

Proprietary retaining wall systems

(March 2020) (First Issue)



Question

What is required when considering the design and use of proprietary retaining wall systems?

Consideration

NHBC Standards requires that retaining walls should be adequate for their intended purpose (Clause 10.2.4), that they should be adequately guarded and allow safe use (Clause 10.2.5) and should be of materials suitable for their intended use (Clause 10.2.7).

Clause 10.2.3 asks that retaining structures that give support to the foundations of homes, or generally used in plot boundary situations should be designed with a desired service life of 60 years and should be completed before work starts on the construction of the home. Clause 10.2.4 states that all retaining structures, more than 600mm high, should be designed by an Engineer in accordance with Technical Requirement R5, and the design specification and drawings should be made available on site to operatives and specialist subcontractors.

Answer

Proprietary Systems

There is a wide variety in the form of proprietary retaining wall systems currently available on the market, but typically these comprise:

- An earth or slope support or restraining system with either integral or independent facing wall/s or panel/s,
- Modular dry-stack masonry or precast concrete block systems that rely on mass and interface shear resistance between elements for their structural stability.

The use of a proprietary retaining wall system will need to be considered against NHBC Standards requirements on a site by site basis due to the variability of each application. Issues to be considered by the designer should include, but not necessarily limited to:

- Location of the retaining wall (i.e. boundary or within-garden location), its proximity to other structures and extent required to both construct and accommodate it,
- External loadings (from highways, drives, parking areas, other structures, barriers, fencing, etc.),
- Extent and effect of ground movement (either during construction or design life of the retaining wall) on existing or newly supported structures, or services,
- System service life and any maintenance requirements,
- Ground and groundwater conditions,
- Exposure to prolonged dampness or waterlogging,
- Drainage requirements to relieve hydrostatic pressures,
- Height of retaining wall considering both temporary and permanent conditions and allowing for unplanned excavations,
- Nature and topography of retained soil,
- Nature and topography of supporting ground for stability,
- Proposed anchorage of the retaining wall, if required,
- Potential for failure through sliding, overturning, rotational slip, shear, etc.

For further guidance and additional information on what else to consider including different design situations, reference should be made to BS 8002.

When considering retaining wall materials, account should be taken of the relevant Performance Standards and Guidance given in the relevant Chapters for concrete, masonry, timber, etc. to suit the proposed construction. Where retaining wall materials or systems fall outside the scope covered by NHBC Standards, e.g. use of fibre-reinforced concrete, they should be independently assessed by a third party in accordance with our Technical Requirement R3.