# BEST PRACTICE GUIDES <br> <br> SECTION 5 <br> <br> SECTION 5 FIRST FIX FIRST FIX OPERATIONS 

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NHBC
PRIDE IN THE JOB AWARDS


Our series of Best Practice Guides will 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 44 marking lines split across 9 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 4 indicates compliance with NHBC Standards and with Building Regulations. A mark of 5 indicates extra attention to detail over and above compliance standards. A mark of 6 would indicate that much of what the judges have seen cannot be improved upon. A mark less than 4 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 5 FIRST FIX OPERATIONS

## WINDOW AND DOOR FRAMES

FLOOR DECKING STAIRS AND SOUNDPROOFING
SERVICES - ELECTRICAL
SERVICES - PLUMBING
SERVICES - VENTILATION
NON-LOAD BEARING AND COMPARTMENT WALLS
PLASTER AND DRY LINING
FIRESTOPPING (FIRST FIX)
Looking at a property at first fix stage is probably one of the best opportunities to see many aspects of the build before it all gets covered up - it's the skeleton of the home before boarding and painting takes place.

This section covers those construction processes which would normally be available at this time. Bear in mind that many aspects of the quality of the home when it is finished are fixed at this stage - for example spacing of electric sockets and switches.


## SECTION 5 - FIRST FIX OPERATIONS

## WINDOW AND DOOR FRAMES

Images 1 and 2: The judges will look at the correct installation of the frames including sufficient fixings to secure the perimeter sides and the heads. The installation of external windows and doors should be complete to provide a watertight shell before other first fix operations commence. Attention should be given to obtaining a proper fit rather than placing an overreliance on mastic and expanding foam so we will be looking at the squareness of the reveals and tightness of fit of the windows and profiles.

NHBC requirements for fixings are maximum spacing of 600 mm and within 150 mm of the top and bottom (alternative locations and fixings are acceptable where they provide the same structural stability). The fixings in photo 107 clearly exceed the dimensions along the reveal, though it is not clear if there are any fixings across the head of the door.
Note how 'snug' the fit is of the door sitting within the masonry structural opening, it's a good uniform fit with no excessive gaps, a compliment to good setting out and building by the bricklayers; this would earn at least a 5 from the judges - possibly a 6 if this workmanship was consistent around the rest of the plots.
In image 2 the fixings are good, but there is a question mark over how far apart they are. The blockwork reveal is not as even and the silicone sealant is a bit untidy. This would score a 4 at best - if the fixings are too far apart then this would be a 3 .

Fire-resistant doors and frames should be fitted correctly to ensure adequate means of escape and to ensure that no excessive gaps are present between the frame lining at the door reveal.

Particular care in aligning, spacing and fixing of windows to complement subframes. Consistent and even sealing at the perimeters of the windows and doors. Here, further consideration of the application of protection as described in Section 9 (protection of work in progress) may be appropriate once installed and would be marked accordingly by the judges.
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## SECTION 5 - FIRST FIX OPERATIONS

## FLOOR DECKING STAIRS AND SOUNDPROOFING

Images 3 and 4: The correct thickness of boarding for the joist spacing is to be used, and the decking should be fixed sufficiently to prevent future squeaks and creaks. Correctly specified decking glue should be present through the whole of the tongue and groove joint presenting itself as shown in these two images - that is, glue just oozing on top to protect the joints from the weather, and from underneath to show that the whole joint has been filled with glue. Excessive use of glue would be marked down, but these two examples here would score at least a 5 .
All free edges of the decking over the joists should be supported, and any holes through the floor should properly formed with a core drill. The perimeter edges of the decking should be cut square and sealed.

Images 5 and 6: Stairs should be properly supported and comply with the Building Regulations regarding travel, particularly when serving more than one plot. The handrail arrangements and balustrade provision will also be judged.

Further Pride in the job marks can be attained by considering the alignment and solid fixing of stairs (for example using 'Spax' fixings or similar through a continuous batten into the masonry - as shown in image 5.), the quality of balustrade work and finishing of the stairs in relationship to the floor. The supporting of any winders on the flight of stairs will also be scrutinised - image 6 shows very good support to the kite winders and the first riser. Workmanship of this quality will attract at least a 5 from the judges.

Again, protection of work - which is considered under section 9 may also be relevant here. Consistency of the cleanliness and width of gaps between decking and walls prior to dry lining or plastering also ensure that the quality is right first time.

Images 7 and 8: Sound insulation of bathroom walls and SVPs needs to be done neatly. Here are two good examples. Note in image 7 that the site manager has made an effort to ensure that the SVP boxing is double boarded on all exposed sides - trapping a sheet of plasterboard as shown helps the boarder when dealing with the full boarding of that wall.
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## SECTION 5 - FIRST FIX OPERATIONS

## SERVICES - ELECTRICAL

Images 9, 10 and 11: The forming of holes, chases and notches and how cabling is routed and clipped through the structural floor members by the electrical trades will be marked by the judges. The work in these three images is generally ok - good clipping and good line. This would score a 5 depending on consistency through the plot.

The installation of the main services carcass, including the brackets, clips and other required supports, will be considered. Electrical wiring is to be installed in appropriate safe zones.

Considering the attention to detail and planning of wiring drops along with thoughtful and consistent setting out of sockets and switches, will help to enhance the overall internal appearance for the second fix. Care of installation into timber and metal frame studwork and at party-wall installations will be considered by the judges as will the consistency of clipping and support. Neatness of work is very important at this stage, despite most of this work being covered by plasterboard at a later date.
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## SECTION 5 - FIRST FIX OPERATIONS

## SERVICES - PLUMBING

Images 12, 13 and 14: The forming of holes, chases and notches through the structural floor members by the plumbing trades will be scrutinised. The installation of the main services carcass, including the brackets, clips and other required supports will also be considered. The protective wrapping of pipes (next to cementitious materials etc) and isolation of pipes from other pipes and materials, should be appropriately considered and carried out.

Attention to detail and consistency of installation is important with particular thought given to separation of pipes, joists and masonry where they pass through to prevent noise due to differential or thermal movement in the finished home. Water and waste transfer through soil and vent pipes and their associated branch pipes continue to be a major headache on occupied homes.

Judges will look for temporary sealing of open-ended pipes to prevent debris and wet plaster from entering during the remainder of the build process. Temporary protection of radiator loops which might be trodden on or otherwise damaged should be implemented. Again, overall neatness of work is important in demonstrating trades have a good understanding of what the site manager requires of them.
Image 15: Here is one example of a site manager who has used a template for the pipework to the hot water cylinder. Interestingly, because of challenges in getting the tank in place at second fix, decorating and fitting skirting, this tank is installed at first fix after the walls. Provided it is all protected, this is fine and would attract the best attention of the judges for high marks.
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## SECTION 5 - FIRST FIX OPERATIONS

## SERVICES - VENTILATION

Images 16, 17 and 18: The installation of brackets, hangers and other required supports to the ventilation ducting will be judged. If ducting passes through the cold roof space, appropriate insulation is to be fitted at time of installation. Inspection access openings need to be well planned and installed.

Rigid duct is preferable to flexible, but where flexible duct is used, it should be restricted in length to ensure that the airflow resistance does not prevent the designed ventilation rate from being achieved. Where ductwork passes through an external wall, it should be positioned to slope slightly outwards to prevent water entering the building. Changes in direction of rigid ducting and the avoidance of sagging of flexible ducts are to be within acceptable limits. You should also consider that bends in ducting (either rigid or flexible) alter the displacement calculations of the extractor fan.

Higher marks will be given for neatness and careful routing of ductwork to the outside environment. Careful coring of holes in external walls, with evidence of planning and precautions, to avoid penetration of cavity trays and spalling of brick faces would also gain marks. Images 16 and 18 in the view of the judges would score a 6.
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## SECTION 5 - FIRST FIX OPERATIONS

## NON LOAD-BEARING AND COMPARTMENT WALLS

Images 19, 20, 21, 22 and 23: The judges will assess blockwork, metal or timber construction of internal walls. The fixings and overall stability are the main criteria. Installation of additional sound insulation within bathroom/toilet walls will be judged. The fixing of the soleplate to the decking will be scrutinised as will the formation of deflection heads between non load bearing walls and soffits which must be correct.
Provision of appropriate DPC material between timber or metal partitions and the ground floor is an important consideration.

Occasinally studwork is set out at 45 degrees to adjacent walls, which can leave an awkward gap and unsupported plasterboard. Images 21 and 22 show how this has been overcome. Detailing like this would contribute to a high mark for this section.

In wet months where the blockwork may still be damp, appropriate protection of timber studwork (as shown in image 19) will be viewed favourably.

Extra timber noggins or dwangs should be installed adjacent to the side of the stairs to catch any plasterboard edges and provide a more robust fixing in a high traffic area. The spacing of studs around tiled rooms (or rooms that may become tiled in the future) should be at 450 mm centres to cater for the extra weight.

Excellent attention to detail of these performance standards will gain higher marks.
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## PLASTER AND DRY LINING

Images 24, 25 and 26: One of the basics to consider is that dry lining/plaster boarding should not be started until the building is substantially weatherproofed and watertight. The judges' marking will review the correct number and spacing of screw fixings to the boards, the quality of cutting for openings around sockets, switches and other areas as well as the gap sealing of cut edges.
Over-screwing of boards should be avoided with the fixing finishing just below the surface of the board and not tear through the paper. You should check plumb and squareness to corners, margins, recesses and projections, including pipe boxing

The flatness of walls and ceilings are important. Are the correct boards being used in their correct locations e.g. Soundblock, Thermal board and moisture boards? Table 5 in Chapter 9.2 of NHBC Standards should be consulted as it outlines the plasterboard thickness and the maximum spacings for support.

Extra marks are on offer for:

- accuracy and consistency in fixing boards to studs and joists
- staggering of cut boards over doorways
- care of cuts around sockets and where boards meet other elements
- the solid dabbing of boards, where applicable.
- consistent care taken in the formation of square boxing and reveals to assist
following trades
- consistency of screw fixings to dry lining - spacing and distance from edge of boards.

Image 24 shows excellent attention to detail in respect of the cut of the boards and evenness of fixing. Image 25 shows exemplary installation and fixing of plasterboard to the underside of an open staircase. You can clearly see the precision and care taken in the plasterboard cutting and fixings, indicating accuracy and pride in work, it can't be improved. Not only is this excellent plasterboard workmanship, it also makes the plasterer's task much easier to strike a sharp top-quality plastered finish. Workmanship like this would score a 6 . With image 26, whilst it all looks good and the dabs evenly applied, there might be a query over how close to the ceiling that top row of dabs is placed; it's important to ensure that the dabs for the wall boards do not interfere with the ceiling boards as that has been known as a factor in causing cracking sounds. It is recommended that the dabs are kept 100 mm down from the ceiling line.
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## SECTION 5 - FIRST FIX OPERATIONS

## FIRESTOPPING (FIRST FIX)

Image 27: Fire separation between compartments, protected routes and protected shafts should meet the performance requirements necessary for the building. There is a greater focus right across the industry for fire stopping and fire barriers to be excellent in their installation. The fire stopping you see in image 27 has been completed by a specialist subcontractor, with a sprinkler system and wiring within a protected zone. Whilst the fire stopping has been installed by a 'specialist', a good site manager will check the completed works to ensure it complies. The work here is adequate and would score a 4.

The record keeping for building owners is of paramount importance - this is another opportunity for site mangers to demonstrate their leadership skills, technical abilities and ability to influence the quality on site.

There should be no compromising over the installation of fire proofing. On many occasions NHBC has come across specialist fire-stopping works that fall some way below the required standard and don't comply with Building Regulations. Be sure to complete your supervisory checks, getting fire stopping right is of utmost importance. The judges will give further consideration to any checking systems employed as well as the neatness of installation.
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## 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
- leadership
- attention to detail
- interpretation
- technical expertise
- 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.

