

2 Connections Tutorial 2 – Beam to Column Bolt Connection (US)

2.1 Software Version and Standard

This tutorial was completed using WoodWorks® US 2019, and NDS 2018.

2.2 Introduction

This tutorial goes over the design of a bolt connection between a beam and column.

Click [here](#) to download a copy of the Connections file (.con) created from going through this tutorial.

2.3 Connection Type

1. Click the **New** button on the toolbar.
2. Select the connection type **Post and Beam, Beam-to-column, two-sided** configuration.
3. Click on **OK**.

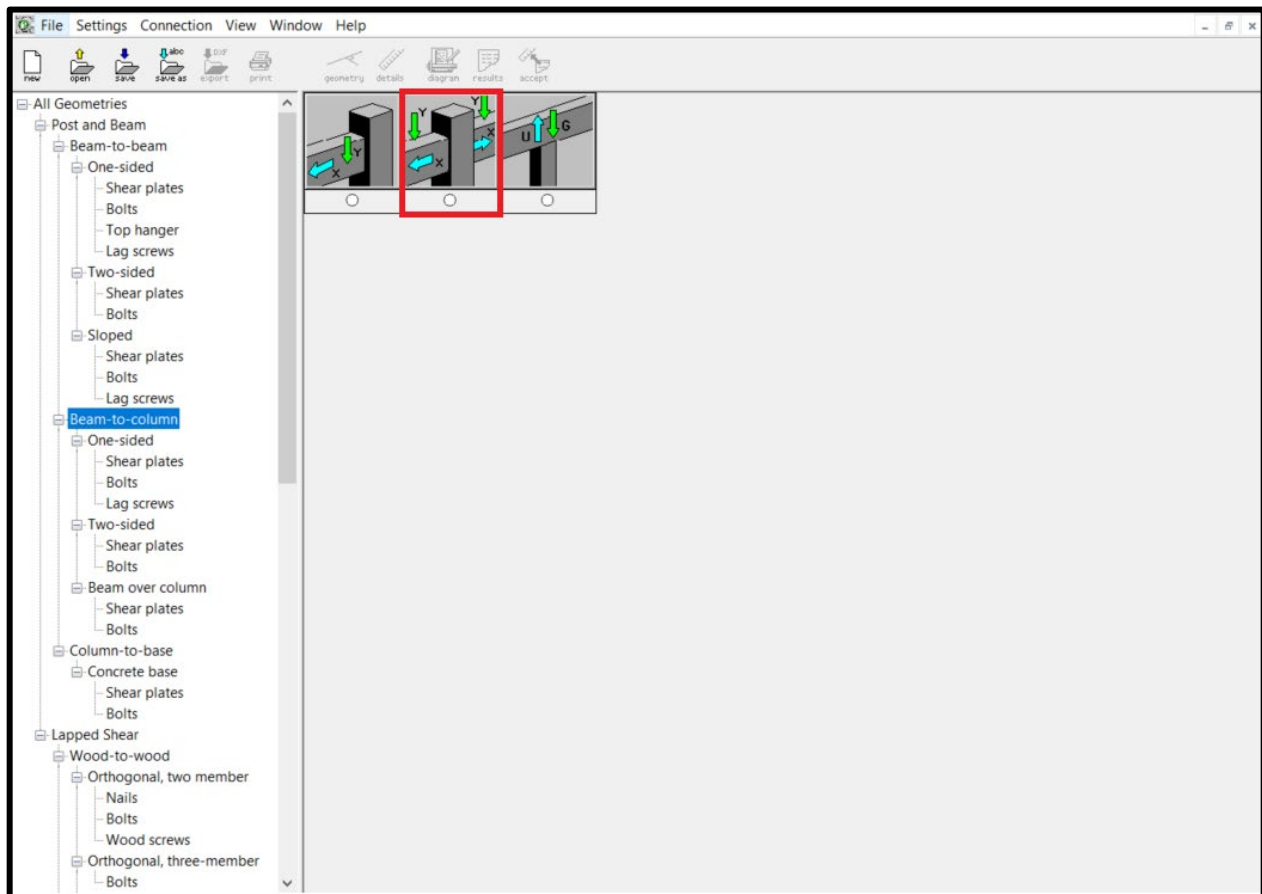


Figure 1: Connections Tutorial 2 – Selecting Connection Type

4. Select the **Bolts** connection type.
5. Click on **OK**.

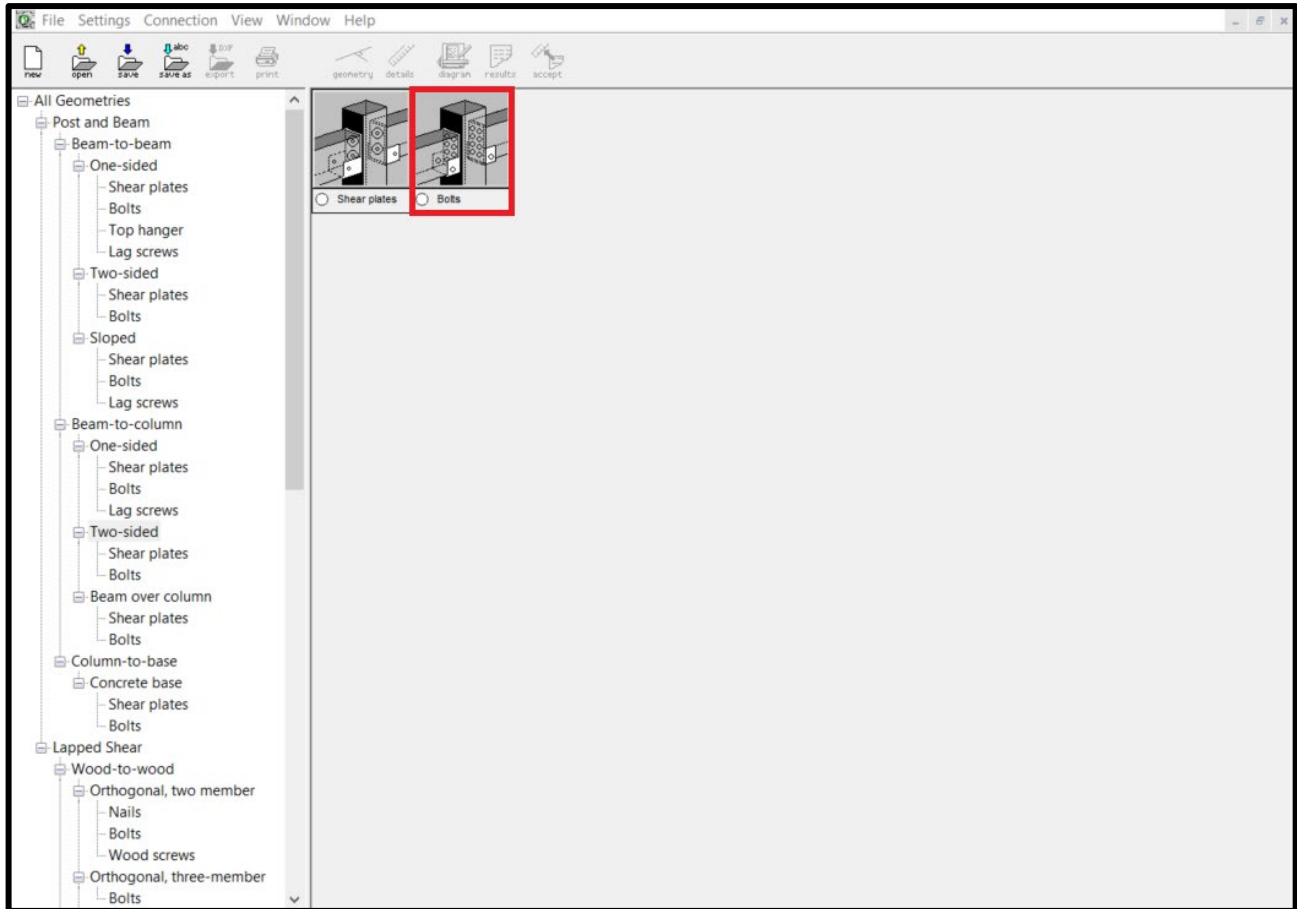


Figure 2: *Connections Tutorial 2 – Selecting Bolt Connection*

2.4 Connection Details

2.4.1 Main Member

1. Specify **Material** to **Glulam-Uniform**.
2. Specify **Species** as **West Species**.
3. Specify **Grade** as **1 (DF L3)**.
4. Specify **Width** as **8-3/4 (in.)**.
5. Specify **Depth** as **9 (in.)**.

The screenshot shows a software interface for defining main member details for a column. The interface is divided into two tabs: "Main" and "Side". The "Main" tab is active. The interface includes several input fields and dropdown menus for defining the member's properties. The "Name" field is set to "Column". The "Material" dropdown is set to "Glulam-Uniform". The "Species" dropdown is set to "West Species". The "Grade" dropdown is set to "1 (DF L3)". The "Width b" field is set to "8-3/4" in. The "Depth d" field is set to "9" in. The "Ply" dropdown is set to a greyed-out option. The "End Type" dropdown is set to "overhang". The "Offset" field is set to "0.0" in. The "Moisture Content" section has "In-Service" and "Fabrication" both set to "Dry". The "Temperature (deg. F)" dropdown is set to "T < 100F". The "Fire Retardant" section has "Fire treatment factor" set to "[not active]". The "Loads (lbs)" section has "Force Y" and "Force X" both set to "0". There are two "Duration" dropdowns, both of which are greyed out. A "Run Design" button is located at the bottom left of the interface.

Figure 3: Connections Tutorial 2 – Main Member (Column) Details

2.4.2 Side Member

1. Specify **Material** to **Glulam-Balanced**.
2. Specify **Species** as **West Species**.
3. Specify **Grade** as **24F-1.8E WS**.
4. Specify **Width** as **5-1/8 (in.)**.
5. Specify **Depth** as **10-1/2 (in.)**.
6. Specify a factored **Force Y** of **5500 (lbs)**.

The screenshot shows a software interface for configuring a Side Member (Beam). The interface is divided into two tabs: 'Main' and 'Side'. The 'Side' tab is active. The main configuration area includes the following fields:

- Name: Beam
- Material: Glulam-Unbalan.
- Species: West Species
- Grade: 24F-1.8E WS
- Width b: 5-1/8 in.
- Depth d: 10-1/2 in.
- Ply: (empty)
- End Type: overhang
- Offset: 0.0 in.

Additional configuration sections include:

- Moisture Content: In-Service (Dry), Fabrication (Dry)
- Temperature (deg. F): T < 100F
- Fire Retardant: Fire treatment factor ([not active])
- Loads (lbs): Force Y (5500), Duration (Ten Years), Force X (0), Duration (Two Months)

A 'Run Design' button is located at the bottom of the main configuration area.

Figure 4: Connections Tutorial 2 – Side Member (Beam) Details

2.4.3 Face Plate

1. Specify a **Bolt Diameter** of **1" (in)**.
2. Specify **Row per Plate** as **1**.
3. Specify **Bolts per Row** as **2**.
4. Specify a **Plate Thickness** of **0.25 (in)**.
5. Leave all other parameters as **(unknown)**.
6. Click **Run** Design.

	Face Plate		Side Plates
Bolt Diameter	1" <input type="text"/>	in	(unknown) <input type="text"/>
Rows per Plate	1 <input type="text"/>		(unknown) <input type="text"/>
Bolts per Row	2 <input type="text"/>		(unknown) <input type="text"/>
Spacing Between Rows	(unknown) <input type="text"/>	in	(unknown) <input type="text"/>
Spacing Within Rows	(unknown) <input type="text"/>	in	(unknown) <input type="text"/>
Plate Thickness	0.25 <input type="text"/>	in	0.25 <input type="text"/>
Plate Steel Grade	ASTM A36/A36M <input type="text"/>		ASTM A36/A36M <input type="text"/>
Max. Plate Length	10.5 <input type="text"/>	in	3.35 <input type="text"/>
End Distance		dia	(unknown) <input type="text"/>

Figure 5: Connections Tutorial 2 – Face Plate Details

2.5 Review and Accept Design Results

Once a load has been input, *Connections* will automatically complete the design, and a drawing of the connection will automatically generate on the **Details** screen. At this point, it is possible to review the **Diagram**, **Results** and **Accept** the design. Both the **Diagram** and **Results** can quickly be printed using the **Print** icon.

Click [here](#) to download a PDF of the design results.

Click [here](#) to download a PDF of the diagram.

Note: For this type of Connection, the diagram does not show the left beam.

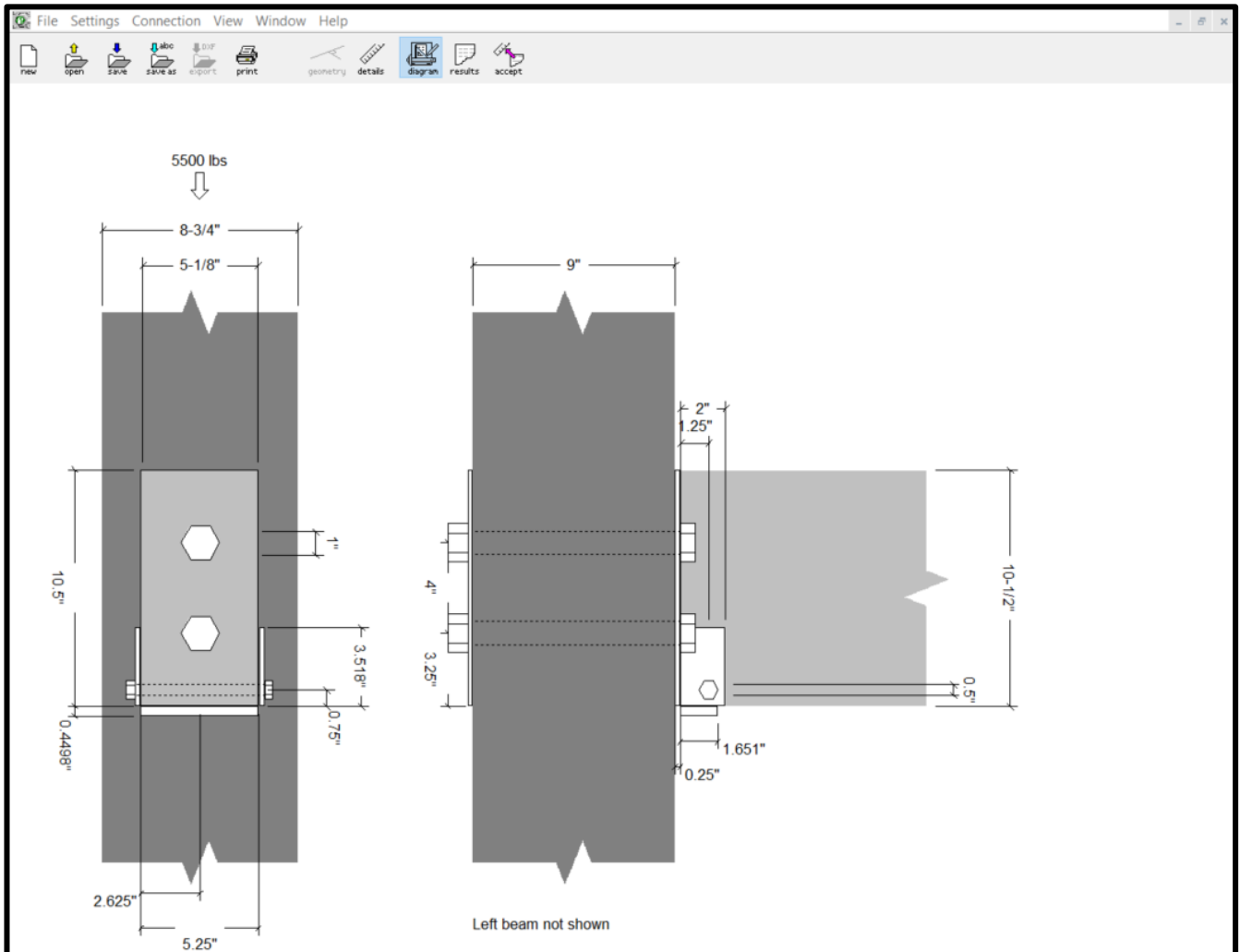


Figure 6: *Connections Tutorial 2 – Diagram Results*