



Plating Tips for ANSI/TPI 1-2007

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Purpose

There are a significant amount of changes for ANSI/TPI 1-2007. A number of these changes affect how joints will be plated. In many cases, plates may be larger in size or thicker in gauge. There may also be cases where certain joints will not plate.

To help you deal with these plating issues, we have come up with the following list of suggestions. These suggestions will help you use available software features to minimize the effect of the code changes on plating design. Our Software Technical Support group will be happy to work with you on any of these areas, and may have other options for you to try.

The Basics

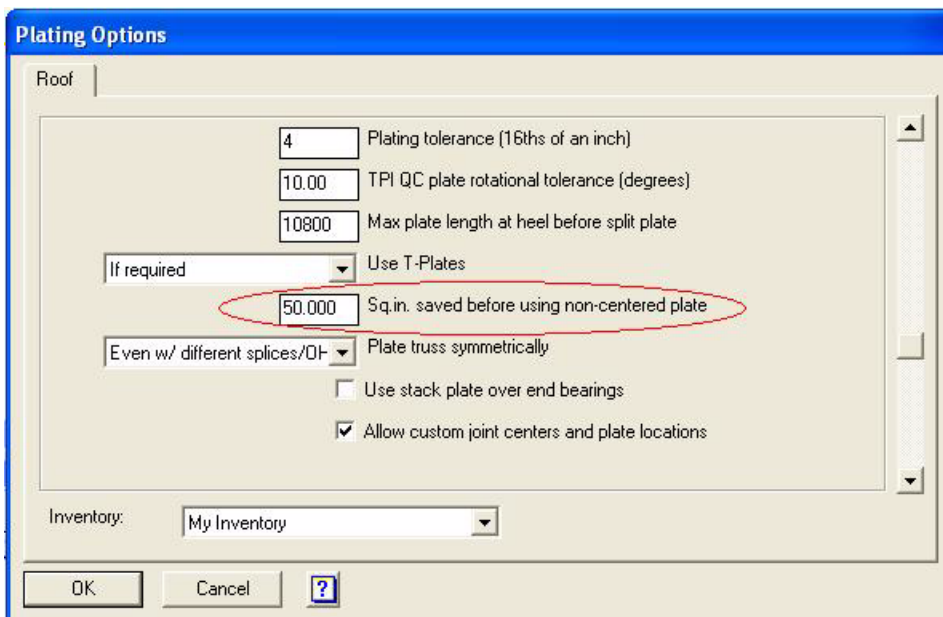
Expanding Plate Inventory

Our first suggestion is to include more heavy gauge plates in your inventory than you have in the past. **MT18HS plates** have both high grip capacity and high tension and shear capacity. If you do not use these plates currently, you may find it beneficial to begin carrying them in your inventory. If you have your plates priced properly in your inventory, it is best to sort your plates by cost. This should provide you with the least cost plates on your designs.

New Plate Options Feature

An option that can be used to reduce your plate sizes in general is the Plate Options feature "**Sq.in. saved before using non-centered plate**". See Figure 1.

Figure 1: Plating Options Dialog

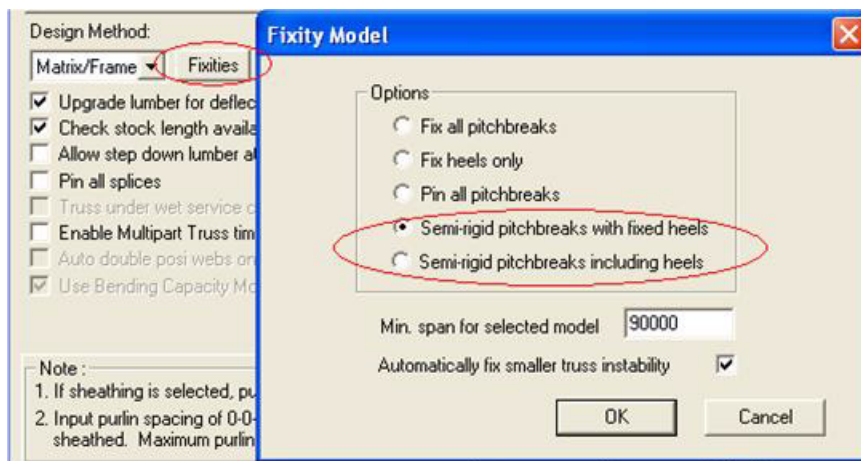


By default, this is set at 50 sq. in. This setting tells the program to allow a centered plate to be 50 sq. in. larger than a non-centered plate before the program will use the non-centered plate on the truss design. If you reduce this number, you will get more non-symmetrical plates. This will reduce the sizes of some of your plates, but your manufacturing group will have to be more concerned with plate placement. You may find that you are saving on plate costs, but increasing your manufacturing cost. You will need to find a balance that works for you if you decide to adjust this setting.

Semi-Rigid Joints

Another possibility for reducing plating problems is to use the new **Semi-Rigid Joint feature**. This is accessed through the "Fixities" Button in the Design Info dialog box. See Figure 2.

Figure 2: Accessing the Semi-Rigid Joint Feature

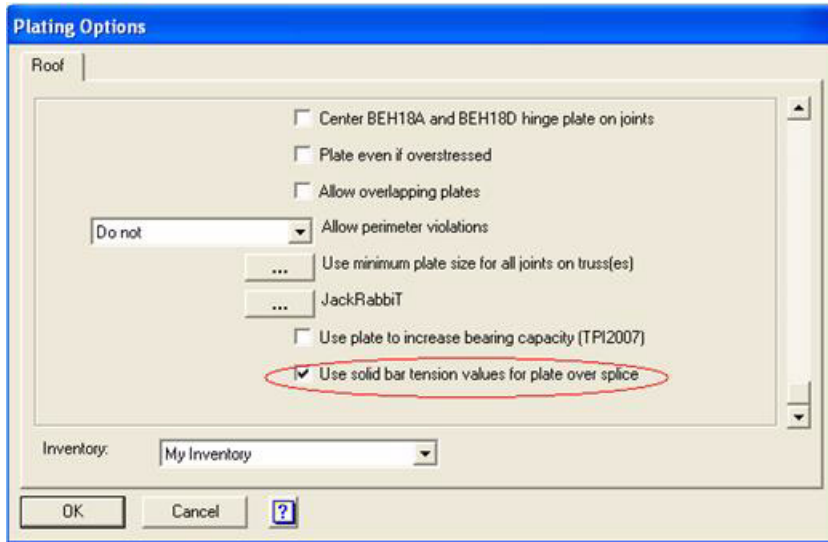


This feature reduces the amount of moment at the perimeter break joints for which the program is designing. Using Semi-Rigid Joints will generally increase the stresses on the lumber while decreasing the moment on the plates. This will typically decrease the plating requirements, but it may increase the lumber size or grade. In our testing, we found this to reduce the overall amount of plates while not having a major impact on lumber.

Solid Bar Plating

We have also introduced a new feature called **Solid Bar Plating**. Using this option allows you to use higher tension steel values for our connector plates. This may allow some joints to plate that otherwise might not plate, or that might require a thicker gauge plate. See Figure 3.

Figure 3: Using Solid Bar Tension Values



The downside to using this feature is that it requires stringent quality control. You must make sure the solid bar section of the plate (as opposed to the section through the plate with slots) is centered over the splice line. There is only an eighth of an in. (1/8-in.) positioning tolerance along the plate's length and the rotational tolerance is very limited (about 2 degrees). Although we do not recommend using this feature as a rule, it may allow you to plate some joints that you could not otherwise.

Corner Joints

We have seen a number of cases where bottom chord corner joints require larger plates or will not plate when using TPI-07. Our first suggestion is to try running the vertical web through the joint. The quickest way to do this is by using Heel Options. We recommend setting this as your default at the Manufacturer level. Another option is to increase the size of the end vertical being used, but this tends to give larger and/or thicker gauge plates than the method of running the vertical through. See Figure 4 and Figure 5.

Figure 4: Running the Vertical Web through the Joint

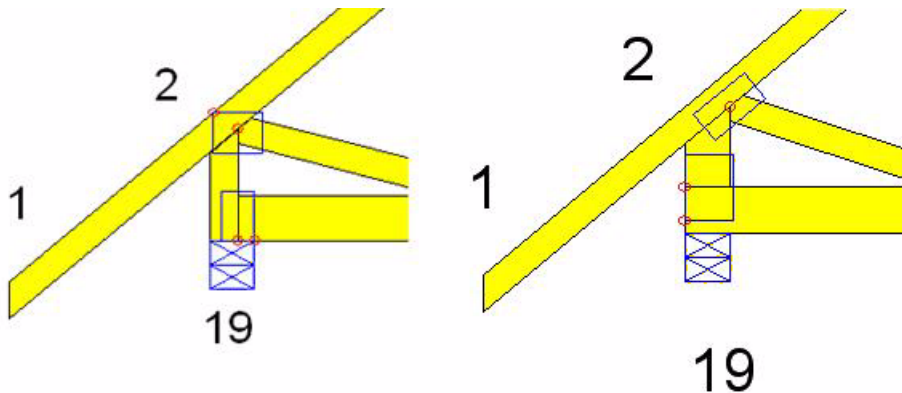
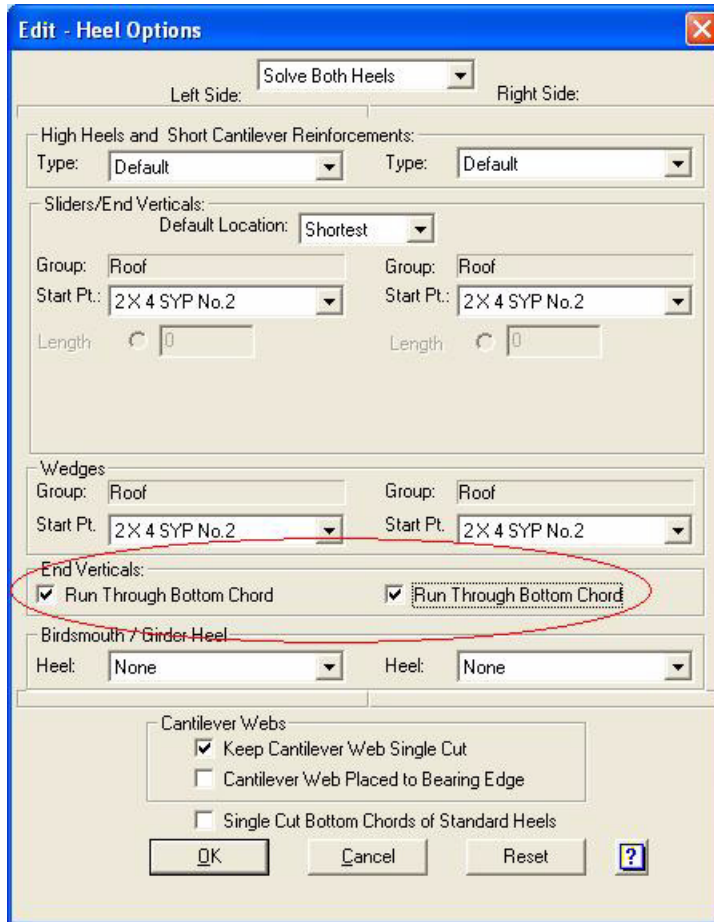


Figure 5: Selecting End Verticals in the Heel Options Dialog



Mid-Panel Splice Joints

Mid-panel splice joints do not have many options for fixing their plating issues. One of the easy things to try is moving the splice location a foot or two. This may help put it in a location of lower stress. You can also try adjusting the panel lengths around the splice

Peak and Hip Joints

Adding 45-Degree Plating Angles

Peak and hip joints may have plating problems when using TPI-07. Our first suggestion is to add a couple of orientations to your plate options. We recommend adding the **45-degree plating angles** if you haven't already done so. This one is a bit complicated, so do not hesitate to contact our Technical Support group if you need help implementing it. See Figure 6 during this procedure.

1. In Setup, Manufacturer, Materials, Plates, place a checkmark in the "Advanced" checkbox, and then click on the "Joint Types" button.
2. Click the "Orientation" tab at the top of the dialog box.
3. Click on "CCW" from the list on the left side.
4. In the lower right hand box, click on "135 degrees".
5. In the upper box, click on the last entry (probably "Vertical") and then click the "Add" button.
6. Now click on "45 degrees" in the lower box and click "Add". Follow this same procedure for the "CCWW" and "CCWWW" joint types and click OK to the dialog boxes. Since this is a manufacturer's setting, this change may need to be done on the server version of this file. With the setting shown, the program will only use this 45-degree configuration if the other configurations do not work.

Figure 6: Adding 45-Degree Plating Angles

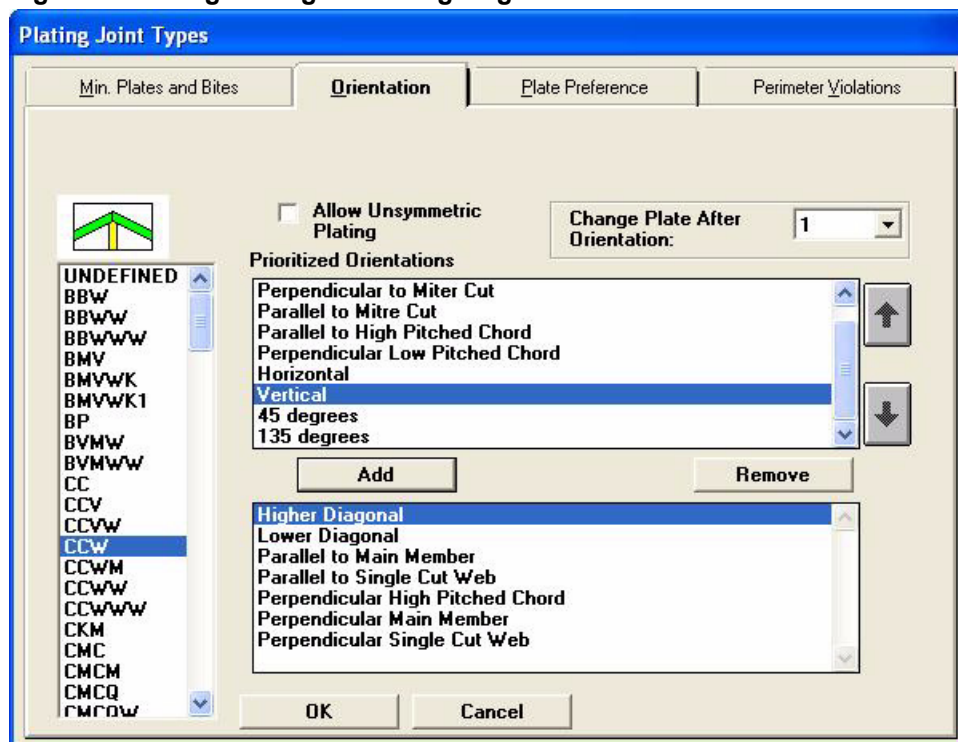
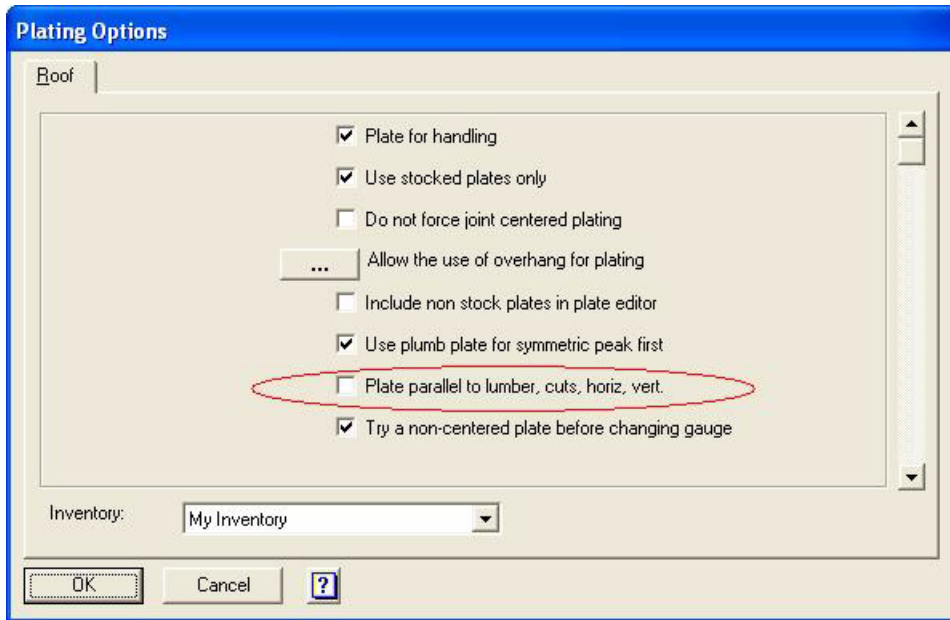


Plate Parallel to Lumber

You can also turn off the Plate Options setting "Plate parallel to lumber, cuts, horiz, vert." See Figure 7. This setting will force the plate at a hip joint to be parallel to one of the chords. By turning this off, you allow the plate to be positioned perpendicular to the miter-cut, which will allow it to plate in some cases when it would not otherwise. You can make this part of your manufacturer's settings, and it will generally help you obtain smaller plates, but you may get plates positioned at the miter angle more often than you would like.

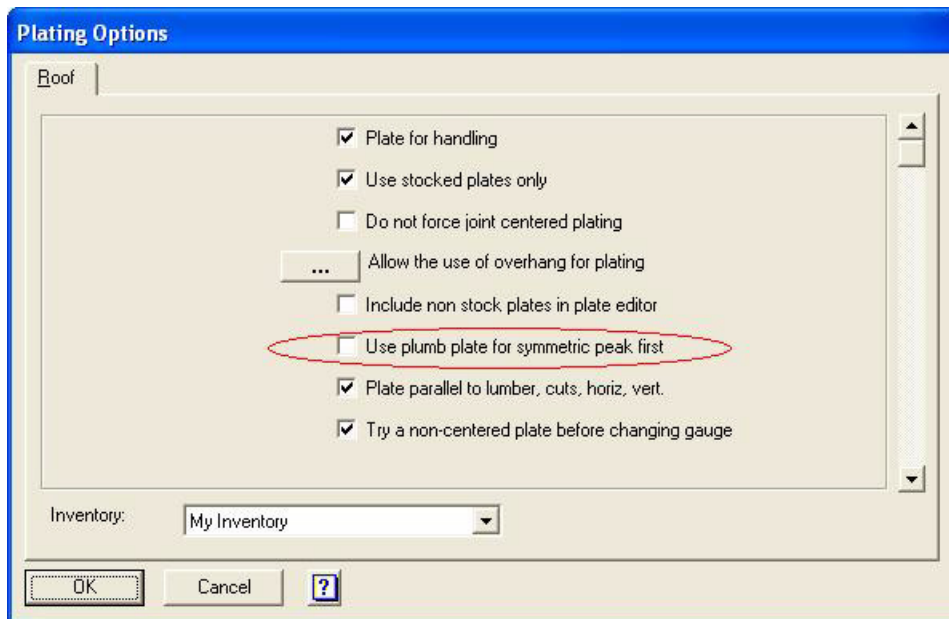
Figure 7: Plate Parallel to Lumber, Cuts, Horiz, Vert



Use Plumb Plate for Symmetric Peak First

You can also turn off "Use Plumb Plate for Symmetric Peak First" in "Plate Options". See Figure 8. This option tells the program to place peak plates horizontally. Most manufacturers prefer their plates this way. But there are cases when you can get smaller or thinner gauge plates by turning this off. You can do this on an individual truss basis, or you can make it your default in your manufacturer's setting, and the program will try other angles to get a smaller size plate.

Figure 8: Use Plumb Plate for Symmetric Peak First



Reduce Length of Panel Next to Peak or Hip Joint

Another option is to reduce the length of a panel that is next to the peak or hip joint. This also reduces the moment at the joint so that a smaller plate may be used.

Increase Chord Size

In some cases it may be necessary to increase the size of a chord coming into a joint. This is especially useful at plum cut hip joints where there is a big difference in the scarf cut of the two chords. Following a similar tact, you can change the cutting on a hip joint so that it has a miter cut between the two chords. This gives more area on the sloping chord for plating