

# BEST PRACTICE GUIDES

## MULTI-STOREY APPENDIX



**PRIDE IN  
THE JOB  
AWARDS**



# BEST PRACTICE GUIDES

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 43 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.

## MULTI-STOREY APPENDIX

FOUNDATIONS

BASEMENTS AND PODIUM DECKS

M & E AND PLUMBING SERVICES

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FLAT ROOFS

CLADDING

BALCONIES - FIXING AND WEATHER PROOFING

This appendix has been produced to provide site teams on multi-storey developments with guidance on what judges look for when marking developments in the multi-storey category for Pride in the Job.

We have taken 8 build areas within multi-storey construction and provided photographs and commentary. These build stages differ considerably from low-rise residential housing and we hope this guide provides you with some tips to enhance your chances of winning a Pride in the Job award.

## FOUNDATIONS



## FOUNDATIONS



## MULTI-STOREY APPENDIX

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### FOUNDATIONS

**Foundations - Will be marked under Pride in the Job section 1 'Foundations'.**

The site manager should be able to demonstrate an awareness and understanding of the design, the potential for changes in circumstances encountered during the dig and the knowledge to take action to accommodate these changes which are likely to be either ground conditions, contamination, or poor pile installation. Although normally this work is carried out by specialist sub-contractors it still needs to be managed well. A particular knowledge and interest exhibited by the site manager demonstrates the understanding and ability to control and check these complex works.

As the foundation will generally be expected to carry far greater loads than for traditional construction, the formation should be accurate. It should be free from debris or loose material and clear of excess water before the concrete is poured. The relative position of any piles to the foundation pad or ground beam must be checked and installation of pile reinforcement carried out correctly. Pile installation logs and test results should be checked, queried as necessary and be available on request. The pile heads should be trimmed to expose sound concrete with the correct penetration of 50mm to 75mm into the pad or beam. Pile reinforcement should protrude to provide adequate laps into ground beam/pad reinforcement. Formwork should be appropriate for the conditions (consider strength, size, materials, positioning of stop-ends etc). Quality and care taken with dig and support of trenches, accuracy and alignment of dig and pile placement, fixing of heave precautions to avoid gaps etc.

**Image 1** - displays a tidy pile alignment and preparation, demonstrating care and attention, health and safety considered, safe and tidy working area and protection to re-inforcement.

**Image 2** - good planning and organisation go hand in hand with well executed works when the culture of good practices are being delivered. Care taken to batter back, guarding and safe access.

**Image 3** - neat and tidy, well supported shuttering, correct application of spacers for cover, clean and ready for concrete.

**Image 4** - shows good attention to detail of the 'cellcore' ground beam heave board. Note that there are no gaps where the cellcore abuts the pile head, it is a good tight fit. This is an area we look at to ensure good installation. Marks will be gained if this standard of workmanship is presented consistently across the site.

All of these photos demonstrate the extra attention to detail that the judges look for to justify a PIJ score of 5 or even 6 if these standards are consistent across the site.

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## BASEMENTS AND PODIUM DECKS



## BASEMENTS AND PODIUM DECKS



BASEMENTS AND PODIUM DECKS

Basements and podium decks will be marked under Pride in the Job section 2 'water proofing and ventilation' and Section 4 'flat roof coverings'. Refer to NHBC Standards Chapter 5.4 'Water proofing of basements and other below ground structures' and Standards Chapter 7.1 'Flat roofs and balconies'.

For basement construction to be successful it is vital that works are carried out under strict supervision. Design and specification information should be available on site listing relevant specialist subcontractors and/or suppliers and include the following information: a full set of current drawings; details of joints, junctions and service penetrations; an installation method statement detailing the sequence of work; a ground condition report; third-party certificates.

Water-proofing systems should be designed by a water-proofing design specialist with a robust QA process and records in place. Construction below ground level or at basement level is likely to be of masonry, reinforced concrete or a combination of both. Structural steel elements may also be present.

For masonry, fully filled 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 if required. For reinforced concrete elements, consider reinforcement placement, cover to reinforcement, care taken in the concrete pour, quality of formed concrete and neatness of joints at kickers, water bars and junctions. Smoothness of concrete finish, especially if it is to remain unclad will gain extra marks. Absence of staining to walls indicating leakages. The method of providing for

service entries through the walls should be considered. In steel columns, correct use of holding down bolts and packing pieces is essential.

DPCs must be correctly located when rafts are used. Tanking must be applied in accordance with the manufacturers' instructions with particular attention given to laps, corners and fillets. Tanking should always lap with other DPCs, trays and other membranes to form a continuous envelope. Penetrations through the water proofing should be avoided where possible. Where penetrations cannot be avoided, the design should detail the method of water proofing to ensure that it is water tight and durable. Cleanliness and preparation of construction joints, water bars and the application of tanking to basement walls and the interface with superstructure are particularly important and good work in these areas will be rewarded.

**Image 5 and 6** - these images show effective planning of temporary works. Look at the perfectly struck and level finish to the top of the wall.

**Image 7** - this basement area image shows unclad concrete soffits and columns demonstrating good shuttering and concrete workmanship. The applied finishes to the contiguous perimeter walls provide for a well presented basement area.

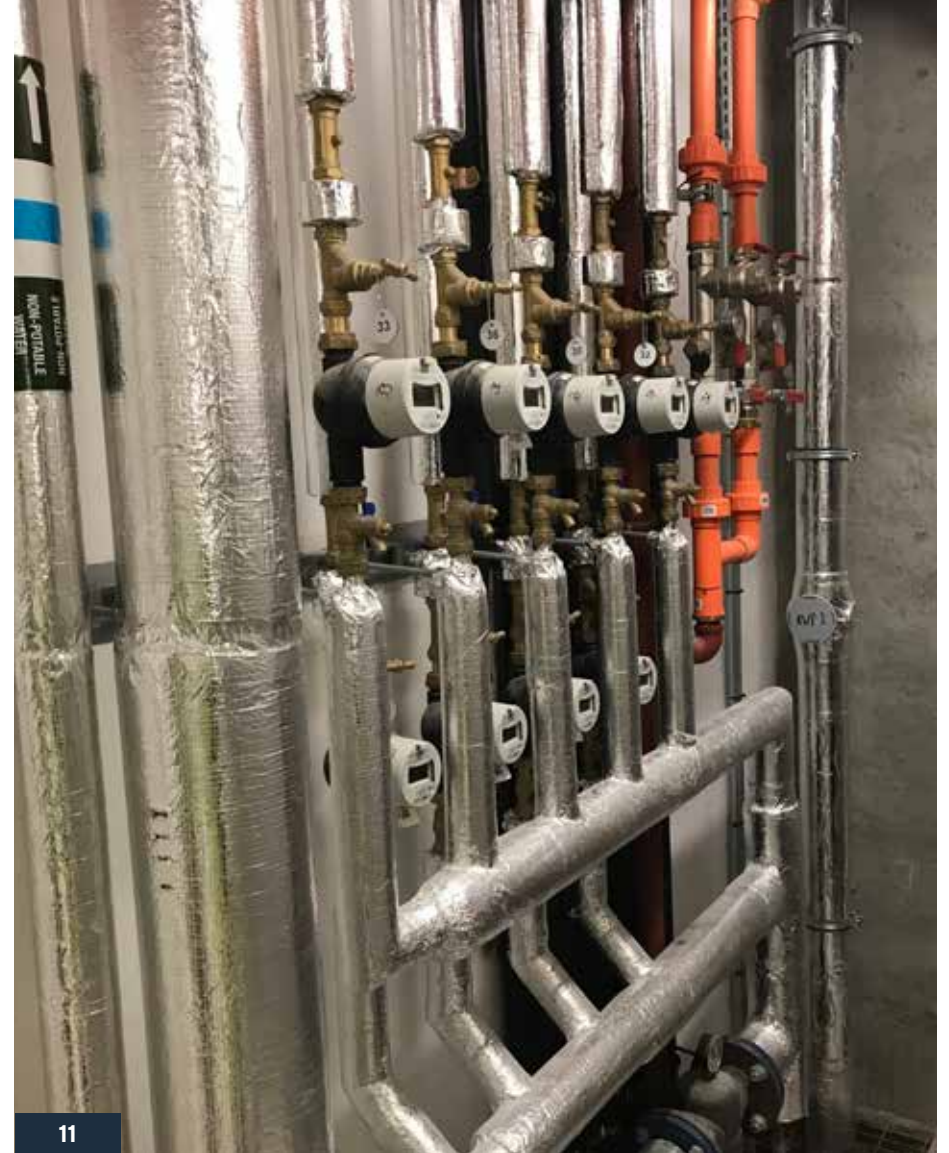
**Image 8** - this water-proofing product has been applied to an approved detail, by competent specialist installers. You can see that neat laps and bonding and this system has been tested post -installation.

**Image 9** - demonstrates care and safe storage of materials and components for re-inforced concrete work.

These photos are examples of high quality workmanship and well worth a mark of 5- possibly a 6 if consistent at this level across the site. The judges will be looking to see if the work areas have been suitably prepared and that they are clean and safe, works are completed in accordance with design and manufacturer installation guidance.











## MULTI-STOREY APPENDIX

### M & E AND PLUMBING SERVICES

This section will be marked under *Pride in the Job Section 5 'Services Electrical, Services Plumbing and Services Ventilation'*. Refer to *NHBC Standards Chapter 8 'Services'*.

The forming of holes for SVPs through the structural floors must be properly sealed to enable the sound and fire resistance to be fully maintained. Most services will be routed in vertical risers and then horizontally in either the floor void or fixed to the underside of the soffit. Service supports to cabling or pipework including clips should be considered under this heading. Attention to detail, setting out and planning of drops, careful planning of fire stopping for service penetrations through compartment walls are critical. Thoughtful setting out of sockets and switches at first fix stage will help to enhance the overall internal appearance for second fix. Judges will also look for careful installation of timber and metal frame studwork and at party wall installations including sufficiency of clipping including non-combustible clips, support, pattresses and the provision of robust coverings to protect end users.

Most services will be routed in vertical ducts and then horizontally within the floor space. Mechanical ventilation and heat recovery systems ducting should be installed as per design in line with manufacturers' installation guidance. Designs and specifications should be issued to site supervisors, relevant specialist subcontractors and suppliers and include the following information: location of all ductworks runs; the fan unit and controls; type, size and position of ducts and terminals; insulation of ducting where required to prevent condensation; type and spacing of clips and

fixings. If required by the design, the location, type and of firestops and sound dampers to be used.

Temporary sealing of open-ended pipes to prevent damage during the build process. Temporary protection of radiator loops which might be trodden on or otherwise damaged.

**Image 10** - shows plasterboard 'baffle box' detail to socket boxes. This would score a 4 as it meets the requirements. To gain additional marks more care would need to be taken around the sealing of the joints.

**Images 11, 12 and 13** - good planning and setting out to align pipework and valves in a consistent method, neatly jointed and applied pipe insulation, identification for ease of maintenance. If you are producing works to a similar quality as displayed in these photos you will be rewarded with a score of 6.

**Image 14** - good organisation and cable management and support, making best use of confined space to accommodate all services. Extra attention to detail clear with the care and attention shown in routing of the wiring and also clipping and positioning of the ductwork. This would score at least a 5 and possibly a 6.

**Image 15** - pre-planning and forward thinking about providing a neat crisp finish in a confined space.

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## STRUCTURAL FRAMING



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## FIRE-STOPPING CLADDING



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### FIRE-STOPPING CLADDING

Will be marked under Pride in the Job section 3, ' Fire stopping (Superstructure) '. Please refer to NHBC Standards Chapter 6. 'Curtain walling and cladding'.

The correct installation of fire stopping materials to the cladding system are important to achieve their required performance standards. We are looking for evidence of care taken to ensure that products are installed accurately and precisely to meet their performance capabilities. It is vital that these life-saving elements to the frame are correctly installed and checked under strict supervision. A carefully designed checking and signing-off system implemented on site to ensure accurate installation has followed design drawings conveys excellent quality control and management of this high-risk area. Due to speed of some build programmes a catalogued photographic record of fire stopping installation and fixing prior to covering up is critical.

A high standard of detailing, accuracy, alignment and checking of fire stopping installation increases confidence in the safety and quality of the building. Has the site manager taken the time to understand the systems being used so correct application is more likely?

Materials used for cavity barriers and fire stops shall be capable of producing adequate resistance to fire and smoke. Systems incorporating proprietary intumescent materials should follow the guidance provided by the Intumescent Fire Seals Association (IFSA) or the Association for Specialist Fire Protection (ASFP).

**Images 22, 23, 24, 25, 26 and 27** - designers must take care to ensure correct size of cavity barriers are specified to tightly close cavities or, in instances where ventilation is required, (image 27) that the correct dimension of cavity barrier have been specified to meet the requirements. The responsibility then sits with the site team and installers to supervise and manage the installation the cavity barriers. Judges will look to see neatly installed barriers, care taken to ensure continuity where barriers cross over cavity trays and that the correct cavity trays have been installed. Catalogued photographic records of workmanship prior to covering up are now becoming common practice on site, as is engaging the services of a specialised fire engineering company to address the fire stopping as well as maintaining an online database of records.

These photos show good practice which would warrant Pride in the Job scores of 5 or 6.

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## FLAT ROOFS



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## MULTI-STOREY APPENDIX

### FLAT ROOFS

Roofs will be marked under **Pride in the Job Section 4**. Please refer to **NHBC Standards Chapter 7.1 'Flat roofs and balconies'**.

All types of roof construction - timber, profiled metal or concrete - are included in the score line. Design and specification information should be issued to site supervisors, relevant specialist subcontractors and suppliers. A thorough understanding by the site manager of any specialist weather-proofing system being used is essential to achieve a successful delivery of the flat roof system being constructed. In addition to maintaining the weather-proofing system at upstands and junctions, flashing has a major impact on the visual appearance. Cleanliness and dressing are important considerations. It is essential that the water-proofing layer is protected from storage of heavy or hazardous materials and tested upon completion.

The installation of thermal insulation, vapour control and ventilation shall ensure satisfactory performance, and prevent the formation of condensation which could adversely affect the construction. The structure and receiving surface should be checked and approved by the water-proofing contractor and weather conditions should be suitable for installing water proofing. Flat roof coverings are likely to be proprietary systems, however the fixing of any coverings is a highly important item. The manufacturer's details and guidance must be strictly adhered to, to prevent leaks or wind damage. If a green roof is being installed it should be clearly defined by the supplier as a completely independent third-party certified system. A green roof should be installed by a contractor trained and approved by the system supplier. Drainage arrangements should be effective and have a suitable overflow. The building should not flood where an outlet or downpipe is blocked. Provision should be made for adequate gulleys to avoid pooling water on any flat roof.

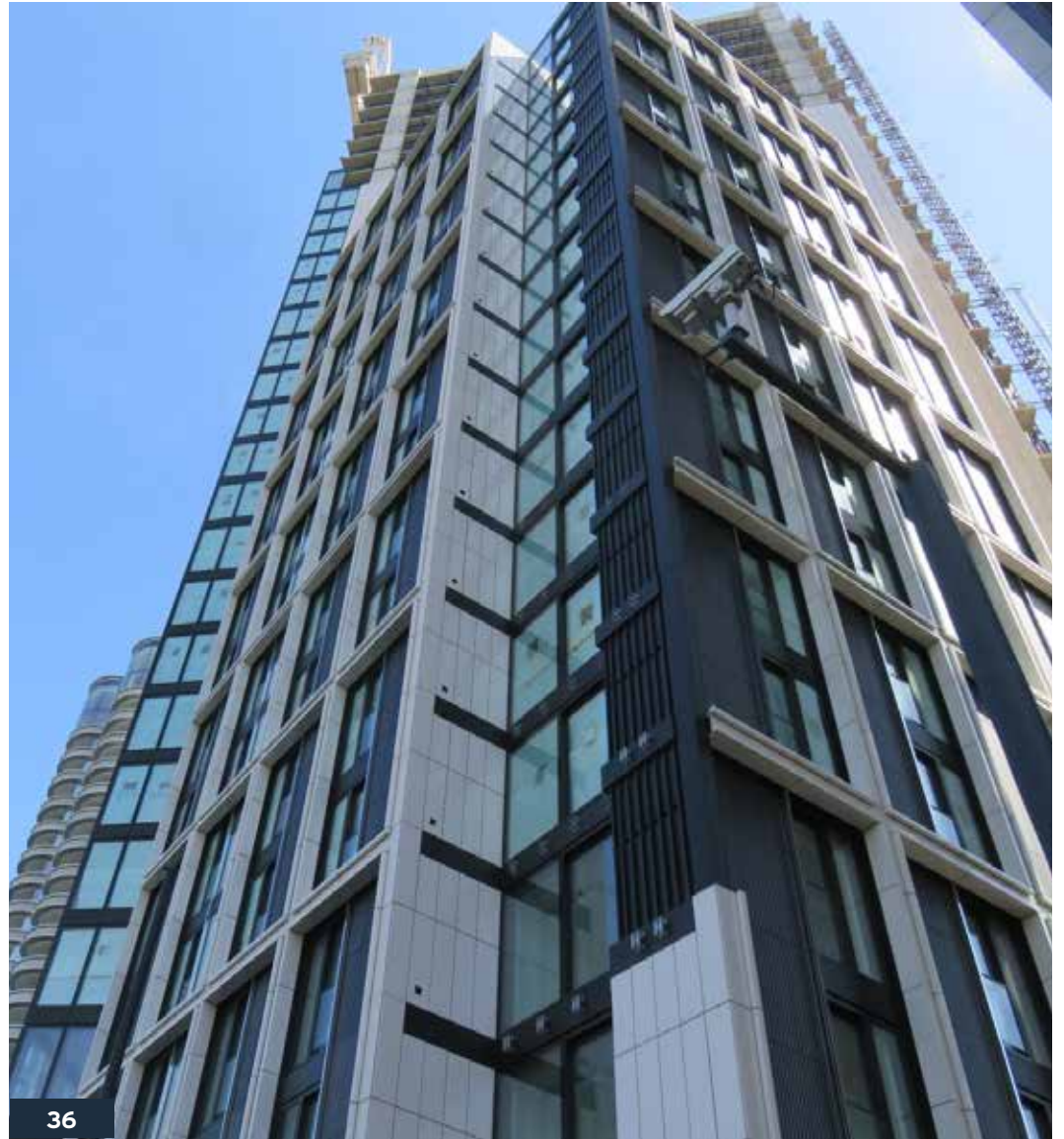
**Image 28** - note the attention to detail on this flat roof membrane delivering quality workmanship - pride.

**Images 29, 30, 31, and 32** - care taken to ensure integrity of water-proofing membrane where services and projections finish above the flat roof.

**Images 33 & 34** - care to implement the design is essential with flat roofs with a pre-water-proofing survey, ensuring adequate falls to outlets. Materials applied by competent trades are installed to manufacturers' guidance and design drawing details. Extra attention should be applied to the parapet detail as this area can include both

water-proofing and fire-stopping details as well as the fixing of the parapet coping to ensure a quality finish.

# CLADDING





## CLADDING



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## MULTI-STOREY APPENDIX

### CLADDING

Will be marked under Pride in the Job section 3 ‘External envelope’. Please refer to NHBC Standards Chapter 6.9 ‘Curtain walling and cladding’.

All types of cladding system will be considered under this heading - facing brickwork, curtain walling, rainscreen cladding, insulated render and brick slip cladding. The site manager should have a thorough understanding of the cladding system being installed and be able to refer to a full set of drawings, fixing schedules, specific details of all interfaces including backing walls, EPDMs, all installed in strict accordance with manufacturers’ specifications. It is imperative that insulation is correctly specified, securely fixed and neatly installed.

Curtain walling and cladding systems shall be adequately tested, certified, and designed in accordance with appropriate standards. Where applicable, certification should be in accordance with the CWCT Standard for systemised building envelopes. Correctly positioned and formed movement joints including sealant should also be marked under this heading. External lintels and shelf angles, including their protection and fixings should be considered as part of the external fabric. Pre-formed feature panels within curtain walling and in particular their fixings should also be considered under this heading. The installation of curtain walling should precisely follow manufacturer’s instructions and requirements of the BBA, BRE or other UKAS accredited certification body. The visual impact of the construction would also enhance the score. Quality execution of setting out and jointing, (particularly at interfaces and at lintels, windows and floor structures. Early anticipation of architectural problems indicates a heightened level of skill, even if most of the work is being carried out by specialists.

**Images 35, 36 and 37** - show good sequencing of work and material logistics. Attention to details and robust QA processes to deliver a safe, weather-tight façade.

**Images 38, 39, 40 and 41** - understanding the design and carefully setting out of cladding systems is vital in ensuring successful delivery of the finished product. Additional care is needed on hybrid systems (image 40) to ensure interfaces are well detailed and weather tight, supported by testing.

The images displayed would warrant a score of 5 or 6.

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## BALCONIES - FIXING AND WEATHER PROOFING



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**BALCONIES - FIXING AND WEATHER PROOFING**

Will be marked under Pride in the Job Section 3 'Balconies including fixings and weather proofing'. Please refer to NHBC Standards Chapter 7.1.

Balconies must be accurately aligned, installed, and correctly fixed back to the main frame. Early consideration to ensure robust fixing, thermal and fire resistance at the interface with the main frame and weather proofing at the threshold and across the entire balcony footprint. Areas to focus on include installation of trays at abutments and linking of cavity trays with the water-proofing membrane. Careful consideration of the maintenance of balcony drainage and overflow systems, including the balcony guarding. When the judges look at and score finished decking, they are looking at how it has been set out, neatness of cuts and fixings.

Care taken to make these distinctive structures look aesthetically pleasing, whatever the design.

**Images 49 and 50** - balconies can be pre-fabricated or cast in-situ, but all require attention to detail to be weather tight and adequately drained.

**Images 42, 43, 44 and 45** - good interfacing with façade membranes and around openings is essential, with well detailed drainage outlets and overflows.

**Images 46, 47 and 48** - good structural design is essential for adequate balcony support, as well as attention to weather-proofing and fire-stopping details. Three images demonstrate above average quality of installation when you look at the neatness and attention to detail. In these images a score of 5 or even 6 would be justified.

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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
- 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.