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   We detail the main changes that you need to take account of

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   A review of Robust Details' first year of operation and findings so far

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5 Building Regulations Part P
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Batten down the timbers

In previous editions of Standards Extra we have stressed the need for adequate fixing of roof tiles and slates, but it is just as important to ensure that the tiling battens are adequately fixed to the supporting structure, as the loads are transferred from one to the other.

Table 4 of BS 5534:1 ‘Code of practice for slating and tiling’ gives the minimum nail penetration into structural timber, needed to resist a range of wind uplift forces. The nail penetration figures quoted are dependent on calculated wind uplift, the strength class of the timber being fixed into and the type of fixing - such as smooth nails or improved nails (e.g. ring shanked or helical threaded) - being used.

Pitched roofs with rigid sarking of timber boarding/sheeting or insulation boards should incorporate counter battens to provide drainage and ventilation between the tiling battens and the sarking. For drainage purposes the counter battens could be as thin as 12mm but timber this thin would not be adequate to fix the tiling battens to.

Where the counter batten is thinner than the required nail penetration to resist wind uplift the tiling battens should not be fixed just into the counter batten. Instead the nail should be long enough to pass through the tiling batten, counter batten and any insulation/sarking board and into the rafters by at least the minimum nail penetration required. This could mean a very long nail (see diagram A)!

To avoid this, where the counter batten is thicker than the minimum nail penetration required, the tiling battens can be fixed to just the counter battens provided the counter battens are adequately fixed through into the structural timbers below (see diagram B).

Where ‘headless’ fixings such as helical nails are being used the thickness of the member being fixed must also be sufficient to resist the wind uplift forces and the fixing manufacturer’s guidance on this should be followed.

**Action**
To resist the wind uplift forces, ensure counter battens are thick enough to fully accommodate the required nail penetration for the tiling batten fixings. Alternatively, the tile batten fixings should be long enough to penetrate into the structural roof timbers by the required minimum nail penetration given in table 4 of BS 5534:1.
BRE has published the third edition of Special Digest 1 (2005) “Concrete in aggressive ground” which takes into account the latest research findings relating to thaumasite sulfate attack and the determination of sulfates in aggressive ground. The latest Special Digest 1 has been condensed into a single document with six sections (A to F).

The main changes are as follows.

- The limits of the Design Sulfate (DS) Classes based on 2:1 water/soil extract tests on soils have been reduced to bring them into parity with sulfate classification based on groundwater, which remains unchanged.

- High magnesium levels do not need to be considered when determining the Aggressive Chemical Environment for Concrete (ACEC) Class of natural ground. For clarity two separate tables have been included for natural and brownfield site locations respectively, instead of the previous single table for both locations.

- Concrete specifications have been revised to rationalise the number of suitable options.

BS 8500 Parts 1 and 2 are currently being revised to align with the new edition of Special Digest 1. NHBC Standards Chapter 2.1, particularly Table 4a, is being revised to take into account these changes and amendments will be published in due course. In the meantime, it is recommended that the industry should adopt the new guidance.

Action
If you are building on ground which falls within the scope of Special Digest 1, ensure that your consulting engineers are working to the latest recommendations for interpreting 2:1 water/soil extract tests and for specifying concrete in contact with the ground.
In this article, Dave Baker, Chief Executive of Robust Details Ltd. provides an insight of where RDL has got to in its first year.

On 1st July 2005 the Part E Robust Details celebrated their first anniversary. The Part E Robust Details scheme was established to provide an alternative means of compliance with Requirement E1 of the Building Regulations (England and Wales), for new build attached houses and flats, to avoid the requirement for pre-completion sound testing (PCT).

Robust Details Ltd. (RDL), the company formed to administer and manage the Part E Robust Details scheme, has been encouraged by the demand, with over 90,000 plots registered for the use of Part E Robust Details in the first year of business.

A fundamental part of the Part E Robust Details scheme is performance monitoring of the Part E Robust Details in use. In this respect, RDL has engaged a number of acoustic consultants (the RDL Inspectorate) to undertake both visual inspections of Part E Robust Detail construction in progress and sound tests on completed Part E Robust Details. These are carried out on a sample of all the plots registered with RDL, the aim being to provide data to evaluate the actual application and performance of the details in use. This aspect is paramount to RDL fulfilling its obligations in accordance with the agreement between RDL and the Office of the Deputy Prime Minister (ODPM).

House builders who register to use Part E Robust Details in their developments are advised that their sites may be selected for performance monitoring visits. More than half of the fee paid by house builders to register plots for the use of Part E Robust Details is set aside to pay for performance monitoring.

The RDL Inspectorate began the performance monitoring process in October 2004 with an initial programme of visual inspections of work in progress. This was well ahead of the anticipated date of around 12 months after the start of the scheme, suggested in the ODPM consultation document.

From the outset of the scheme it was acknowledged that it would take time before a reasonable number of registered dwellings became available for sound testing to begin. However, as with the visual inspections, RDL set out to commence sound testing at the earliest reasonable opportunity and it began in February 2005.

As a result, by the end of May 2005, the RDL Inspectorate had carried out:

- visual inspections on more than 500 registered new homes
- spot check sound tests on nearly 100 new homes completed under the scheme.

The feedback generated by the visual inspections undertaken to date has been encouraging with only 4% of cases where significant deviation from the Part E Robust Details requirements has been noted. In each of these instances the relevant building control body was notified in order that appropriate action could be taken.

These cases included:
- flanking construction not in accordance with that specified in the Robust Details Part E Handbook
- bridged cavities in masonry cavity separating walls
- the use of non-robust detail separating walls and floors (e.g. solid masonry separating wall, beam and block separating floor - examples of these design types are currently being assessed but are not yet approved and issued as robust detail constructions)
- the inappropriate registration of conversion dwellings which are not within the scope of the scheme.

Of course these departures from robust detail specifications would not necessarily fail to achieve the performance criteria set down in Approved Document E. However, until such departures are successfully tested in accordance with RDL assessment protocol they cannot be used as an alternative to PCT.
Due to the limited number of sound tests achieved so far it is perhaps premature to draw specific conclusions about the results achieved. However, the evidence is again favourable in that to date:
- there have been no failures to meet the required performance
- in general, the measured performance has exceeded that achieved during the original robust details research project which produced the first 14 robust details.

As with the visual inspection process, there are procedures in place for RDL to notify the relevant building control body, as well as the builder, if a test fails to achieve the performance requirements. In such circumstances, the building control body would take reasonable steps in conjunction with the builder to ensure compliance with Requirement E1.

RDL would, of course, subject to the co-operation of the builder, investigate the reasons for any failure. In the context of sound testing, RDL would also be interested in investigating any instances where sound test results fall below the stringent robust details criteria irrespective of whether or not they meet the minimum requirements of Approved Document E.

So far, RDL has received excellent co-operation from builders in conducting inspection and testing. This has already enabled RDL to identify and resolve a few national issues which otherwise might only have been resolved locally. Whilst it is still too early to draw firm conclusions about the success or otherwise of the scheme, it has certainly got off to a successful start.

In the event that any robust detail consistently failed to meet the required performance, it would be withdrawn.

On site, the RDL Inspectorate endeavours to provide assistance and advice regarding the use of the Part E Robust Details where appropriate. It is therefore hoped that house builders will continue to willingly co-operate in the performance monitoring process.

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**Timber frame certification - HB 353B**

In England and Wales, Northern Ireland and Isle of Man, all conventional timber frame dwellings require a completed HB 353B certificate to be available on site for NHBC. The form gives our inspector the confidence of knowing that the timber frame calculations and details have been checked by a timber frame certifier. A copy of the form is shown.

The certificate is completed by a timber frame certifier approved by NHBC. All sections - A to D must be completed.

We have recently come across some examples where the timber frame certifier has not completed section C.

**Who should sign what?**

**Section C**

If the timber frame certifier is not an engineer, then he/she will need to engage an engineer to check the structural design and calculations and sign Section C to confirm they are satisfactory.

An independent engineer (I Struct E or ICE) can sign Section C. The engineer who was responsible for the design cannot sign it.

**Section D**

Section D is signed by the timber frame certifier. In doing so, the certifier is confirming that:
- the construction detailing is in accordance with Chapter 6.2 “External timber framed walls”
- the details show good building practice and the design is not of novel construction
- structural calculations have been prepared to show the design is in accordance with Building Regulations and relevant British Standards
- arithmetic calculations have been independently checked
- construction details have been checked
- the builder has the certified information in a form suitable for use by operatives on site
- the materials specified meet with NHBC Technical Requirement R3.

The certifier is not permitted to delete any of the above. Therefore, the certifier cannot just carry out a structural check and omit the detailing/cladding interface check, as this is where potential problems could arise.

It is also not acceptable to assume that any unresolved issues can be left for NHBC to pick up on site. Although our building inspectors will be making site visits these should not be considered as an alternative to proper checking by the timber frame certifier.

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**Action**

Builders using timber frame construction should have completed HB 353B certificates available on site. Timber frame certifiers must sign Section D, having satisfied themselves that all of the above checks have been satisfactorily completed.
NHBC continues to contribute to raising house-building standards by supporting builders with training courses on the topical issues of sustainability and building on previously contaminated land.

House Building on Contaminated Land is a very topical subject. With changing legislation, complex human health assessments, the introduction of Planning Policy Statement 23 (PPS23), Approved Document C and the implementation of the Land Fill Directive, it is proving increasingly difficult for house-builders to regenerate land.

This course has been designed around a case study allowing delegates to put knowledge straight into practice. By putting the issues into context it will help familiarise builders with the recent and forthcoming regulatory, legal and technical developments relating to the regeneration of potentially contaminated land.

This course is being run regionally and on various dates throughout October and November. For further information or to make a booking please contact Leah O’Donnell on 0870 241 4323 or email lodonnell@nhbc.co.uk.

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Current requirements - Building Regulations Part P (England & Wales) - New homes and competent persons

Since the introduction of Part P (Electrical safety) in January 2005, there has been widespread publicity concerning the introduction of ‘competent persons registered with electrical self-certification schemes’. Persons registered with such schemes are able to self certify to the local authority that electrical installation work complies with Part P of the Building Regulations.

This is particularly relevant where electrical work is being carried out to existing dwellings. A homeowner employing a contractor who is able to self certify to the local authority that the work complies, will not need to make a separate building regulations application, or have the work inspected by the local authority.

However, the situation for electrical installations in newly built homes differs:

**NHBC Building Control**

Where NHBC is providing building control, the Initial Notice covers all of the building work, including the electrical installation. In these circumstances the Regulations do not allow for contractors to self certify to the local authority that their electrical work complies with Part P - it is for NHBC Building Control to be satisfied that the work complies.

So for new homes, how do you satisfy NHBC Building Control that you comply with Part P (Electrical safety)?

- It is expected that you will employ ‘competent persons’ as defined in Appendix 6 of BS 7671 “Requirements for electrical installations” to carry out work. Such persons are required to have sound knowledge and experience in relation to the nature of the work they are undertaking and to the technical standards given in BS 7671.
- In addition, they should be fully versed in the inspection and testing procedures contained in the British Standard and employ adequate testing equipment. This does not mean that such persons need to be additionally registered with a ‘competent persons electrical self-certification scheme’.
- Evidence will be required that the electrical installation has been inspected (this is necessary during construction as well as on completion) and tested to check satisfactory performance in accordance with BS 7671. A way of showing compliance would be to provide a copy of the BS 7671 electrical installation certificate for inspection and testing to our Building Inspector for each plot prior to final inspection. Examples of the BS 7671 model forms can be found in Appendix B of Approved Document P.

For further information any of our building surveyors will be pleased to advise.
Questions & Answers

Below are answers to questions we have recently been asked in NHBC Technical.

Precast concrete floor planks to ground floors

Question
Is it acceptable to install precast concrete floor planks over a DPM on fill without an under floor void or under floor ventilation?

Answer

- NHBC Standards clause 5.2 – D10 refers to the provision of damp-proofing to suspended precast floors and the provision of a minimum 75mm void and under floor ventilation.
- On sites with shrinkable soil a ventilated void should be formed under the slab to accommodate possible ground swell.
- The fill may settle and cause the DPM to sag and pull away from the DPC in the walls or become torn allowing water vapour from the ground to migrate into the concrete floor structure.
- If the fill settles an unvented void would form under the slab which on certain sites could lead to an unacceptable build up of gas under the building.

Where precast concrete floor planks are used over a DPM laid directly on fill the fill should be inert and non-expansive, e.g. not clay, raised up to the underside of the floor slab and be well compacted to avoid future settlement. Where this is carried out it is not necessary to form a ventilated void under the precast floor.

On shrinkable soil where heave could take place a ventilated void should be formed under the slab to accommodate the ground swell. A separate DPM may then be required over the floor slab.

Note: This option does not apply to precast concrete beam and block floors, which should be installed with a ventilated void beneath.

Lightweight drainage covers

Question
Should lightweight covers to drainage systems be secured by screws to deter children from lifting them?

Answer

- Covers, which can be easily lifted, pose a risk to children falling in or allow them to throw objects into the drains, which may cause blockages and a health hazard.
- Approved Document H (England & Wales) says that small lightweight access covers should be secured (for example by screws) to deter unauthorised access (for example by children). Scottish and Northern Ireland Building Regulations currently do not have this recommendation.

Small lightweight access covers to private drains should be:
1. too heavy for children to lift, or
2. secured by screws, or
3. of a design which requires the use of a key to lift the cover from the frame.

In all cases the frame should be securely fixed to the chamber and/or bedded in mortar to avoid it being lifted with the cover.
Questions & Answers

Guarding to retaining structures

Question

Is guarding required where the ground level has been sloped up against a retaining structure, to make the top of the sloping ground less than 600mm below the top of the structure?

Answer

NHBC Standards clause 9.2 - S7(a) says, ‘Guarding should be provided where:

- structures are retaining land more than 600mm high to which people have access, or
- a path is adjacent to a vertical difference in level of more than 600mm, or
- the ground adjacent to the path falls away at an angle of more than 30° from the horizontal’.

Where the drop from the top of the retaining structure to the top of the slope is less than 600mm and the ground slopes away at an angle less than 30° no guarding is required (see Diagram A).

If the drop from the top of the retaining structure to the top of the slope is greater than 600mm or the ground slopes away at an angle greater than 30° then guarding is required (see Diagram B).