

# The Standards and Technical Requirements

## CHAPTER 2.1

This chapter introduces the NHBC Standards and contains the Technical Requirements.



Raising Standards. Protecting Homeowners

### Application of the Standards

The NHBC Standards contain the Technical Requirements, performance standards and guidance for the design and construction of homes acceptable to NHBC. The home is defined in NHBC Rules for builders and developers registered with NHBC. The Standards come into effect for every NHBC registered home whose foundations are begun on or after 1 January 2018, and they apply throughout the UK, unless otherwise stated.

### Composition of the Standards

The Standards are divided into 10 Parts, each covering a particular element and subdivided into chapters which, in principle, follow the normal build sequence (the list of chapters is shown in the Contents section of Part 1). The front cover of each chapter contains its scope, together with a list of its contents.

### Technical Requirements

The Technical Requirements are shown in **red text** in this chapter, and **must** be met by the builder.

### Performance standards

The performance standards support the Technical Requirements and are shown in bold black text backed with a shaded box. Where the performance standards are followed, the Technical Requirements for that particular item of work will be met. Alternative standards of performance will be acceptable **only** if, in the opinion of NHBC, the Technical Requirements for that particular item of work are met and the standard achieved is not lower than the stated performance standard.

### Guidance

Guidance on how the performance standard may be met is shown in black text and is based on normal construction procedures and recommended practices which have been shown to be satisfactory and acceptable over time. NHBC will consider alternative methods to meet specific requirements, subject to prior consultation and evaluation.

Guidance is also contained in illustrations and digital 3D models.

Guidance is provided to demonstrate specific technical principles, and should not be used as working construction details.

### Limitations on use

The Technical Requirements, performance standards and guidance form acceptable technical benchmarks for a particular item of work, but do not form a complete specification and should not be used as such in contracts. Individual chapters cover, as far as practical, the requirements for particular elements of construction. To avoid repetition, some cross-referencing is made between chapters.

The NHBC Standards do not apply to:

- health and safety matters relating to building operations
- planning matters except where specifically referred to in these Standards.

Such matters are covered by statutory requirements.

### Interpretation

Where a difference exists in how to interpret the Technical Requirements, performance standards and guidance, this would generally be resolved by further consultation, failing which, NHBC will exercise its right to decide in accordance with the NHBC Rules.

### Testing

Where required, samples of materials, products and systems shall be tested in accordance with Technical Requirement R3 and the NHBC Rules.

### Standards and codes of practice

Where NHBC Standards refer to authoritative documents such as British Standards, the documents shall be the editions current at the time of Building Regulation approval, unless other recommendations are agreed by NHBC in writing.

The standards referred to in the NHBC Standards comprise specifications, codes of practice and published documents that are published by BSI, the European Committee for Standardization (CEN) and the International Organization for Standardization (ISO).

### Tolerances

All work shall be within acceptable tolerances. Where applicable, account should be taken of Chapter 9.1 'A consistent approach to finishes'. In other situations, tolerances will be those currently acceptable in the house-building industry.

### Acknowledgements

NHBC is indebted to members of the Standards Committee, the Standards Review Group, the Scottish Technical Subcommittee and the Northern Ireland Technical Subcommittee for their work in developing and maintaining the NHBC Standards.

NHBC also wishes to acknowledge the help given by consultants, authoritative organisations, individuals and staff.

### Technical Requirements

**The Builder shall ensure that the work complies with the Technical Requirements.**

#### R1 Statutory requirements

**Work shall comply with all relevant Building Regulations and other statutory requirements relating to the completed construction work.**

NHBC will generally accept work that accords with relevant Building Regulations/Building Standards and supporting documents. Exceptions would be where NHBC has a higher standard.

#### R2 Design requirement

**Design and specification shall provide satisfactory performance.**

Account shall be taken of:

- a) The land quality, including:
  - i) climate
  - ii) topography
  - iii) geology and ground conditions
  - iv) contamination
  - v) workings below ground
  - vi) previous use of the site
  - vii) any other aspect, on or adjacent to the site, which could affect the design.

Where appropriate, the land quality will have to be determined by a person acceptable to NHBC.
- b) The structural adequacy of the works. The design, with appropriate factors of safety, shall satisfactorily allow for loads during and after construction and for their transfer to the supporting structure, or foundation, without undue movement, including:
  - i) self weight
  - ii) all imposed loads, including wind loads
  - iii) construction loads.
- c) The geographical location of the site, including:
  - i) exposure to wind and rain
  - ii) topography.
- d) The position of the dwelling on the site, especially with reference to the dwelling's exposure to the weather, including at early stages in the development of a site, even if it is eventually protected by structures built later.
- e) The position of building elements within the construction works, including the interrelationship of materials and constructions.
- f) The security of the dwellings.

### R3 Materials requirement

#### All materials, products and building systems shall be suitable for their intended purpose.

The structure of the home shall, unless specifically agreed otherwise in writing with NHBC, have a life of at least 60 years. Individual components and assemblies, not integral to the structure, may have a lesser durability and need planned maintenance, repair or replacement during that period.

Account shall be taken of the use and location of materials, products and building systems in relation to:

- durability of both the structure and individual components and assemblies
- geographical location
- position on the site
- position within the structure.

Materials, products and building systems will normally be acceptable if they comply with the following:

#### a) MATERIALS AND PRODUCTS USED FOR CRITICAL FUNCTIONS

Functions critical to performance are: structure, fire resistance, weatherproofing, durability, thermal and sound insulation, services including heating appliances and flues. Any of the following are acceptable:

- i) performance in accordance with standards set by NHBC, or
- ii) where no NHBC standard is set, compliance with the relevant British Standard or equivalent European Technical Specification approved by a Committee for Standardisation, provided they are used in accordance with the relevant Code of Practice, or
- iii) compliance with standards not lower than those defined in a relevant British Standard specification or equivalent, provided their use is accepted by NHBC, or
- iv) satisfactory assessment by an appropriate independent technical approvals authority accepted by NHBC, or
- v) use of materials and products in accordance with well established satisfactory custom and practice, provided that such custom and practice is acceptable to NHBC, or
- vi) acceptance, in writing, by NHBC that the quality and use is satisfactory.

#### b) MATERIALS AND PRODUCTS USED FOR NON-CRITICAL FUNCTIONS

Compliance with the above acceptance criteria for critical functions or strictly in accordance with manufacturers' recommendations for the specific use.

#### c) RECLAIMED MATERIALS

Reclaimed materials may only be reused with the prior agreement of NHBC. Independent certification of suitability may be required.

#### d) PROPRIETARY BUILDING SYSTEMS

Reference should be made to R3a iv.

#### e) TIMBER DURABILITY

Reference should be made to Chapter 3.3 'Timber preservation (natural solid timber)'.

#### f) RECOVERED AGGREGATES

Aggregates derived from recovered inert waste, e.g. recycled aggregate, should only be used where it can be demonstrated that the inert waste material has been fully recovered, has ceased to be a waste as defined by the Waste Framework Directive 2008 and has become a product. To this end, recovered aggregates produced by a supplier complying with a recognised defined quality management scheme such as the WRAP Quality Protocol and meeting end-of-waste criteria, will be acceptable to NHBC.

#### Notes

- Equivalents to British Standards or technical approvals authority shall be those accepted in the UK.
- Further guidance on Modern Methods of Construction (MMC) can be found at [www.nhbc.co.uk/MMCHub](http://www.nhbc.co.uk/MMCHub)

### R4 Workmanship requirement

#### All work shall be carried out in a proper, neat and workmanlike manner.

The Builder shall ensure that:

- a) the conditions of the materials, products and the completed work are satisfactory
- b) appropriate precautions are taken to prevent damage
- c) account is taken of the following:
  - i) the requirements of the design
  - ii) suitable methods of unloading and handling
  - iii) proper protection during storage
  - iv) use of correct installation methods
  - v) protection against weather during construction (including excessive heat, cold, wetting or drying)
  - vi) protection against damage by following trades.

### R5 Structural design requirement

**Structural design shall be carried out by suitably qualified persons in accordance with British Standards and Codes of Practice.**

The following shall be designed by Chartered Civil or Structural Engineers whose status (including professional indemnity insurance) is accepted by NHBC:

- a) foundations on hazardous ground where the hazard makes special consideration necessary. (Note: This would not apply to matters for which NHBC sets standards, such as building near trees, except where specified to the contrary)
- b) foundations and superstructure of every building over three storeys in height
- c) certain types of foundations and retaining walls, as required in the individual chapters of the NHBC Standards
- d) any structural element which is not based on specific design criteria as laid down in the chapters of the NHBC Standards
- e) any dwelling not constructed in accordance with UK traditional practice.

#### Note

Other structural elements may be designed by a Chartered Civil or Structural Engineer or others whose status (including professional indemnity insurance) is accepted by NHBC.

The structural design shall take account of the durability requirement in Technical Requirement R3 Materials.

In England, Wales, Northern Ireland and the Isle of Man, structural design may be undertaken by the Builder's own Engineer or a Consulting Engineer employed by the Builder. Where specialist subcontractors undertake the design, it must be separately appraised by the Builder's own Engineer or by a Consulting Engineer employed by the Builder to ensure that the site investigation, choice of foundations, siting and construction of dwellings are properly taken into account and that the design is appropriate for the loading and conditions.

In Scotland, the Engineer shall be independent of the Builder and specialist subcontractor.

Account shall be taken of all parts of the following British Standards:

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| ■ Eurocodes and their respective National Annexes.         | ■ BS EN 1993. Eurocode 3: 'Design of steel structures'.   |
| ■ BS EN 1990. Eurocode 0: 'Basis of structural design'.    | ■ BS EN 1995. Eurocode 5: 'Design of timber structures'.  |
| ■ BS EN 1991. Eurocode 1: 'Actions on structures'.         | ■ BS EN 1996. Eurocode 6: 'Design of masonry structures'. |
| ■ BS EN 1992. Eurocode 2: 'Design of concrete structures'. | ■ BS EN 1997. Eurocode 7: 'Geotechnical design'.          |

Alternatively, designs in accordance with BS 8103 'Structural design of low rise buildings' will be acceptable.

The Builder shall:

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| ■ require the Engineer to issue clear instructions for site personnel         | ■ require the Engineer or his representative to carry out such inspections as may be required by NHBC to ensure the adequacy of the design and construction. |
| ■ not permit departure from the design without the Engineer's written consent |  |

The Builder shall ensure that the Engineer visits the site during construction:

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| ■ when the foundations have been designed under this Technical Requirement, or | ■ when specifically required by NHBC in these Standards. |
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The Engineer shall satisfy himself that the design is suitable for the conditions encountered on the site of each dwelling.

When requested by NHBC, the Builder shall:

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| ■ produce such design documents, calculations and prescribed forms of certification as NHBC requires for scrutiny | ■ arrange for NHBC staff to have access to places where off-site fabrication is taking place. |
| ■ provide design documents and assembly instructions, solely for the use of NHBC staff                            |   |

NHBC is authorised by the Prudential Regulation Authority and regulated by the Financial Conduct Authority and the Prudential Regulation Authority.

NHBC is registered in England under company number 00320784. NHBC's registered address is NHBC House, Davy Avenue, Knowlhill, Milton Keynes, Bucks MK5 8FP.

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