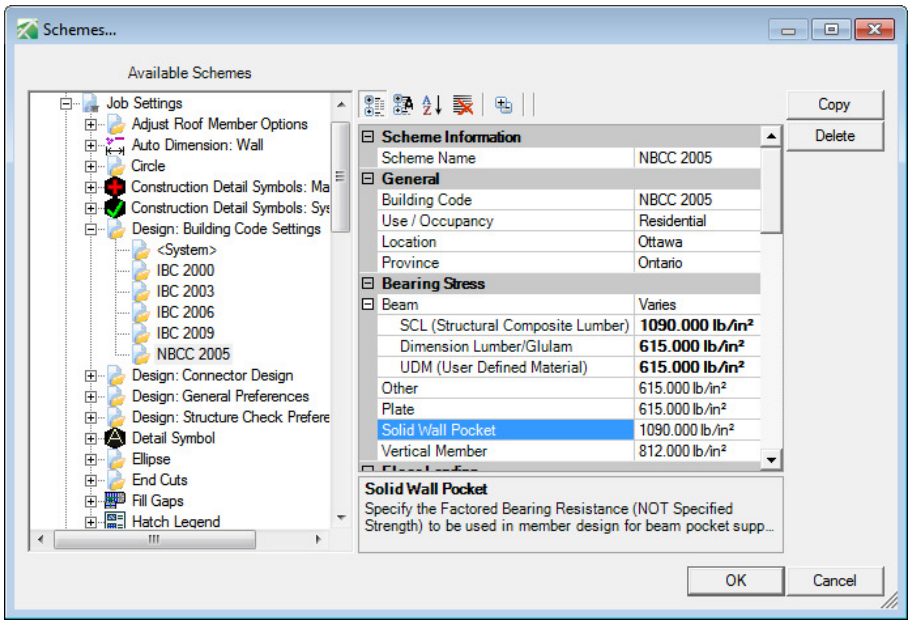
Creating a Steel Plate or Column Caps on a Post

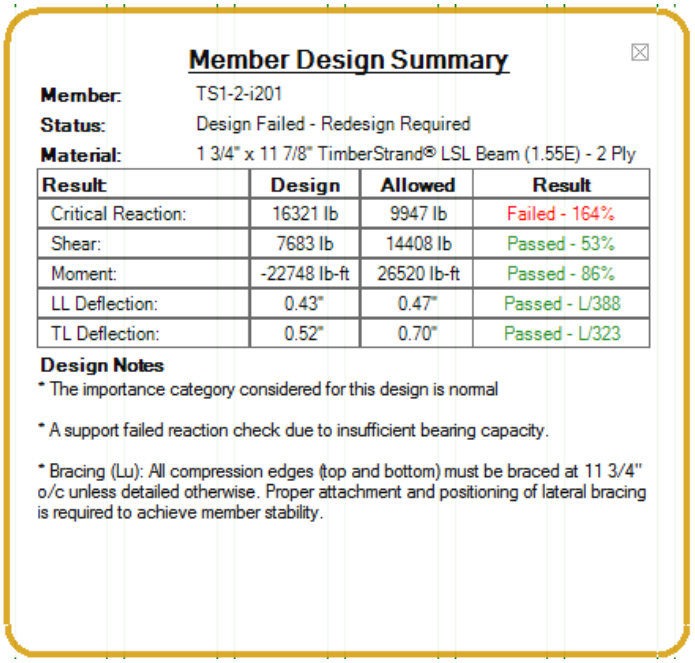
In Javelin there is currently no way to input a steel plate or column cap connector on top of a column to take advantage of higher end bearing capacities. The system will use the Vertical Member value in Job Settings of 812psi, which often controls bearing design as it is less than the bearing strength of SCL beam material. This value (812psi) is based on end grain of stud or trimmer for solid sawn lumber.



The following steps will show how to get increased bearing capacities for beam that are supported by steel and are controlling the bearing strength of the beam material (1090psi). The 1090psi value is a factored resistance; apply the appropriate formulae from CSA 086 to the specified strengths shown in Specifier's Guide on page 5.

1. Draw your structure as you would normally, walls and Beams.

To represent the steel plate or Column Cap add in a Solid Wall with no sill plate. The top height of the wall can be set to the approximate midpoint of the beam (Javelin will create a beam pocket) it is going to support and the bottom height of the wall will be at the top of the column.



Member Design Summary

Member: TS1-2-i201
Status: Design Failed - Redesign Required
Material: 1 3/4" x 11 7/8" TimberStrand® LSL Beam (1.55E) - 2 Ply

Result	Design	Allowed	Result
Critical Reaction:	16321 lb	9947 lb	Failed - 164%
Shear:	7683 lb	14408 lb	Passed - 53%
Moment:	-22748 lb-ft	26520 lb-ft	Passed - 86%
LL Deflection:	0.43"	0.47"	Passed - L/388
TL Deflection:	0.52"	0.70"	Passed - L/323

Design Notes

* The importance category considered for this design is normal

* A support failed reaction check due to insufficient bearing capacity.

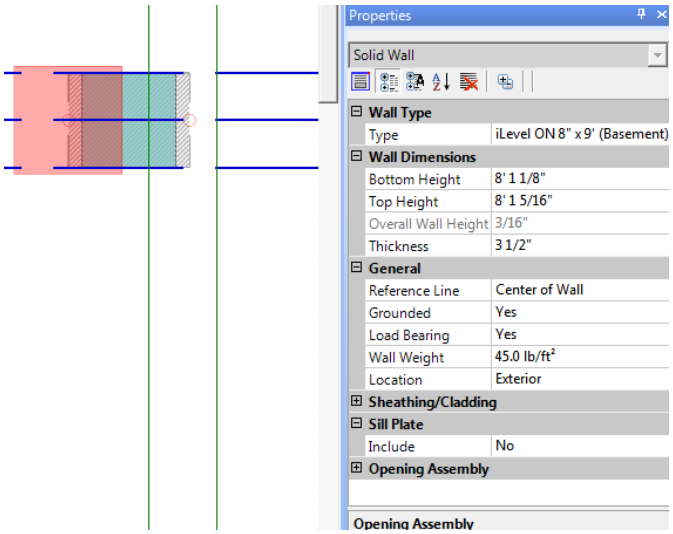
* Bracing (Lu): All compression edges (top and bottom) must be braced at 11 3/4" o/c unless detailed otherwise. Proper attachment and positioning of lateral bracing is required to achieve member stability.

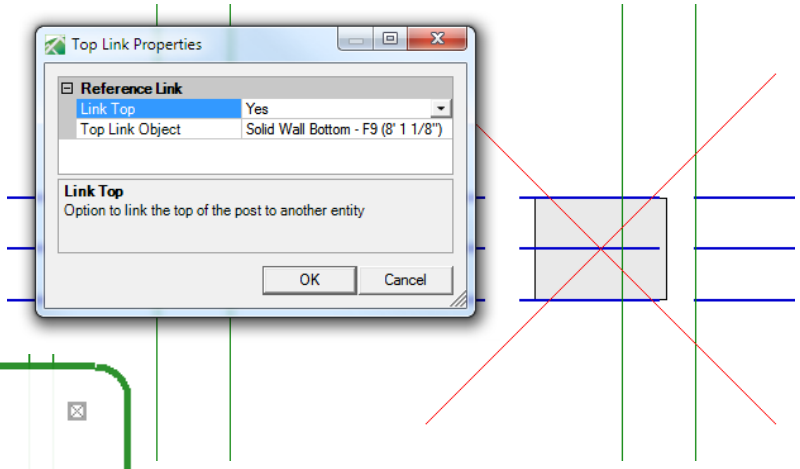
Efficiency Tip 13004

Assumptions for this example:

- Standard Wall Height **9’ 1 1/8”**
- Dropped Beam Depth 3 ½” x **11 7/8”**

2. Select the Input Wall command and make the following changes to the properties grid:
   - Bottom height to top of Column less the thickness of the plate (8’ 1 1/8” = 9’ 1 1/8” – 11 7/8” – 1/8”)
   - Top height to roughly midpoint of beam just not deeper than the beam. (8’6”)
   - Thickness the width of the beam. (3 ½” In this case)
   - Grounded = Yes (the load will still transfer to the post when Linked to the post)
   - Sill Plate -> Include =No
   - Input the wall with a length (4” in this example) equal to the length of the plate / seat of the column cap
3. Input Post
   - Link the Top of the Post to the Solid Wall Bottom – F9 (8’ 1 1/8”)
4. Design the file





Member Design Summary

Member: TS1-2-i813
Status: Design Passed
Material: 1 3/4" x 11 7/8" TimberStrand® LSL Beam (1.55E) - 2 Ply

Result	Design	Allowed	Result
Critical Reaction:	16387 lb	17168 lb	Passed - 95%
Shear:	7696 lb	14408 lb	Passed - 53%
Moment:	-22729 lb-ft	26520 lb-ft	Passed - 86%
LL Deflection:	0.43"	0.47"	Passed - L/387
TL Deflection:	0.52"	0.70"	Passed - L/321

Design Notes

* The importance category considered for this design is normal

* Bracing (Lu): All compression edges (top and bottom) must be braced at 1' 0 5/8" o/c unless detailed otherwise. Proper attachment and positioning of lateral bracing is required to achieve member stability.

TIP: Copy and Paste the Solid Wall to other locations as needed to speed up input.