

MERCER M.E.P. Penetration Requirements



When designing CLT buildings it is essential that any holes required for M.E.P.(Mechanical, Electrical, Plumbing) requirements are integrated and coordinated at the early stages of the design process.

Generally

All holes of 50mm or more should be pre-cut in CLT panels and glulam elements at the factory. The position and size of holes in any glulam columns and beams must be approved by the EOR or specialty Timber Engineer.

Cut outs within panels will have a radius due to the machining, see below for the radii of such cut-outs.

In order to properly integrate an M.E.P. model into Mercer's 3D Fabrication Model we require the following standards to be met.

Model Format

Model submissions must consist of a single coordinated and finalized 3D model. This model should only include the cut elements that extend through Mercer's CLT and glulam. An example of such a model can be found on the right in Figure 1.

Please note that the provided cut elements must be accurate in terms of their required locations and must include installation tolerances. In the event that a penetration fails to extend fully from the panel, it will be cut as provided. If a cut extends beyond the intended member and collides with another member, both members will receive the cut. Based on experience, it is recommended to address both concerns by ensuring a small 150mm (6") extension of each cut element from the top and bottom of the CLT and glulam elements, as shown in Figure 2.

Each model must come with a supplied and coordinated grid line reference or reference element to allow for proper integration and overlay with Mercer's fabrication model.

(I.e. Block or Pyramid at GL A/1, top = Z/0)

Lastly the submission must be given in one of the following file formats to allow for integration with our existing model: .IFC, .STP, .SAT, .3D (Cadwork)

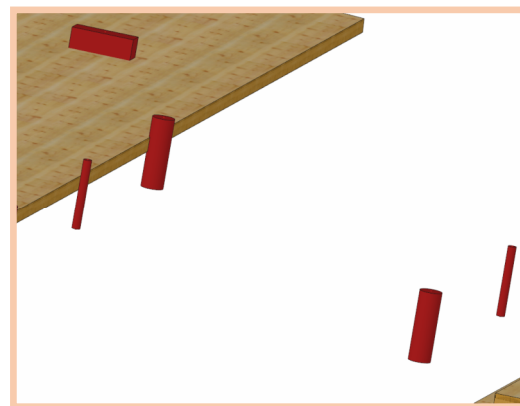


Figure no. 1

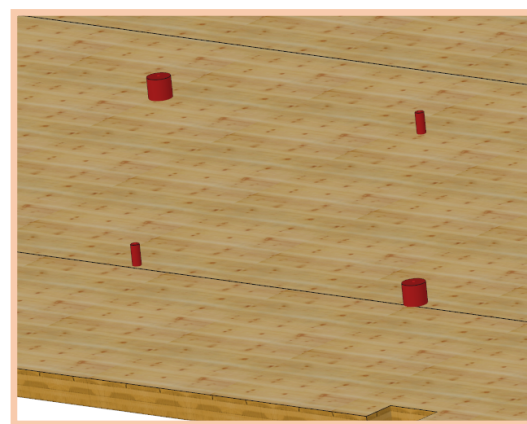


Figure no. 2

All openings

Penetration sizes and shapes are dependent on machining limitations and available cutting tools.
All openings and penetrations must be

Cylindrical openings

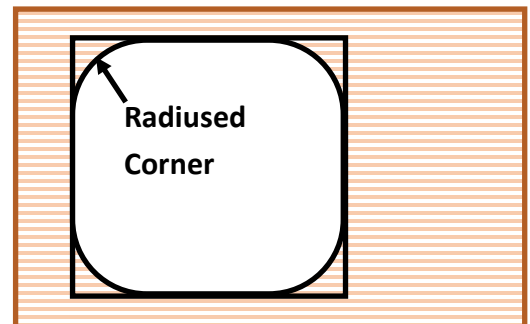
Panel Size	Diameter of openings
175mm (6 7/8") or less	32mm (1.26") or $\geq 50\text{mm}$ (1.97")
Greater than 175mm (6 7/8")	32mm (1.26") or $\geq 90\text{mm}$ (3.54")



Rectangular openings

Panel Size	Width and length of openings	Radiused corners
175mm (6 7/8") or less	$\geq 50\text{mm}$ (1.97")	20mm (3/4")r
Greater than 175mm (6 7/8")	$\geq 90\text{mm}$ (3.54")	40mm (1 1/2")r

Cut element



Good Practice Notes:

1. Early appointment of the M&E subcontractor.
2. All holes of 50mm or more should be pre-cut in CLT panels and glulam elements at the factory.
3. Provide a single finalized and approved 3D model
4. An agreed upon grid reference must be supplied
5. Files must be : .IFC, .STP, .SAT, or .3D (Cadwork)
6. Provide exact elements to be used for cutting including tolerances
7. Elements must be supplied as volumes, surface elements will not be accepted
8. Ensure a 150mm (6") Extension beyond the top and bottom of each panel