



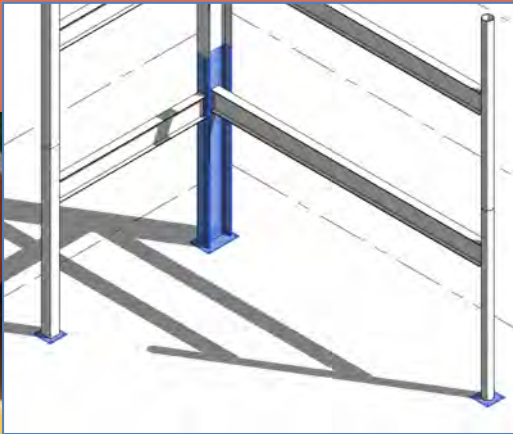
ARCH 2431

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



1.10

Building
Technology III

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• Video

- New 3D Family
- W24 x 162
with baseplate

- Parameter Formula
- Add Void Holes
- Load into Project

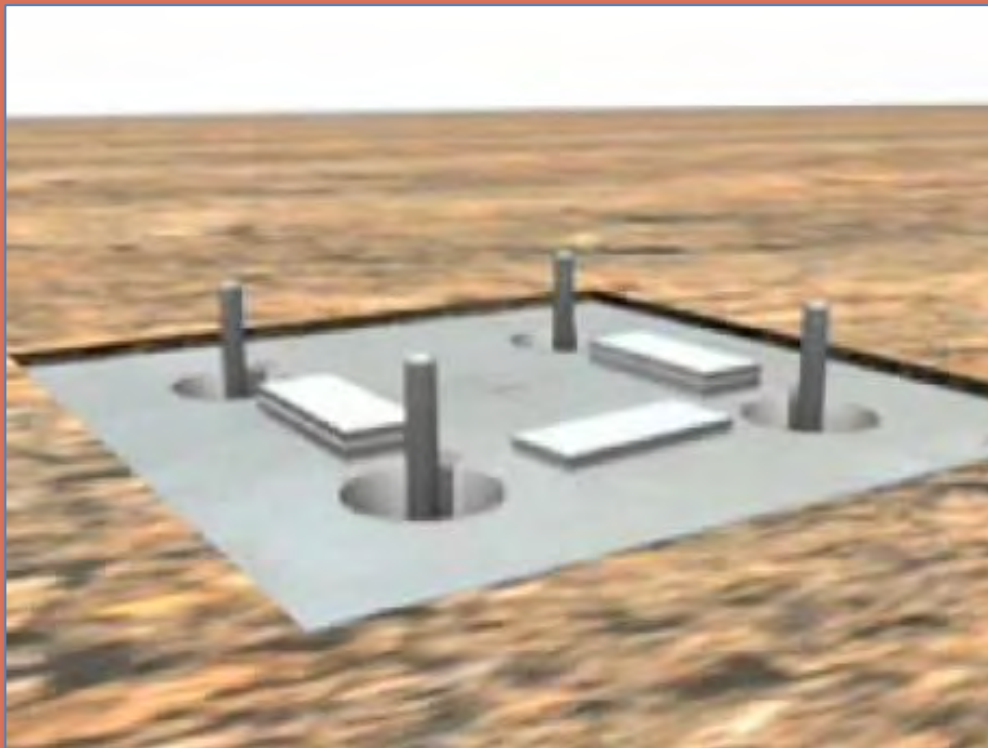
- New 3D Family
- Independent
Baseplate

- Load into Project
- Align & Lock
- Adjust Parameters
- Columns w/ Base
Plates

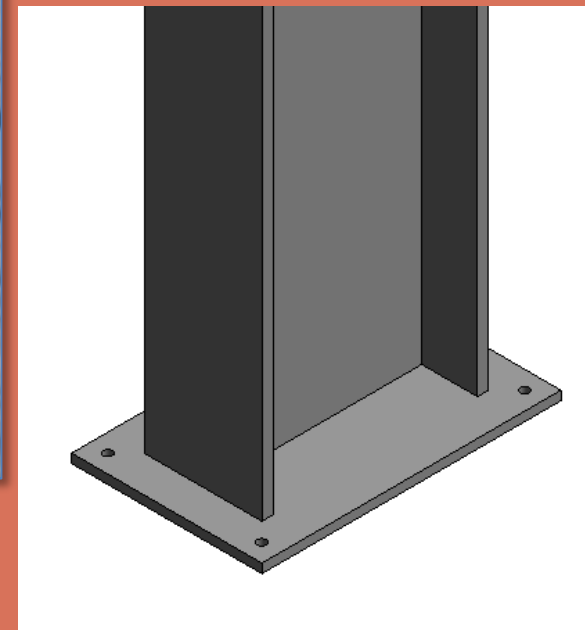
• Sheet View

Concrete Footing to Baseplate Connection

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



➤ *Watch the Video*



➤ *Column Base Plate with holes*

• Video

• New 3D Family
• W24 x 162
with baseplate

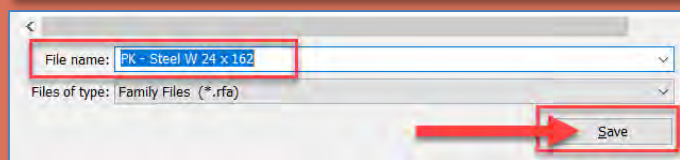
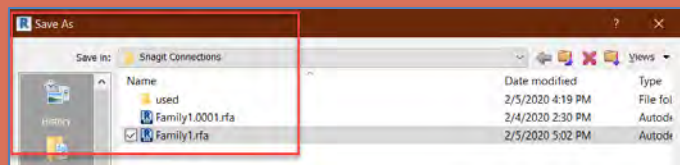
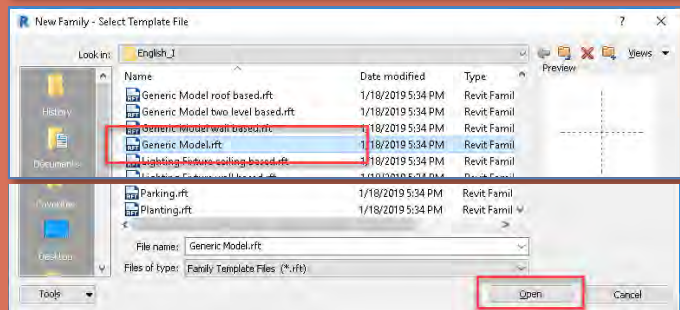
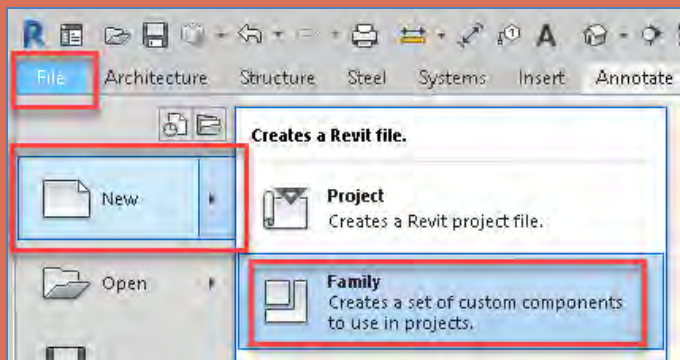
- Parameter Formula
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• New 3D Family
• Independent
Baseplate

- Load into Project
- Align & Lock
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- Columns w/ Base Plates

• Sheet View

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*

- Video
- New 3D Family
- W24 x 162 with baseplate

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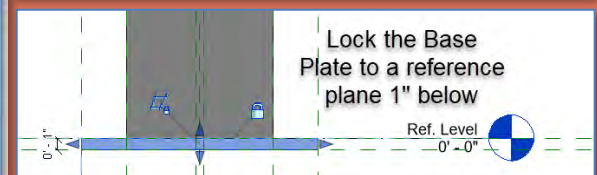
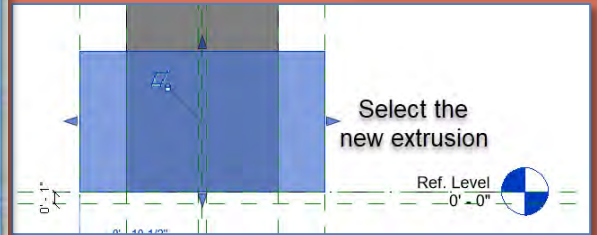
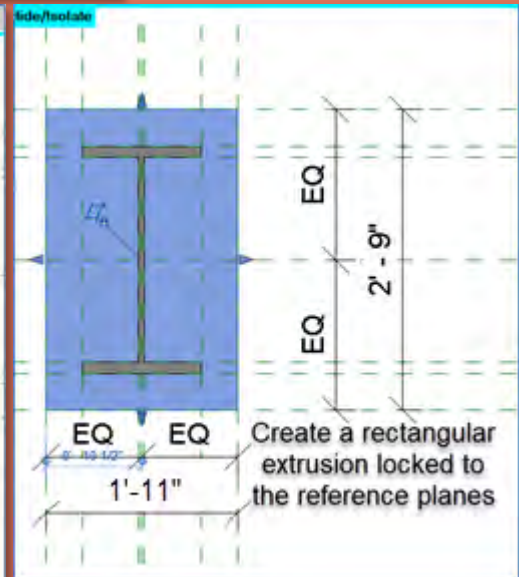
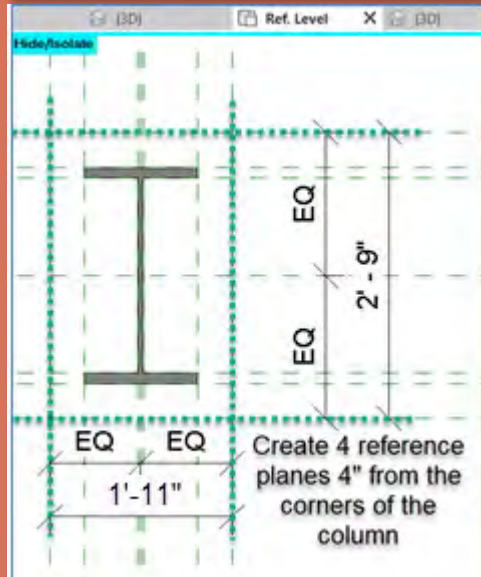
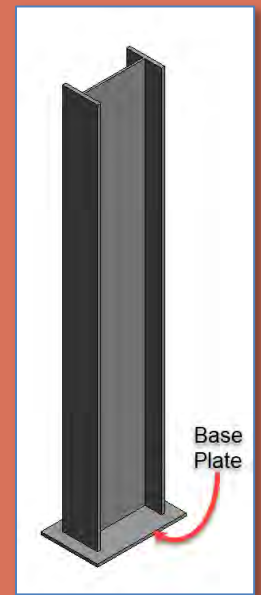
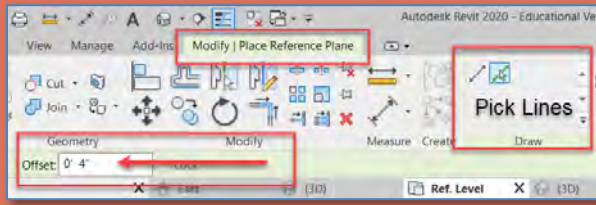
- New 3D Family
- Independent Baseplate

- Load into Project
- Align & Lock
- Adjust Parameters
- Columns w/ Base Plates

- Sheet View

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

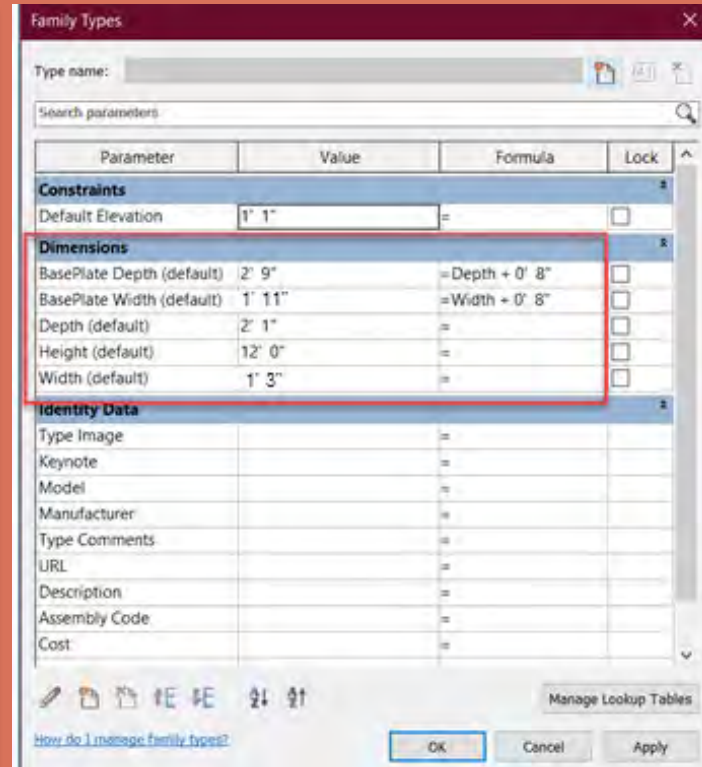
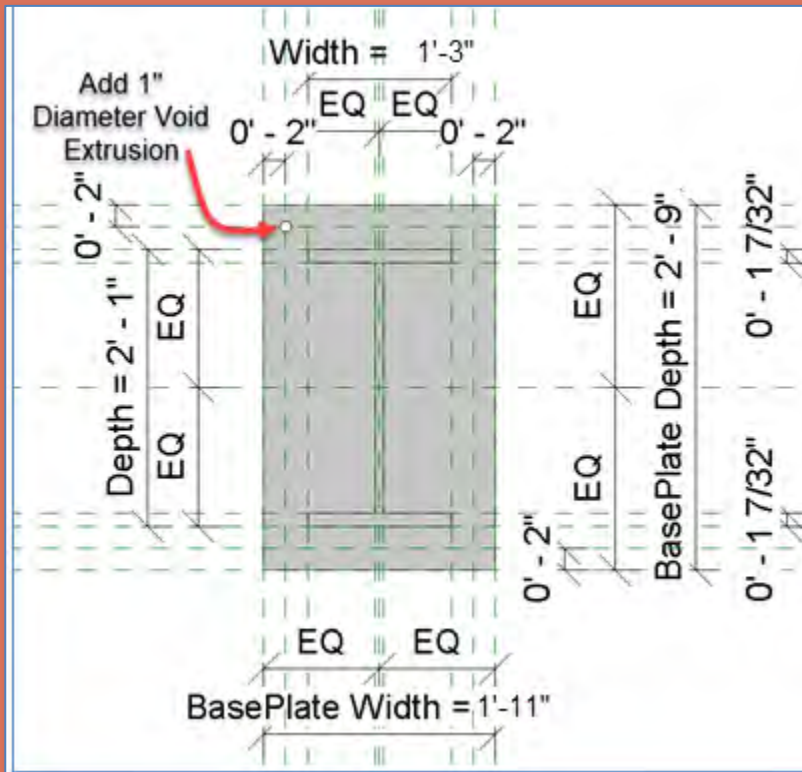


Baseplate uses parameter formulas

- Video
- New 3D Family with baseplate
- Parameter Formula
- Add Void Holes
- Load into Project

- New 3D Family Independent Baseplate
- Load into Project
- Align & Lock
- Adjust Parameters
- Columns w/ Base Plates

- Sheet View



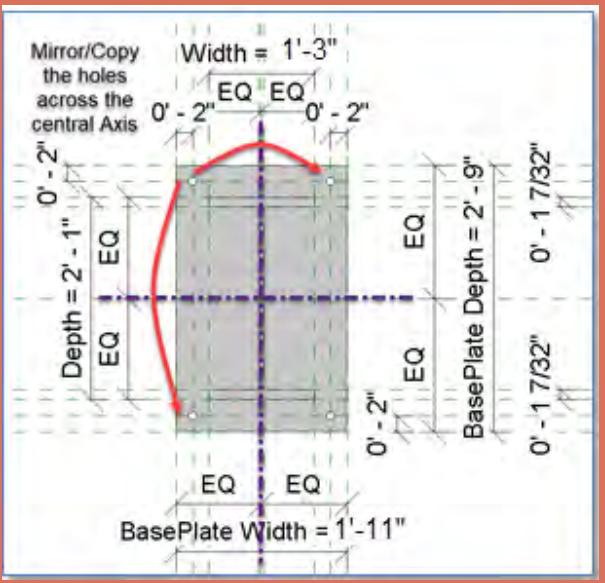
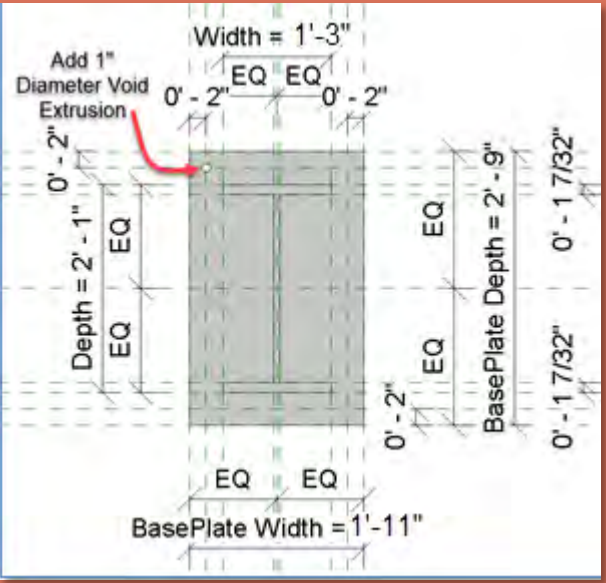
- The base plate is 4" beyond the corners of the column and uses parameter formulas
 - $BasePlate\ Depth = Depth + 0' 8''$ $2' 1'' + 8'' = 2' 9''$
 - $BasePlate\ Width = Width + 0' 8''$ $1' 3'' + 8'' = 2' 1''$

Add holes for anchor bolt to footing connection

- Video
- New 3D Family
- W24 x 162 with baseplate
 - Parameter Formula
 - Add Void Holes
 - Load into Project

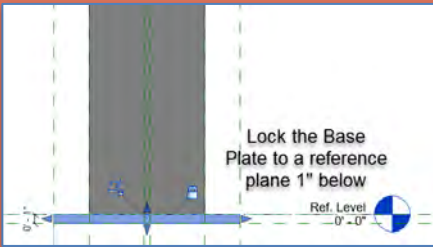
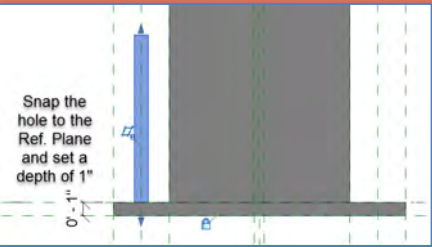
- New 3D Family
- Independent Baseplate
 - Load into Project
 - Align & Lock
 - Adjust Parameters
 - Columns w/ Base Plates

- Sheet View

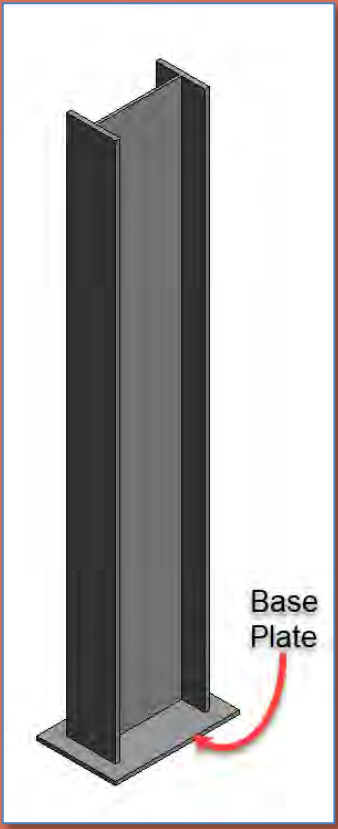


- Create > Void Forms > 1" Diameter holes
- Snap to Reference Planes 2" from edge of base plate

- Mirror/Copy the holes across the center axis



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

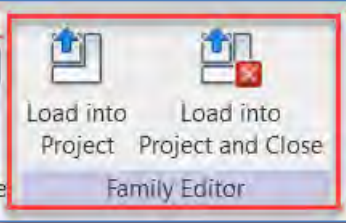


- Video
- New 3D Family
- W24 x 162 with baseplate
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- Add Void Holes
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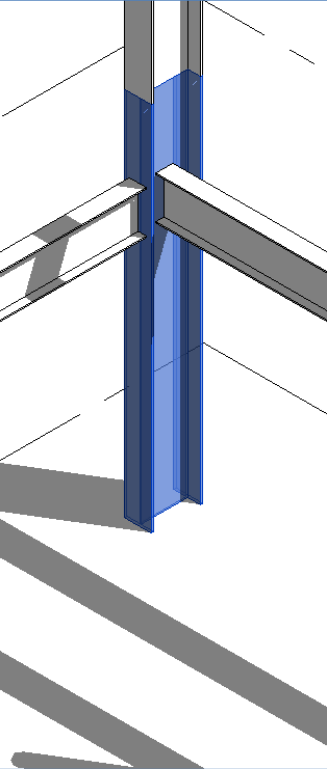
- New 3D Family
- Independent Baseplate
- Load into Project
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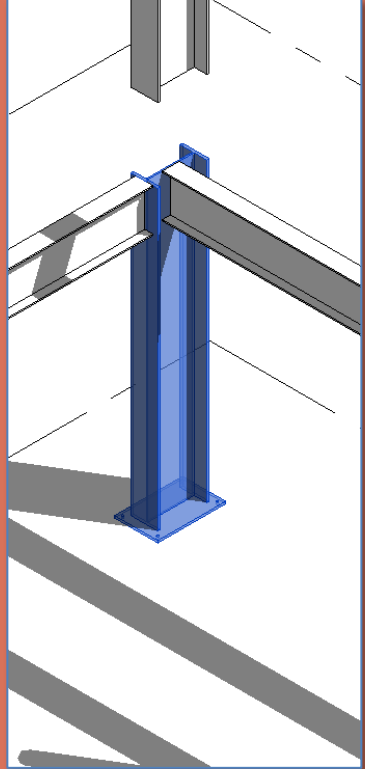
Load new column with baseplate into project



- 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!



A screenshot of the Properties palette. The 'PK - Steel W 24 x 162' is selected at the top. Below it, 'PK - Steel W 24 x 162 Baseplate' is highlighted. A red arrow points from the selected beam to the baseplate. Text in the center says 'Replace W 24 x 162 with the new family with the baseplate'. At the bottom, another instance of 'PK - Steel W 24 x 162 Baseplate' is shown with a small 3D model icon.



A screenshot of the Properties palette for the 'PK - Steel W 24 x 162 Baseplate'. The 'Dimensions' section is expanded, and the 'Height' parameter is set to '15' 0"'. A red arrow points to this value. Text to the right says 'Change Height back to 15'-0"'. Other parameters like 'Depth' (2' 1"') and 'Width' (1' 1"') are also visible.

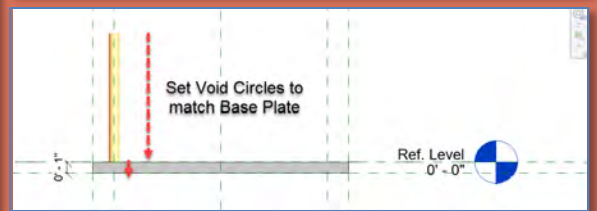
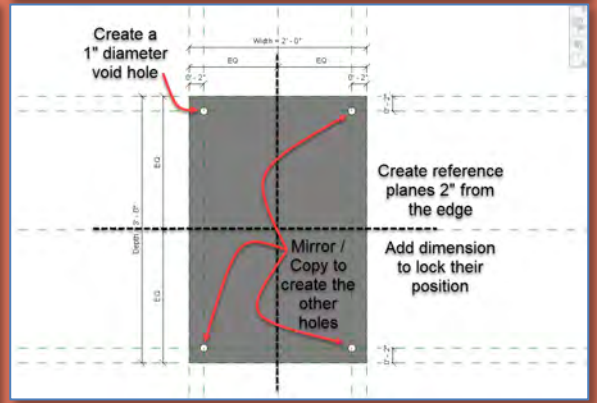
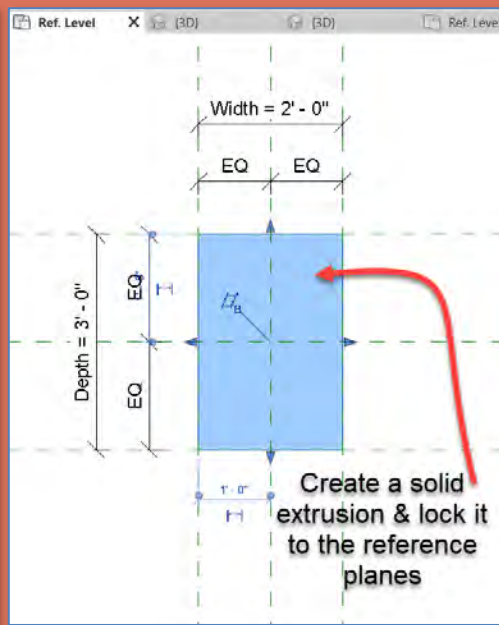
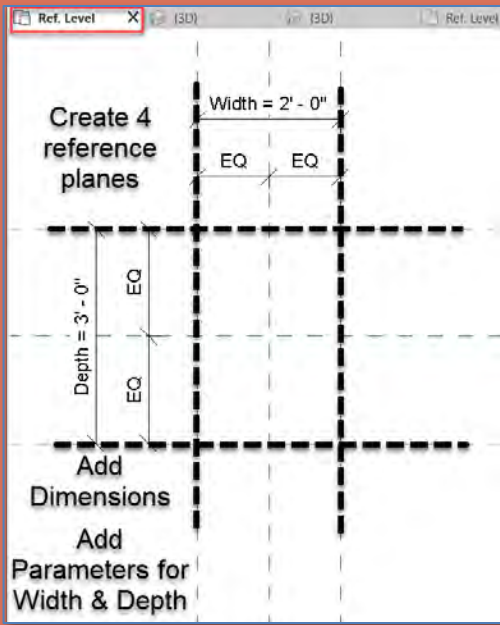
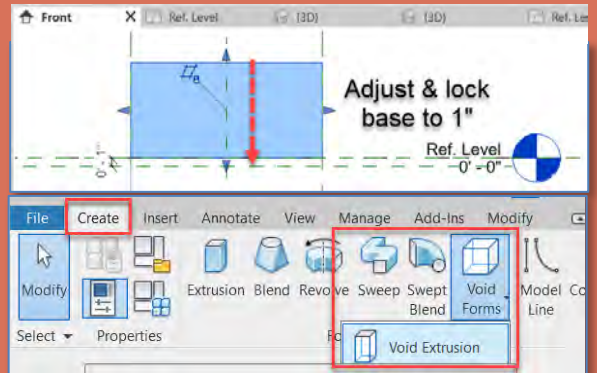
- Video
- New 3D Family
- W24 x 162 with baseplate
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- New 3D Family
- Independent Baseplate
- Load into Project
- Align & Lock
- Adjust Parameters
- Columns w/ Base Plates

- Sheet View

Creating an independent base plate with parameters

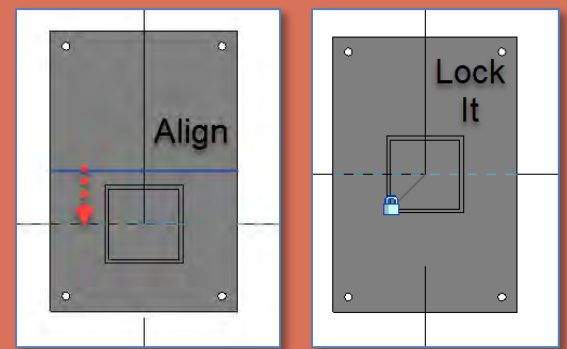
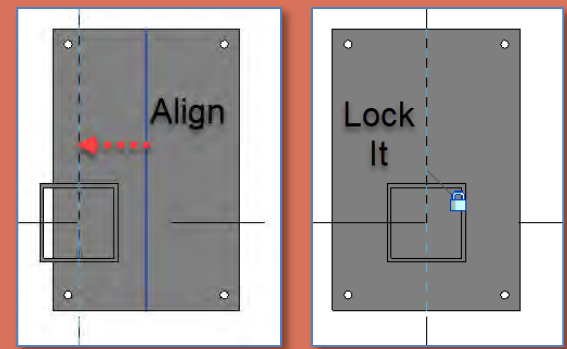
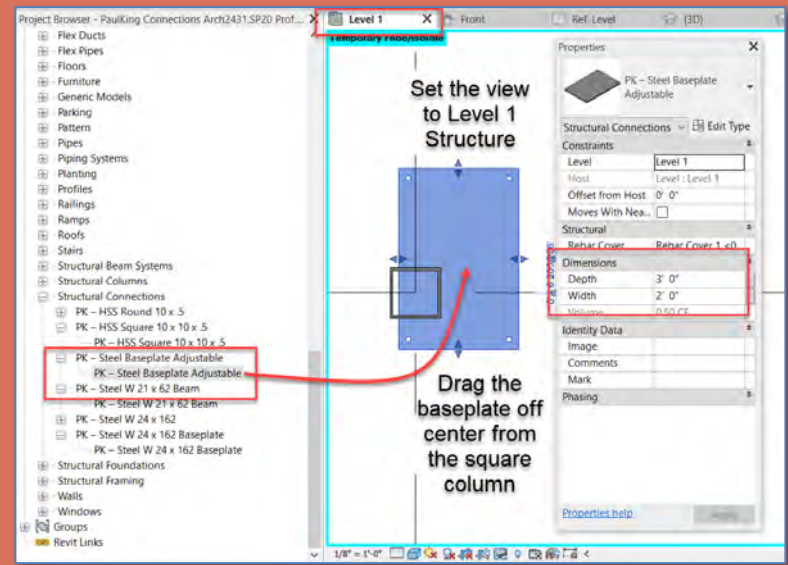
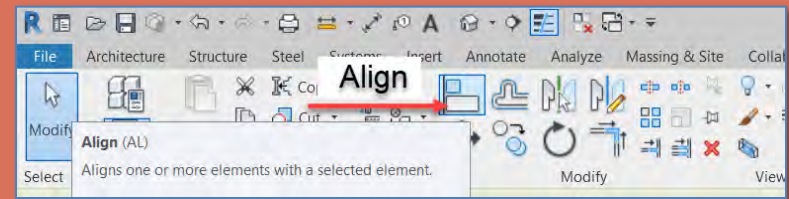
- New Family > Generic Model
- Create > Reference Planes for edge of baseplate
 - Add Parameters for Width and Depth
- Create > Solid Extrusion > lock to Reference Planes
- Create > Reference Planes 2" in from edges
- Create > Void Forms > 1" Dia. Holes > lock to reference planes
- Mirror / Copy to create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



Add independent base plate for Square Column

- 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
 - Adjust Parameters
 - Columns w/ Base Plates
- Sheet View

- Load into project
- Make Level 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



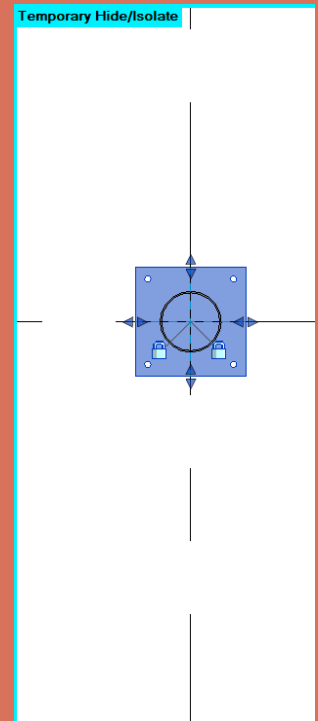
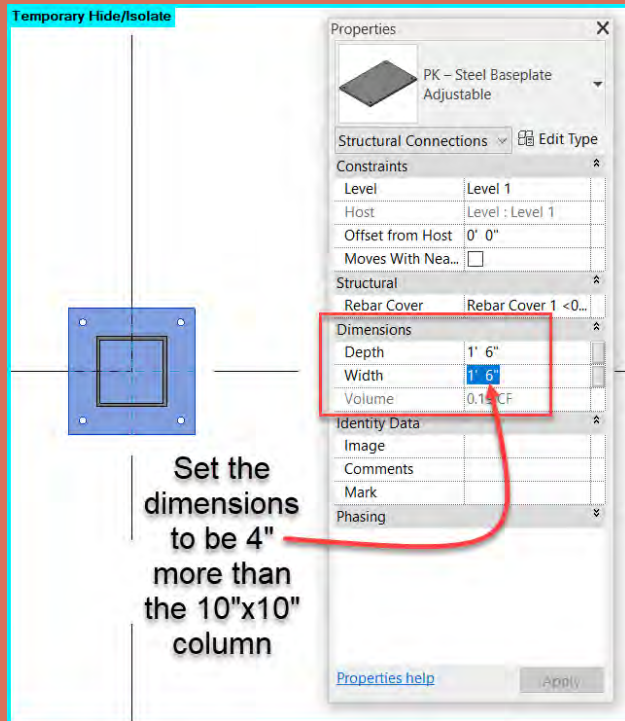
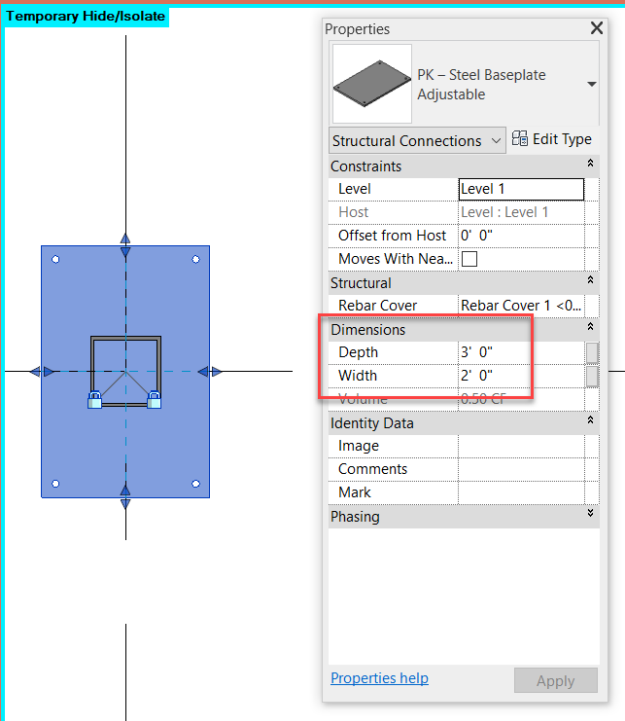
Steel Connections

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
 - Adjust Parameters
 - Columns w/ Base Plates
- Sheet View

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"])



- Video

- New 3D Family
- W24 x 162 with baseplate

- Parameter Formula
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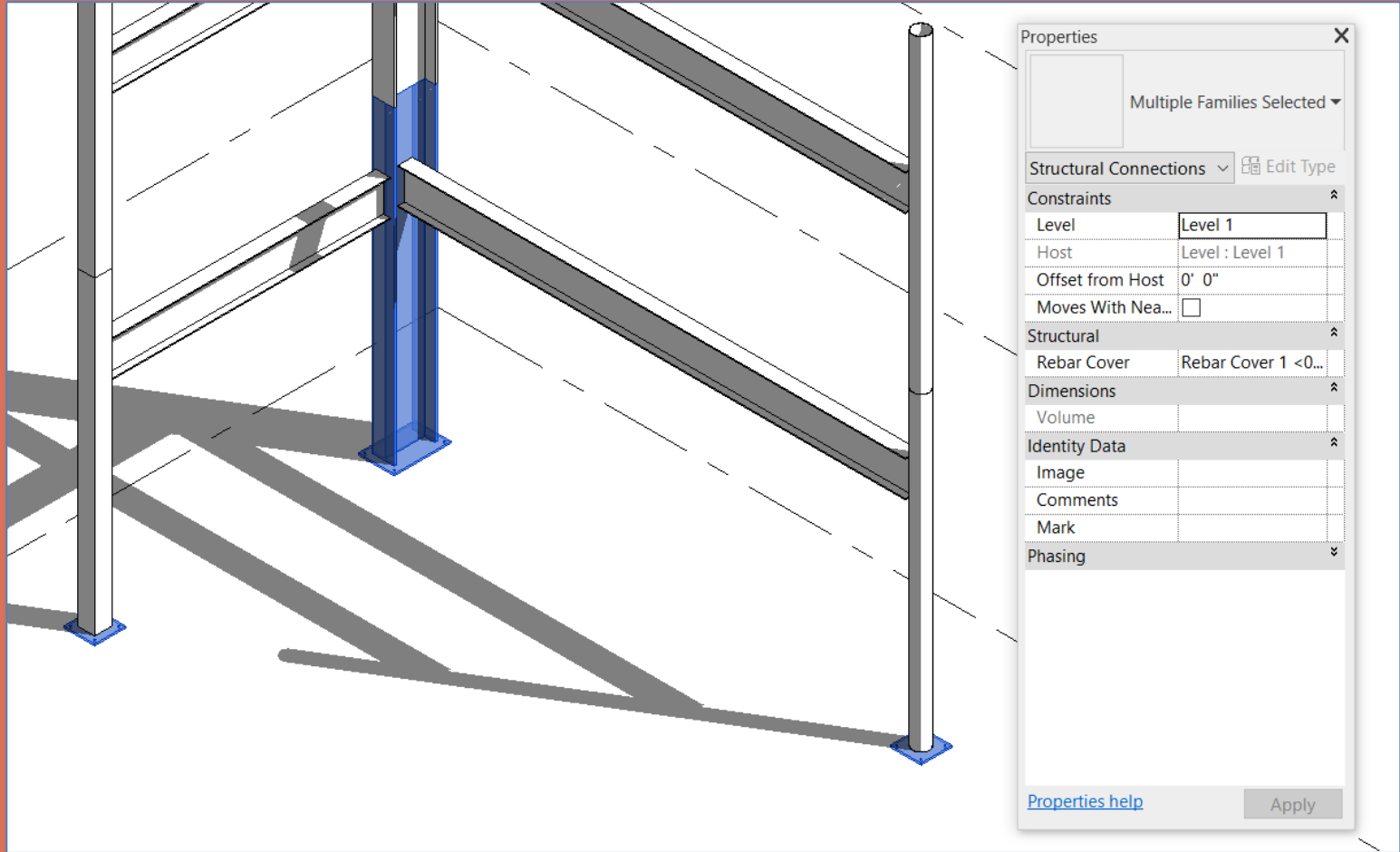
- New 3D Family
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- Load into Project
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- Sheet View

Columns with base plates

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



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

Steel Column and Beam Connection Videos

(1) Level 2 - Structural Assembly
 16'-0" V-G

(2) Isometric View
 16'-0" V-G

(3) Isometric View
 16'-0" V-G

(4) Floor View
 16'-0" V-G

(5) Right View
 16'-0" V-G

(6) Perspective
 16'-0" V-G

Student Photo Here
 Student Name Here
 Prof. Name Here
 Semester Here

Building Technology III
 STEEL CONNECTIONS
 PLANS, ELEVATIONS AND ISOMETRICS

Project Number: _____
 Date: _____
 Drawn by: STUDENT NAME
 Checked by: _____
 Title: SC-01
 Scale: 1/8" = 1'-0"



That's all Folks!