

GUIDANCE FOR SELF-BUILDERS CONCERNING STRUCTURAL COMPLIANCE

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Introduction

I have prepared this guidance on the basis of misconceptions / mistakes encountered on projects I have supervised for certification purposes. It supposes the house is to be of timber frame construction and is to be built on a separate trades basis, where you must assume full responsibility for the project.

Before starting work on site I strongly advise you to visit the Health & Safety Executive's website at <http://www.hse.gov.uk/construction/information.htm#guide> and, in particular, study their free leaflet 'The Absolutely Essential Health & Safety Toolkit'. Self-builders often try to save money by taking short-cuts with health and safety - this is generally false economy and could result in you either incurring a hefty fine or, worse, causing injury or death. It is simply not worth it.

Most importantly, you must ensure a professionally erected scaffold is provided around the entire house, prior to the kit being erected. Also, that this scaffold is maintained and adapted (if necessary) to provide safe access and working conditions for following trades. In particular, ensure you provide adequate roof edge protection. In addition, catch nets or air bags need to be provided within the house.

Furthermore, if you haven't been there already, I recommend you visit what is probably the foremost self-builder website at <http://www.buildstore.co.uk/> where you will find a wealth of information.

Finally, make sure you are working from the latest set of drawings and that all trades are working with the same information. Always adopt the specification and details shown on the drawings - this is what has been approved by building control. If you want to change anything you must consult the building inspector (and me) before proceeding.

Foundations

Wherever possible, I recommend the house be constructed on a level site - even if this means cutting away ground before you start. Not only will this make the construction process easier, it will also save money by eliminating excessive underbuilding. In most cases the completed house will look more balanced and the step in ground level can provide an added landscape feature.

All excavations must be taken down to hard ground - clay (hard pan) or rock. Soft spots must be dug out and filled with concrete. If it becomes apparent that the ground conditions are unsatisfactory you will need to engage an independent structural engineer to design a suitable foundation. Do not crash on regardless, you will only waste time and money.

The excavations must be inspected by the Building Inspector (and me), prior to the concrete foundations being poured. And, the top of the concrete in the foundations must be at least 450mm below finished ground level, to avoid frost action.

Underbuilding

It is imperative that the underbuilding is built accurately, to the dimensions stated on the foundation plan, square and plumb. It is worth checking all dimensions including diagonals to ensure they are correct, before proceeding further.

Solum

This is the concrete sub-floor you have when employing a suspended timber floor. It must not be lower than finished ground level. If the excavated formation is low the level must be made up with clean crushed stone (upfill) laid in 200mm compacted layers. It's easier doing this at the outset than trying to save costs and then having to barrow it in when the kit has been erected!

Concrete Floor

It is not permissible to employ a ground bearing, solid concrete, floor construction where the upfill will exceed 600mm deep. In such circumstances you must employ a suspended floor of either precast concrete beam and block or timber construction.

Timber Frame Kit

If the kit is to be erected by someone other than the kit manufacturer, ensure they read the erection manual form cover to cover, before they start. Joiners often assume they know what they are doing and this can be a costly mistake!

The kit must sit square and level on the underbuilding. You are not allowed to pack up any part of the kit, off the underbuilding, by more than 10mm. Similarly, the kit may not overhang the underbuilding by more than 10mm. Do not let the joiners crash on regardless if it becomes apparent these allowances will be exceeded. Such issues must be resolved before work proceeds if you wish to avoid wasting time and money.

Internal load-bearing partitions must be erected at the same time as the external wall panels.

External Block Walling

Any damaged breather paper (on the external face of the kit) must be repaired and the timber frame kit holding down straps, fire stops and damp-proof courses fitted before any walling is built. The holding down straps are galvanized and must be fixed with galvanized nails.

A minimum cavity width of 50mm must be maintained between the outside face of the kit and the inside face of the walling. The stainless steel wall ties must be positioned so as to provide a slight downward slope towards the external walling and kept clear of any mortar droppings which might bridge the cavity. Ties must be nailed to timber studs at maximum 600mm centres horizontally and 450mm centres vertically; ties must be provided between every course of blockwork to the sides of external door and window openings.

Expansion joints must be provided in the external walling at a maximum 6m centres, positioned between openings. Details of a typical joint should be shown either on the drawings or in the erection manual. It is essential that a strip of 10mm bituminous fibreboard be built-in between the blockwork, as it is being built.

External walling must not be built up to the underside of the eaves soffit until the roof tiles or slates have (at least) been loaded on the roof - the weight of the roof covering will cause the kit to compress. As an added precaution a strip of 10mm bituminous fibreboard must be built-in between the top of the walling and the underside of the eaves soffit. Failure to do this may result in distortion of both the eaves soffit and fascia.

Staggers & Projections

Where a building staggers (or steps) or a porch or bay window, for example, projects off the main wall of the building, it is possible to encounter the situation where a roof abuts the outside wall. It is necessary to provide both a cavity tray damp-proof course and lead flashing at this point.

It is a common mistake to omit the cavity tray and this will result in latent defects. It is, therefore, imperative you ensure the cavity tray is built in as the blockwork progresses, it is not easily 'inserted' afterwards. Also, you must ensure the back (top) edge of the cavity tray is fitted up behind the kit breather membrane, not nailed on the face.

Slim (joint) vents must be built into the external walling above the bottom (front) edge of the cavity tray. The cavity tray is positioned directly above the lead flashing and follows the same line as the flashing.

Roof Tiling

This must be executed strictly in accordance with the manufacturers instructions. Ensure you have obtained and read a copy before proceeding. In Caithness, the lap of one course of tiles, over the course below, must be a minimum of 75mm and the closer to 100mm the better. Also, all tiles must be clipped and double nailed.

External Render

This must contain sufficient water-proofer, as recommended in the manufacturer's written instructions.

Although not imperative, I strongly recommend the use of metal render beads to form the bellcast, at all external corners and to eaves and verges. This not only gives a better finish but also reduces the possibility of the render being damaged or failing at these critical points. Render stop beads used up against windows, doors and expansion joints will ensure clean lines and provide the best possible receptor for the silicone pointing.