

Column/Beam Stability

Part 9, Housing and Small Buildings, and Part 4, Structural Design, of the National Building Code of Canada does not address all the concerns a builder may have when framing a structure. In Part 9 especially, some requirements are based on calculations, such as joist or beam spans while other elements are based mainly on performance history, such as nailing for framing, bearing requirements and stud size and spacing.

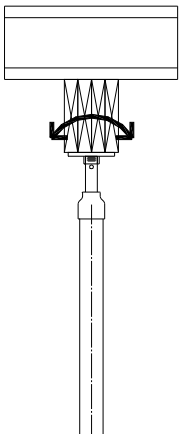
One item we wish to address is the aspect of column anchorage and stability. Engineered steel column bases are typically installed on a footing. A 3" to 4" concrete floor is later placed which firmly anchors the column preventing lateral displacement at the base. In a small number of cases, the column base may also be secured by means of anchor bolts.

The top of the columns on the other hand often do not have the same level of lateral stability. While Engineered Steel Columns are designed and tested based on concentric loading, there are times when, due to installation variability, ideal concentric loading may not be the case in application. A good example to consider is the inherent lateral stability of a relatively wide, shallow beam compared to a narrow, deep beam.

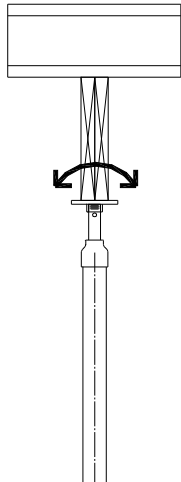
For example, consider a 4 ply 9.5" Parallam beam as compared to a 2 ply 16" Parallam beam, on a flat top column:

The following examples are provided as suggestions for the designer/installer to consider when using Engineered Steel Columns.

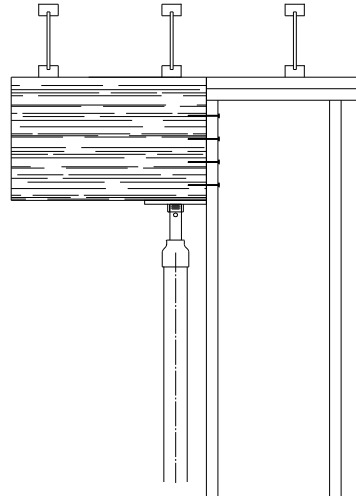
SHALLOW WIDE BEAM
- Relatively good stability provided to column



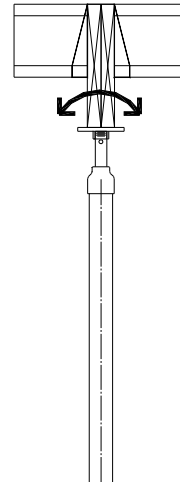
DEEP NARROW BEAM
- Relatively little stability provided to column



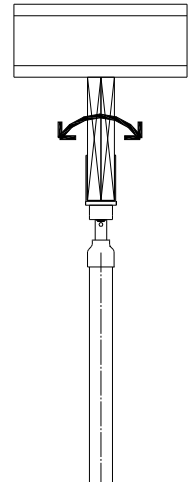
DEEP NARROW BEAM
- Additional stability provided to column via 2x_ nailed into end of beam



DEEP NARROW BEAM
- Additional stability provided to column via flush framing into beam



DEEP NARROW BEAM
- Additional stability provided to column via saddle type connection



Remember: Column top plates/saddles are to be bolted (1/4" x 3" lags) to the supported wood beams.