Meshing FAQ

This page is devoted to **frequently asked questions** (FAQ) related to meshing.

On this page:

Why do I no longer receive errors when I change mesh to be only at visible gridlines?

Extended Question: When I mesh slabs and walls at 36”-48”, there are numerous warnings which include no stiffness, negative stiffness, lost accuracy, and ill-conditioned / unstable. However, when I change the meshing option to be only at visible gridlines, the model runs without error, and forces / reactions are significantly different. Why is this?

Answer: In ETABS v9 and older columns are not automatically included as meshing locations. Therefore it is important to mesh at grid lines to avoid ill-conditioning and to ensure a stable model. For ETABS 2013 (v13) and beyond, floor default meshing recognizes columns as meshing points, hence this is rarely and issue anymore

To connect meshes, what are the advantages of line constraints over mesh generators?

Answer: Mesh generators tend to distort elements, which either reduces solution accuracy or requires a more refined mesh to achieve certain levels of accuracy. Line constraints prevent element distortion, which minimizes the amount of meshing, and enables efficient and accurate formulation.

While meshing shells, how can I prevent the "Meshing Failed" error message?

Answer: To resolve, try using different mesh sizes or subdividing the object into more regular shapes. When modeling shells, it is often helpful to avoid certain shapes, including those with:

- Corners close to zero or 180 degrees.
- Large differences in the length of certain edges.

Why do shells appear meshed though I have not assigned an auto-mesh?

Answer: CSI Software automatically uses general meshing to mesh any areas drawn using more than four joints. To avoid meshing when no auto-meshing has been assigned, subdivide the object such that each region has four joints or less.