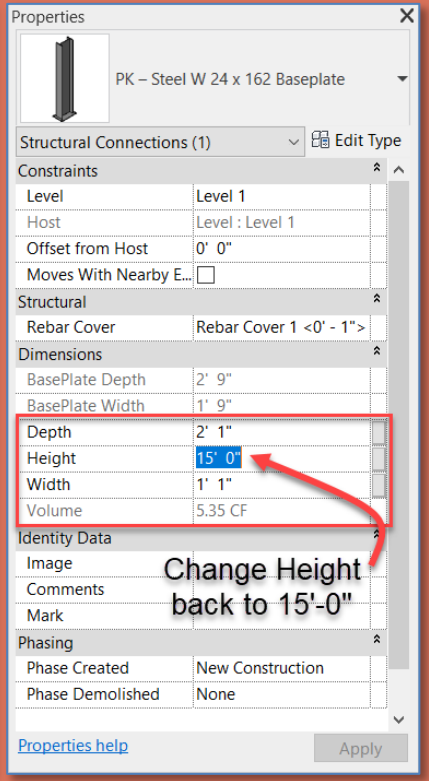


- Load into Project
- Select the lower W 24 x 162 on Level 1
- Replace W 24x162 with the new family W 24x162 baseplate
- The height will revert to 12'-0". Change it back to 15'-0"
- Be certain your 3d View is not cropped and baseplate is visible!









Steel Connections

Column Baseplates

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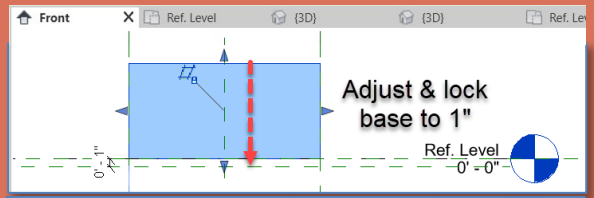
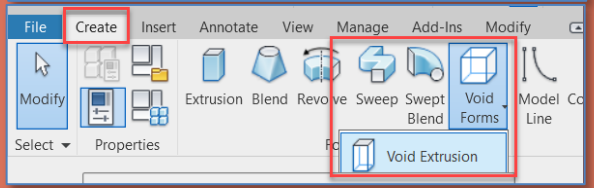
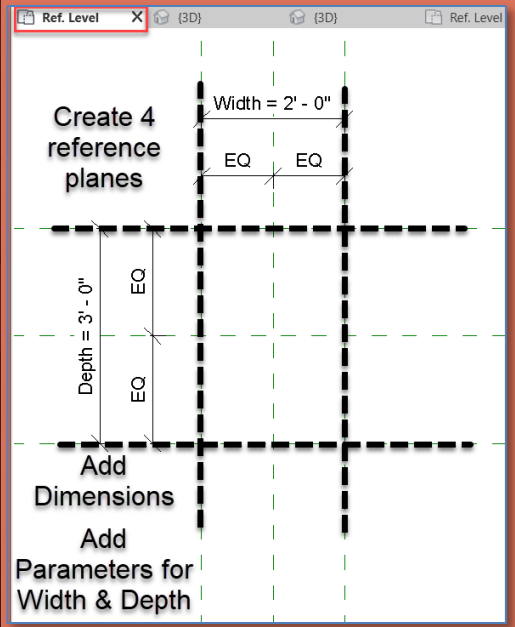
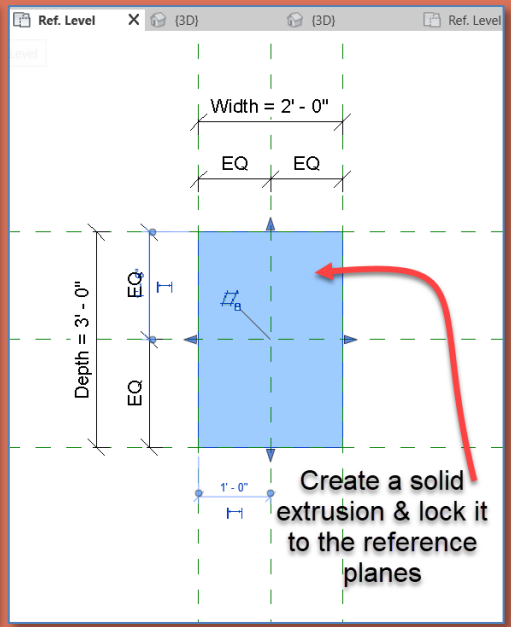
Creating an independent base plate with parameters

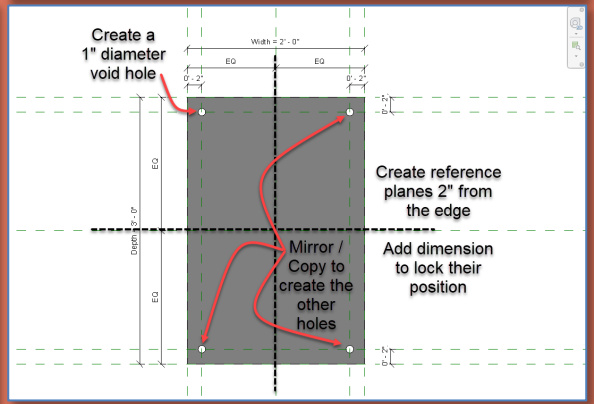
- *New Family > Generic Model*
- *Create > Reference Planes for edge of baseplate*
  - *Add Parameters for Width and Depth*
- *Create > Solid Extrusion > lock to Reference Planes*
- *Create > Reference Planes 2" in from edges*
- *Create > Void Forms > 1" Dia. Holes > lock to reference planes*
- *Mirror / Copy to create all 4 holes*
- *Save and Name*

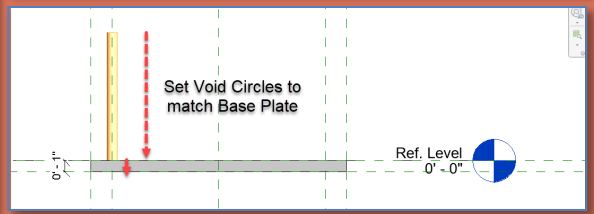






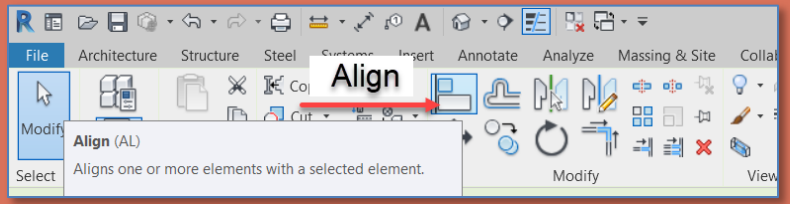


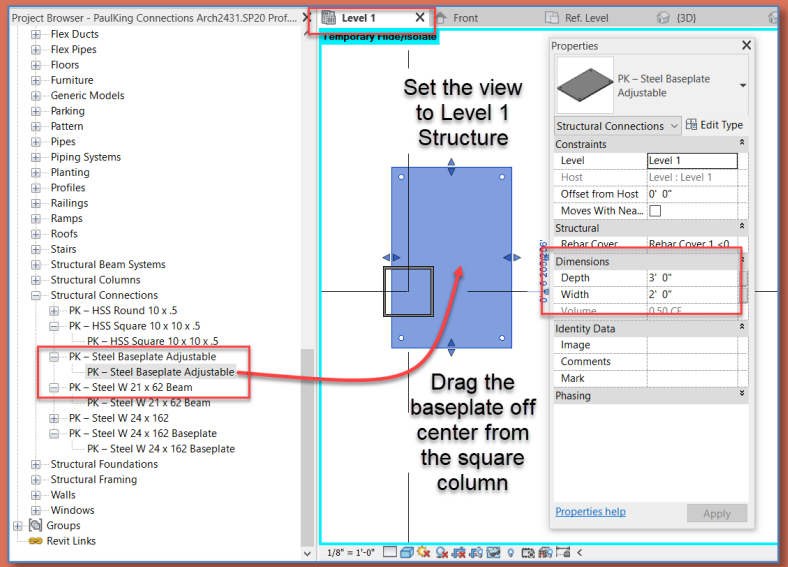


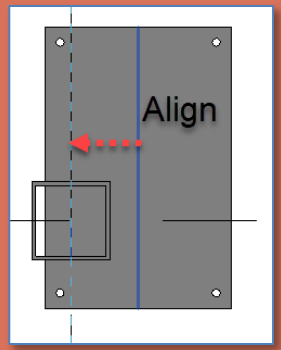


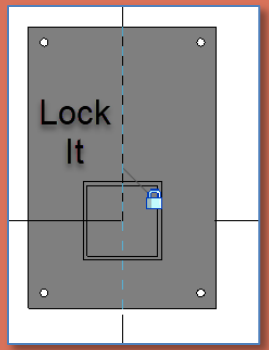
Add independent base plate for Square Column

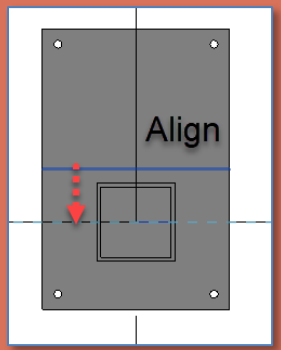
- *Load into project*
- *Make Leve 1 Structure the Current View*
- *Drag New Independent Baseplate close to the square column*
- *Locate it off-center to facilitate alignment*
- *Use Align to lock the baseplate to the center reference planes of the square column*
- *From side view align and lock to bottom of column*

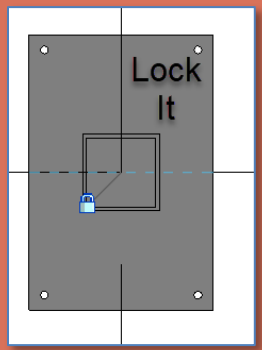






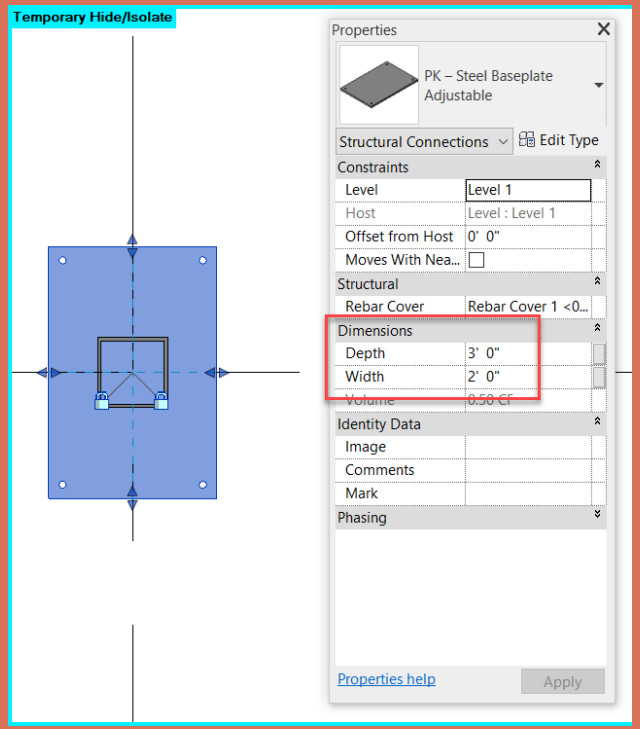


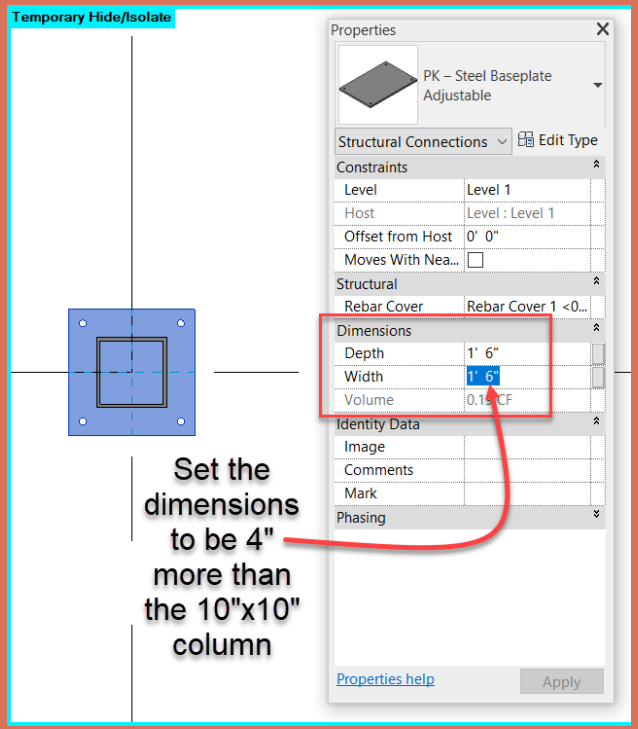


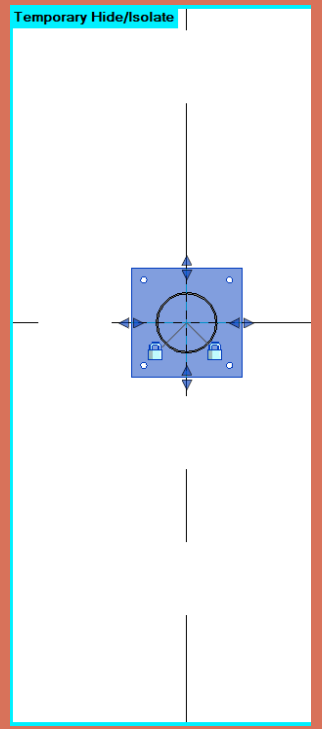


Use the parameters to modify the baseplate size

- *Repeat the process and add a baseplate for the round column*
- *Align it with the center of the round column and lock it*
- *Resize the baseplate to be 4" larger on both sides (10"+4"+4"=18" [1'-6"])*







Column Baseplates

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  - Parameter Formula
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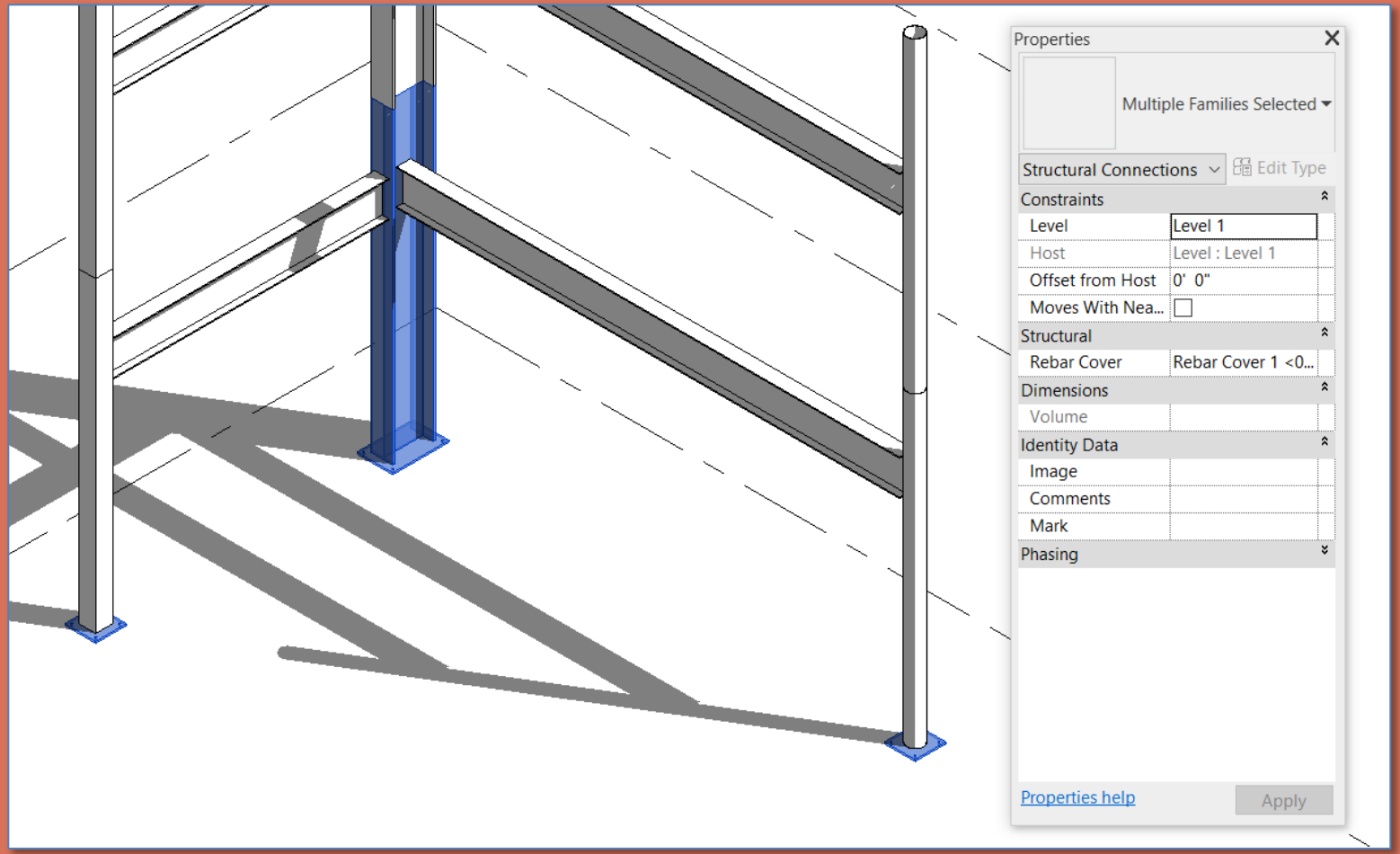
Columns with base plates

Be certain your 3d View is not cropped and baseplate is visible!



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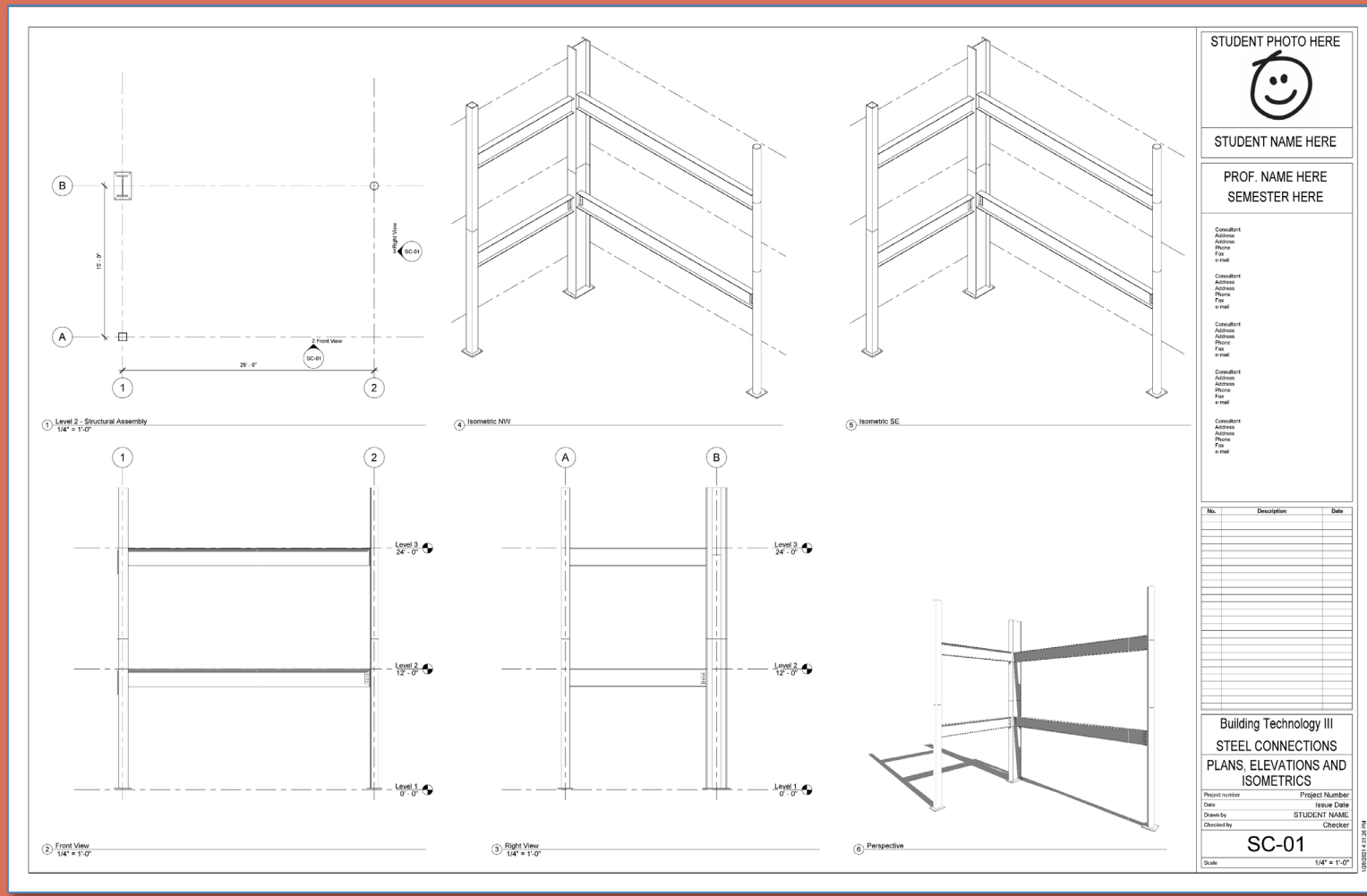
Steel Column and Beam Connection Videos




That's all Folks!