



## Building Regulations Part L1 A from October 2010

### Implications for Post and Beam Framing

We have always maintained that the building envelope should wherever possible be continuous and be positioned outside of the post and beam frame. Most clients choose post and beam framing because of the aesthetic it brings to the interior of the building. However we accept that some clients and designers want to see the frame exposed externally.

We believe that the increased demands of the new part L regulations now make the separation of the envelope and frame imperative.

There are three areas within the approved document that have a direct impact on the way post and beam framing is used in a new dwelling.

- 1) The insulation has to be reasonably continuous over the whole of the building
- 2) Air permeability has to be within reasonable limits
- 3) There are no reasonably avoidable thermal bridges

If the post and beam frame is kept within the building envelope and is professionally designed and manufactured to limit and accommodate the movement and shrinkage of the timber then it will have no impact on the ability or otherwise of the building to meet the conditions above.

However if the designer wishes to expose the frame both internally and externally by putting the building envelope *into* the frame (emulating period wall build up techniques) then the implications are significant:

- 1) **Insulation** – by placing the wall build up fully into the frame the insulation will be broken at every frame member which clearly breaches the Part L condition. In addition most environmentally friendly insulations would require the frame to be so deep as to be entirely impractical.
- 2) **Air permeability** – some framing companies went to great lengths several years ago to develop and patent infill panels with elaborate edge seals in order to emulate period frame panelling. Until the introduction of air permeability measures this approach worked. We know of a company who has successfully carried out air pressure testing on a building with these panels. However this was done immediately after completion and before any material shrinkage and movement in the frame. By their own admission they have no idea how it will perform in the long term and they





don't expect it to meet the regulations. They also manufactured the frame from air dried oak which is entirely impractical in anything other than a one off prototype.

So, the building designer and client have to ask themselves if they are content with a token tick in the box for regulation compliance (assuming the building control body aren't familiar with green timber and don't spot the future problems) or if they want to maintain the integrity of the building for the long term.

- 3) **Thermal bridging** – under the new regulations reasonable efforts must be made to avoid thermal bridging. Clearly by placing the envelope into the frame the number of instances of thermal bridging will be in the many tens if not hundreds. It is difficult to see how any BCB could interpret this as making reasonable effort to avoid thermal bridging.

In Part L1A the maximum area weighted U-value for walls is 0.35 and for any element of the wall 0.7. Green timber has a U-value of 0.93 for a 200mm deep post and 1.174 for a 150mm deep post. As such it is difficult to see how a designer could justify to a BCB the creation of a situation where a green frame member runs the full depth of the wall.

In addition to the issues above NHBC have changed their view of the use of green timber post and beam framing in the last few years. Several years ago they were comfortable with the concept of infill panels. However about three years ago they refused to cover any more building incorporating this type of framing. Sadly this was because they associated it with failing infill panels and they didn't understand the importance of the position of the frame relative to the building envelope.

We entered into a series of discussions with them and TRADA. A number of NHBC staff attended our seminars and finally they saw the light. They now evaluate each building on its merits.

So in summary, if you keep the building envelope outside the frame the new Part L criteria have no specific bearing on the use of timber post and beam framing. However if you want to put the envelope *into* the frame the implications are very significant. If you want to emulate period infill panelling then we suggest either:

- i) a second external frame outside the envelope or
- ii) cover boards that emulate the frame or
- iii) have a single regionalised structural frame with different elevations exposed internally or externally and minimise the interruption of the envelope, but don't underestimate the detailing challenges

