

Upside Down Installation of BOISE GLULAM® 24F-V4 Beams in Simple Span Applications

BOISE GLULAM 24F-V4 grade beams are manufactured with an unbalanced layup, meaning that higher strength laminations are installed in the bottom of the beam. Unfortunately, 24F-V4 grade glulams are sometimes installed upside down (the “TOP” stamp is visible when looking up at the beam from below). The glulam’s load-carrying capacity is reduced when installed in this manner.



When installed upside down, only the bending design value of the 24F-V4 grade is actually affected. The allowable bending value is 1850 psi when inverted, compared to 2400 psi when installed properly. Thus the reduction in bending is approximately 25%.

If the beam is uniformly loaded, there is a simple and conservative method of determining the reduced load capacity of the inverted beam. Simply multiply the allowable PLF load (found in the BOISE GLULAM Specifier’s Guide) by **0.75** for the beam span and size. This reduced value is the allowable PLF load for the non-cambered, uniformly loaded and upside down V4 glulam.

For non-cambered beams with non-uniform loads, the beam design may be analyzed with the BC Calc™ sizing software. To properly account for the reverse installation, the allowable moment is multiplied by the 0.75 factor. Thus in the analysis results, the moment % allowable must be **75%** or less for an upside down installation to be valid. For continuous span applications, BC Calc calculates both positive and negative moments and compares the actual values to the corresponding allowable bending values.

For more information or for assistance with cambered or non-uniform load applications please contact your local Boise EWP representative.