

**Pride in  
the Job  
Awards**



# Best practice guide

Section 2

## Substructure and drainage

**NHBC**

# Best practice guide

**Our series of Best Practice Guides take you through what the Pride in the Job judges look for at each stage of construction and when considering the site manager's overall organisation and management skills.**

The Pride in the Job marking sheet used by our judges has 43 marking lines split across 10 sections. The judges will give a score for each line – where there is no work to mark, that line will be left blank and no mark given. A mark of four indicates compliance with NHBC Standards. A mark of five indicates extra attention to detail over and above compliance standards. A mark of six would indicate that much of what the judges have seen cannot be improved upon. A mark less than four would indicate varying issues relating to workmanship and non-compliance with NHBC's Standards – the greater the issue or number of the same issue, the lower the mark. The final score will be all the marks awarded expressed as a percentage.

These Guides set out what the judges are looking for with clear hints and tips on the sort of practice that will lead to higher marks.

Clearly it is impossible in these short guides to cover every single point of construction – we try here to cover the main issues that are taken into account when considering a mark for each score line.

When looking at the photographs, consider each one in the context of the score line heading – don't be distracted by something else that isn't as good – that will be marked accordingly elsewhere.

## Section 2 Substructure and drainage

Section 1 of this series covered the importance of creating a solid foundation upon which to build a home. Section 2 takes this further and considers the substructure build – the part of the home that connects the structure above ground to the foundations. This includes walls, services, drains and the main ground floor – and all associated protection needed to prevent damp rising from the ground into the habitable area of the home.

**Walls and columns**

**Waterproofing and ventilation**

**Sub-floor services and service entries**

**Ground floor**

**Drainage (internal and external)**

**Gas precautions**

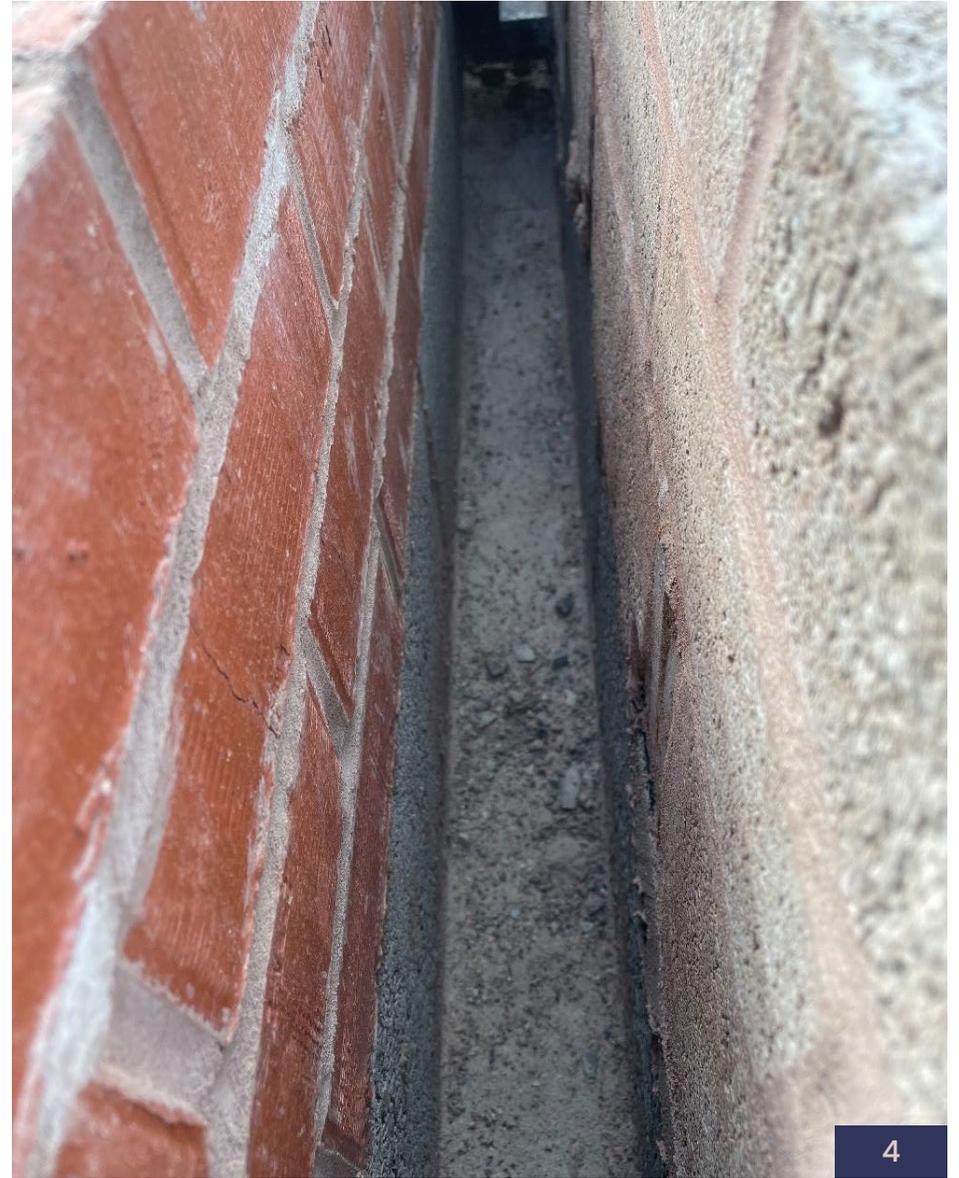
## Section 2

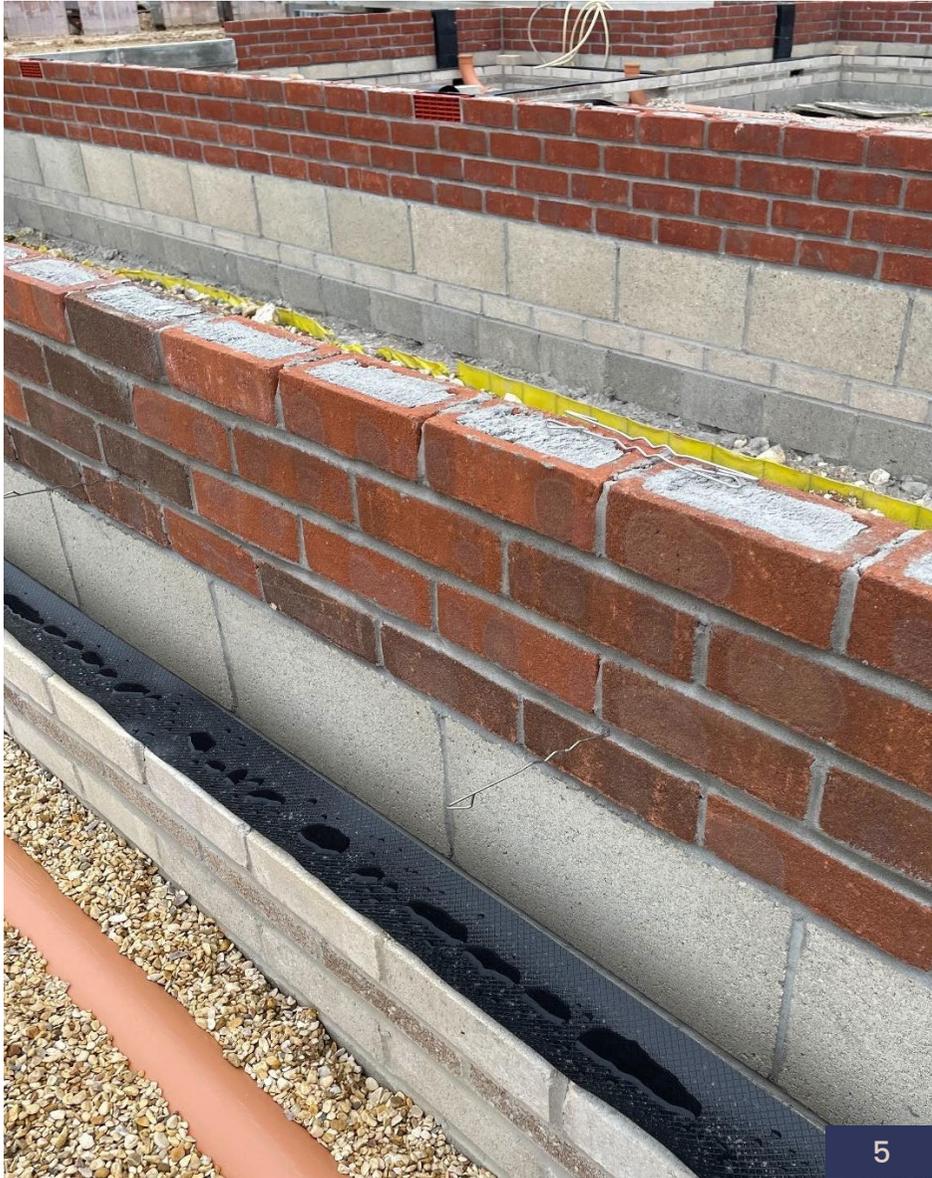
# Walls and columns

This score line should include any construction below ground or at basement level and is likely to be of masonry, reinforced concrete or a combination of both. Structural steel elements may also be present. For masonry, the filling of joints, cutting, tying and bonding are all important for this load-bearing element. Internal substructure walling must be built to permit adequate airflow through the substructure void where required. For reinforced concrete elements, consider reinforcement placement, care taken in the concrete pour, the quality of formed concrete and the neatness of joints at kickers and junctions. In steel columns, the correct use of holding down bolts and packing pieces is essential. The method of providing for service entries through the walls should be considered.

**Pride** – Uniformity and jointing of masonry with neat, fully filled joints, even where they will be hidden by ground levels. Well thought-out bonding of cross walls to external walls. Well set out installation and positioning of ties and structural components, where applicable. Consistency, neatness and accuracy of service holes within substructure and basement walls. In basements, smoothness of concrete finish (especially where it is to remain unclad), little or no honeycombing, and absence of staining to walls indicating leakages. Look for a well-designed and operated system of ensuring that correct steel holding down and connection bolt tightening is being undertaken.











## Section 2

# Waterproofing and ventilation

DPCs should be continuous and over the full width of the brick or block to prevent moisture penetration. They must be correctly located when surface rafts are used. Tanking must be applied in accordance with the manufacturer's instructions, with attention paid to laps, corners and fillets. It should lap with DPCs and other membranes to form a continuous envelope.

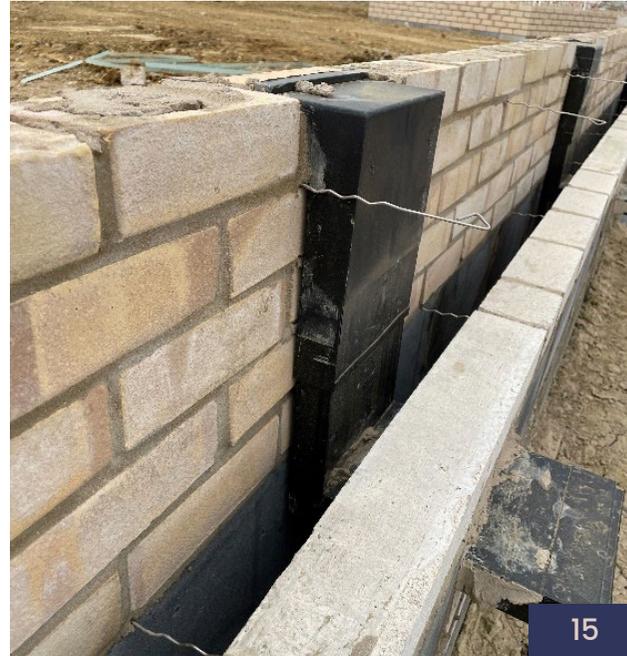
Penetrations through the tanking or other membranes should be correctly designed and formed. Where sub-floor vents are installed, they should be adequate in number and location and have a stop ended DPC tray over them. They should not be positioned where the airflow is likely to be obstructed by the subsequent construction of paths, steps or fall pipes, nor be subjected to point loads. Vent pieces should not be damaged by subsequent work and trunking pieces should remain connected. Internal substructure walling must be built to permit adequate airflow through the substructure void.

**Pride** – Particular care taken in the positioning and retaining in position of DPCs, tanking, DPMs and vents. Systems in place to prevent damage or blockages during build. Cleanliness and preparation of construction joints is particularly important, and good work in this area should be suitably recognised, as should the designing of controls for the application of tanking to basement walls and the interface with the superstructure. Evidence that planning of ventilation positions has taken place – for example where they might otherwise cause a problem with Part M access paths, steps and ramps.





14



15

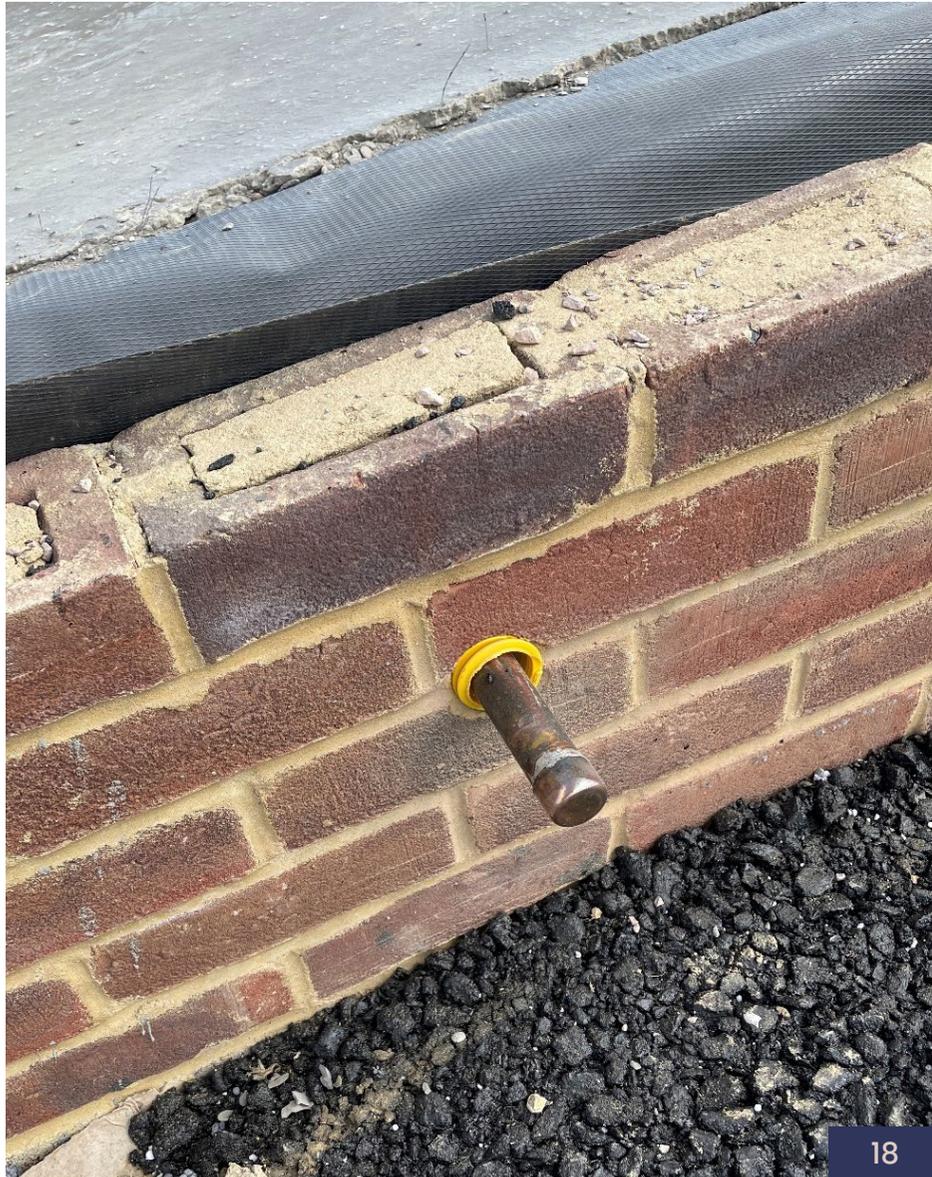
## Section 2

# Sub-floor services and service entries

All services through the ground floor should be correctly positioned, appropriately insulated and properly supported. They should include temporary protection, ie, caps to prevent blockage during construction. Hangers or brackets may be used in basements, which should be properly fixed to provide adequate support. Sufficient under-floor void space for ventilation and/or soil heave protection must be maintained. Floor drainage channels should be correctly positioned. Where passive ventilators are installed, they should be adequate in number and location and should not be positioned where the airflow is likely to be obstructed.

**Pride** – Consideration of finished levels for correct depth of services installation, suitable falls where appropriate and long-term support, sealing and marking to prevent blockages and provide clear indications of positions and type. Neatness of suspended services layouts enhancing the quality of the finished product. The neatness of the finish around service entry holes in the floor slab (both above and below) should be recognised. Provision of temporary drainage to ground floor slab above basements will protect the basement construction and any materials stored within.





18



19

## Section 2

# Ground floor

The type, compaction and depth of the backfill, including trenches, are all to be considered, particularly where offering support to the ground floor. Where a beam and block floor is installed, the grouting should be adequate to prevent movement of the blocks and carried out at an appropriately early stage. Suspended slabs must be fully supported at the bearings. Where the ground floor is to accept timber or steel frame construction (or other modular build systems), the level of the floor is especially important. Packing of plates below the frame should be in accordance with NHBC Standards. The floor should have a finish appropriate to the subsequent flooring coverings. The actual surface finish of the floor is marked under the floor finishes section. Basement floor slabs must be appropriately formed to allow adequate drainage to gullies.

**Pride** – Particular care taken at floor to wall interfaces and the associated tanking and DPM details. The quality of the finish, whether it is to receive a topping or not, should be considered. Consider the timing and quality of grouting to beam and block floors.







## Section 2

# Drainage

(internal and external)

All underground drainage, (including septic tanks, pumping stations etc), the support, line, levels, terminals and access chambers are to be assessed. The bedding must be of the correct size and type for the pipes being laid. All access points should have openings sealed during the construction process to avoid damage and entry of materials. Excessively tight bends are to be avoided.

**Pride** – Thought applied to the accuracy of the setting out to avoid stud walls internally and for manholes to be placed externally as appropriate (avoiding awkward landscape or footpath details). Consideration should be given to the quality of support, bedding and surround to drains and the correct provision for access should be evidenced. Efficient excavation (being just wide enough to receive the drainage and bedding) will also be recognised here.



31



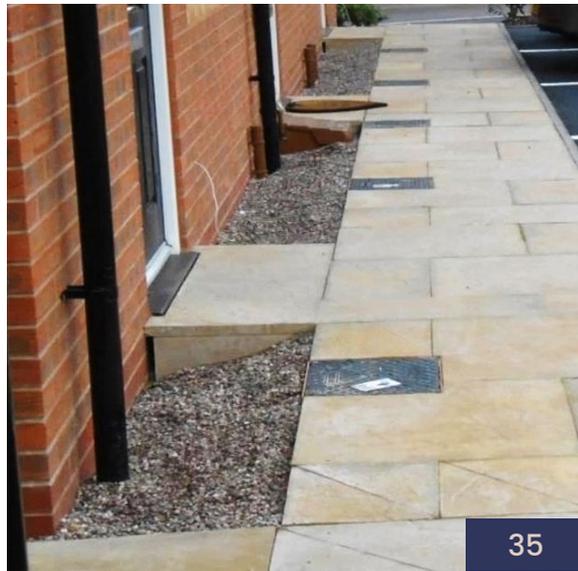
32



33



34



35

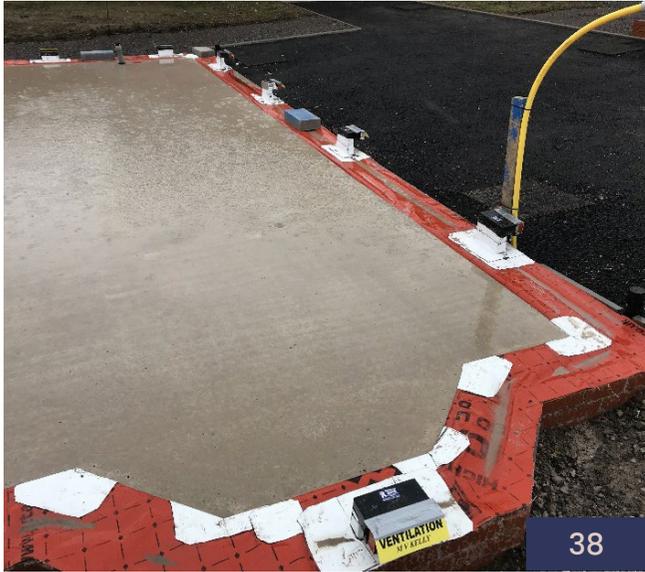


## Section 2

# Gas precautions

The Damp proof membrane should be linked to the Damp proof course. Where the DPM is to prevent methane or radon gas from entering the building, all laps must be sealed. Quality of sealing around services and other penetrations is very important.

**Pride** – Neatness of detail and precision in laying DPMs where they create a barrier to gases. Neatness of detailing around services ducts. Site manager knowledge of the importance of this detailing is a good sign. Evidence of precautions to avoid damage can be seen.



**Pride in  
the Job  
Awards**

# Good luck!

We hope you have found this best practice guide useful in gaining a better understanding of what the judges are looking for at each stage of construction.

Remember, the six characteristics the judges are looking for in a site manager are:

- consistency
- attention to detail
- technical expertise
- leadership
- interpretation
- health and safety.

We wish you all the very best in the Pride in the Job competition as you strive for your very first win or to repeat or even improve on your performance in previous years.

