

NHBC Risk Guide

Ground bearing floor slabs (Revised May 2020)

(Refer to BRE Digest 522, SE 44, TE 04, TE 109, BRE 211, BRE Thermal insulation avoiding risks, Standards Chapter 5.1)

R3 Materials requirement. All materials, products and building systems shall be suitable for their intended purpose.

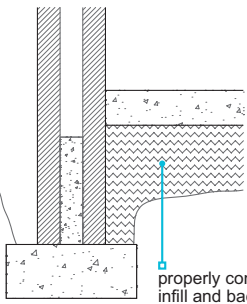
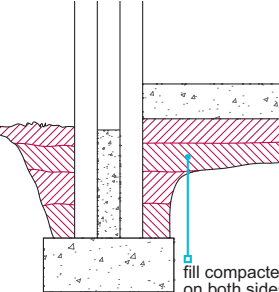
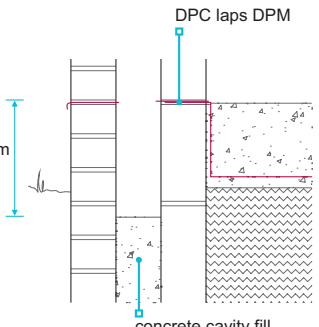
Site ref: Site manager: Inspector:

Date: Signature: Signature:

Provision of information	
It is essential that the following information is available on site:	
All necessary plan dimensions and levels related to identified benchmarks	
Information on all proposed underground services	
Points of entry to the building for services	
Penetration of services through the substructure, including support of the structure above	
Details of trench backfill, infill and void formers	
The required sequence of trench backfill if this is relevant to the design of the walls below dpc	
Work required to maintain the integrity of dpms and dpms	
Details of junctions between dpm, dpc and tanking	
Details of underfloor and floor edge insulation and cavity insulation, where relevant	
If information is unavailable request its provision.	
Does the ground bearing floor slab align with the Technical Summary Sheet TSS and foundation design?	Yes / No

General considerations		
The main ground hazards likely to affect substructure and ground bearing floors are chemicals, particularly sulfates, contaminated material above or in the ground. In such cases sulphate resisting cement to BSEN 197-1 should be used.		
Shrinkable soil, expansive materials or other unstable soils may require suspended floor construction.		
Sloping ground may require steps in the substructure and possibly different floor levels. Where more than 600mm of infill is required at any point in a self-contained area, the floor over the whole of that area must be suspended .		
Are you satisfied that the formation level is virgin ground and not backfill?		Yes / No
Is a ground bearing slab suitable?		Yes / No
If no, suggest considering an alternative option		

Ground bearing floor slabs	
General	
Is the proposed slab a minimum of 100mm thick	Yes / No
Note: Ground bearing concrete floor slabs should be at least 100mm thick, (including monolithic screeds when applicable).	
Type of slab:	Unreinforced Reinforced
If reinforced, is the reinforcement and bending schedule available on site?	Yes / No
If information is unavailable request its provision	
Will the slab be cast in one operation?	Yes / No
Note: Unreinforced concrete cast in one operation should not be greater than 16m ² and reinforced concrete cast in one operation should not be greater than 60m ² and should always be as square in shape as possible. Where possible, construction joints that are provided the floor area should be divided in to equal bays.	
If the slab is not going to be cast in one operation is the joint plan available on site?	Yes / No
If the slab is not going to be cast in one operation how are the construction joints going to be formed?	
Does the dwelling contain loadbearing partitions?	Yes / No
Note: Loadbearing partitions should have proper foundations and should not be supported off ground bearing floors.	

Is radon gas present?		Yes / No
Note: Special precautions may be necessary to reduce the entry of radon gas, for further information see the Radon Risk guide, or BRE Report 211.		
Are there sulfates present in the ground?		Yes / No
Note: Where sulfates are present in the ground at levels likely to be harmful, the floor slab should be of the appropriate mix to resist sulfate attack & be protected by an impervious layer of sufficient gauge polyethylene sheet.		
Fill (ref NHBC Standards Clause 5.1.11)		
Before fill is placed, all topsoil containing roots and vegetation should be removed and a suitable even bearing provided.		
Does the fill contain expansive materials or chemicals?		Yes / No
Note: Fill containing expansive material or chemicals are not acceptable to support ground bearing slabs as these can lift the ground floor slabs and push enclosing walls below dpc outwards. Fill shall be free from hazardous materials (unless precautions are taken), physically unaffected by change in water content, and provide consistent support to ground bearing slabs. Materials that include recycled or secondary materials should comply with relevant waste regulatory requirements. Well graded, inert fill containing no hazardous materials, which passes a 150mm x 150mm screen in all directions, will normally be suitable as support for ground bearing floors (with a maximum lump size of 63 mm).		
What is the total compacted hardcore thickness?		
 <p>properly compacted infill and backfill</p>	<p>The total compacted hardcore thickness should generally be in the range of 100–600mm. (NHBC Standards Clause 5.1.8)</p> <p>Fill should be placed and mechanically compacted in layers not exceeding 225mm deep to form a stable mass.</p> <p>Special consideration should be given to avoid settlement at junctions between the substructure wall and the ground bearing floor.</p>	
	 <p>fill compacted equally on both sides</p>	<p>Fill should be placed in layers of equal thickness to both sides of substructure walls so that compaction on one side is not more than one layer ahead of the other.</p> <p>Where backfill is placed and compacted in one side of the foundation trench before the other side is backfilled the wall will be acting as a temporary retaining wall and should either be designed by an Engineer, or in accordance with Chapter 5.1.</p>
Fill should be blinded sufficiently to receive concrete (or dpm, if required) using the minimum thickness necessary to give a suitable surface.		
Concrete blinding may be needed where voids in the fill could result in loss of fines from the blinding.		
Where the ground floor is to be reinforced, the blinding should be firm and even to give good support for the reinforcement and to maintain the design cover, using reinforcement stools where necessary.		
Damp proofing (ref NHBC Standards clause 5.1.20)		
Where is the membrane located?	Above the slab	Below the slab
Note: When the membrane is located below the slab, a blinding layer of sand should be provided to fill voids in the hardcore and so minimise the risk of puncturing the membrane.		
A suitable dpm material should be used e.g. 1200 gauge (0.3mm) polythene sheet.		
Care should be taken to ensure that all joints and junctions between damp-proofing membranes, wall dpcs or tanking in substructure walls are undamaged, especially while the concrete for the ground slab is being poured, as well as during the construction of formwork and striking of formwork at construction joints.		
 <p>DPC laps DPM</p> <p>225mm min.</p> <p>concrete cavity fill</p>	Continuity of the membrane should be maintained.	
	Laps in polyethylene should be at least 300mm and joints sealed where necessary.	
	Membranes beneath the slab should link with wall dpcs to form an impervious barrier to prevent moisture reaching the interior of the dwelling.	
	Linking should take account of possible differential movement.	
	Where dwellings are stepped down a sloping site, the dpcs and dpms should be linked so that all parts of each dwelling are protected.	
A minimum 225mm clear cavity below the dpc should be maintained.		
Are drainage/services entering through the slab?		
Note: Where services/drainage pass through a dpm ensure the dpm is properly installed around the pipe area and that all joints are sealed, and services should be sleeved where they pass through a structural element.		
Other considerations		
Existing underground services, installation and testing of underfloor services and ducts, and laying of thermal insulation.		
Thermal insulation boards should be tightly butted together to maintain continuity and conform to building regulations at time of initial notice accepted.		