

Unit 15: Building Surveying in Construction

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| Unit code: | H/600/0456 |
| QCF Level 3: | BTEC Nationals |
| Credit value: | 10 |
| Guided learning hours: | 60 |

● Aim and purpose

This unit aims to give learners a knowledge of building surveyors and survey work and the skills required for performing building surveys and producing survey reports.

● Unit introduction

Building surveys are used to identify the aspects of a building that need attention, maintenance or repair before purchase, and form part of the financial negotiations between parties to a contract. They are also used by building owners to identify maintenance needs.

Learners will use a wide range of surveying equipment from a tape for measured surveys to CCTV drainage cameras and boroscopes to identify the particular building defects being examined.

Learners will gain a good understanding of construction methods, modern and traditional, and building defects and be able to identify the approximate age of a building. They will develop essential skills including the ability to collect data, measure accurately, take photographs, use electronic surveying devices, produce drawings and investigate thoroughly the causes of building defects. These skills will enable learners to produce a clear written report of the findings of a survey. Learners will be able to suggest methods of rectifying any defects found. The survey includes the building structure together with the electrical, plumbing and other services within the property being surveyed. Learners will gain a good knowledge of health and safety in relation to visiting sites.

The unit will give learners an understanding of the role and responsibilities of building surveyors, including their interactions with other professionals. They will be able to apply their understanding to carry out building surveys, and produce well-structured survey reports and associated schedules for low-rise domestic and commercial buildings.

● Learning outcomes

On completion of this unit a learner should:

- 1 Know the role of the building surveyor and the route to professional status
- 2 Know the equipment, techniques and procedures involved in building surveys
- 3 Be able to carry out building surveys
- 4 Be able to produce survey reports and schedules of maintenance and repair.

Unit content

1 Know the role of the building surveyor and the route to professional status

Role of the building surveyor: measured, dilapidation and condition surveys; survey reports; schedules of maintenance and repair

Interaction with other members of the building team: eg client, building owner, architect, architectural technologist, quantity surveyor, structural engineer, clerk of works, main and sub-contractors, local authorities, health and safety executive

Route to professional status: eg secondary education, A levels, National Certificate/Diploma, Higher National Certificate/Diploma, honours degree accredited by professional body, professional membership of the Royal Institution of Chartered Surveyors and/or the Chartered Institute of Building

2 Know the equipment, techniques and procedures involved in building surveys

Building surveys: types; purposes; equipment; techniques and procedures; legislative considerations; health, safety and welfare issues

Types of building survey: measured surveys; bank or building society surveys; house buyer reports and valuations; dilapidation and condition surveys

Purposes of building surveys: alteration; lenders; purchasers; maintenance; repair; conservation; assessment of dangerous structures; structural appraisal; building condition

Equipment: steel tape; fibre tape; folding rule; electronic distance measurement device; moisture meter; camera; inspection chamber keys; binoculars; boroscope; thermal imaging equipment; sectional ladder; spirit level; electric torch; optical levels; basic land surveying equipment; personal protective equipment

Procedures and techniques: preliminary surveys; site location; building location; elemental surveys (external, internal, building services, external works); legal considerations; health, safety and welfare

Legislative considerations: contractual obligations; legal constraints

Health, safety and welfare issues: pre-visit risk assessments to cover use of access requirements, potential risk on derelict sites, or work in enclosed areas

3 Be able to carry out building surveys

Building surveys: measured survey; dilapidation survey; condition survey; use of checklists

Measured survey: surveying methods; equipment; low-rise domestic buildings; low-rise commercial buildings

Dilapidation survey: surveying methods; equipment; low-rise domestic buildings; low-rise commercial buildings

Condition survey: surveying methods; equipment; low-rise domestic buildings; low-rise commercial buildings

Checklists for surveys: standardised checklists; coverage of all aspects

4 Be able to produce survey reports and schedules of maintenance and repair

Survey report: approximate age of building; construction method used; defects or potential causes of defects eg wet rot, dry rot, worm infestation, lintel failure, defective flashings and valleys, leaching, proximity of trees, blocked ventilation, damp, settlement, subsidence, concrete reinforcement defects

Maintenance and repair schedules: planned maintenance; emergency maintenance; repair

Assessment and grading criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit. The assessment criteria for a pass grade describe the level of achievement required to pass this unit.

| Assessment and grading criteria | | |
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| To achieve a pass grade the evidence must show that the learner is able to: | To achieve a merit grade the evidence must show that, in addition to the pass criteria, the learner is able to: | To achieve a distinction grade the evidence must show that, in addition to the pass and merit criteria, the learner is able to: |
| P1 describe the role of the building surveyor [IE2, IE3, IE4] | M1 prepare a typical job description for a building surveyor | |
| P2 describe how the building surveyor interacts with other members of the building team [IE1, IE2, IE4, IE6] | | |
| P3 outline the qualification route to professional status [IE1, IE2, IE4, IE6] | | |
| P4 describe the procedures and techniques used in the performance of building surveys [IE1, IE2, IE4, IE6] | M2 differentiate between the equipment, techniques and processes used in two different kinds of building survey | D1 evaluate the contractual obligations and legal constraints applicable to a building survey |
| P5 identify the equipment used to perform building surveys [IE1, IE2, IE4, IE6] | | |
| P6 identify legislation relevant to building surveys [IE1, IE2, IE4, IE6, CT2, RL3, SM2] | | |
| P7 describe health, safety and welfare issues associated with building surveys [IE1, IE2, IE4, IE6, CT2, RL3, SM2] | | |
| P8 carry out a simple measured survey [IE4, IE6, RL3, RL6, TW1, TW6, SM3, EP3] | | |

| Assessment and grading criteria | | |
|---|---|---|
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| P9 carry out a dilapidation survey [IE4, IE6, RL3, RL6, TW1, TW6, SM3, EP3] | M3 relate the nature of the data collected to the type of building survey being carried out. | D2 justify the recommendations made in two different types of building survey reports. |
| P10 carry out a condition survey [IE4, IE6, RL3, RL6, TW1, TW6, SM3, EP3] | | |
| P11 compile data collected during building surveys [IE4, IE6, RL3, RL6, TW1, TW6, SM3, EP3] | | |
| P12 record and present survey data in appropriate formats [IE4, IE6, RL3, RL6, TW1, TW6, SM3, EP3] | | |
| P13 prepare maintenance and repair schedules. [IE4, IE6, RL3, RL6, TW1, TW6, SM3, EP3] | | |

PLTS: This summary references where applicable, in the square brackets, the elements of the personal, learning and thinking skills applicable in the pass criteria. It identifies opportunities for learners to demonstrate effective application of the referenced elements of the skills.

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| Key | IE – independent enquirers CT – creative thinkers | RL – reflective learners TW – team workers | SM – self-managers EP – effective participators |
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Essential guidance for tutors

Delivery

Tutors delivering this unit have opportunities to use a wide range of techniques. Lectures, discussions, seminar presentations, site visits, supervised practicals, research using internet and/or library resources and use of personal and/or industrial experience are all suitable. Delivery should stimulate, motivate, educate and enthuse learners. Visiting expert speakers could add to the relevance of the subject for learners.

The role of the building surveyor and their interaction with other members of the building team should be explored at an early stage in delivery of the unit. Delivery should encompass the purpose of building surveys within the context of building maintenance, repair, refurbishment and conversion. The principal areas of surveying practice should be addressed focusing on procedures, required equipment, health and safety implications and the preparation of reports and schedules.

A significant proportion of the unit involves completing practical building surveys and preparing reports and schedules in a suitable format. This involves the selection of, and access to, suitable premises which learners can survey and the provision of appropriate surveying equipment. Binoculars, tape measures and a digital camera are the minimum requirements.

Overall delivery of the unit should be supported by the use of case studies and visual media, where appropriate, including photographs, videos, DVDs and drawings to demonstrate surveying methods and applications.

Group activities are permissible, but tutors will need to ensure that individual learners have equal experiential and assessment opportunities.

Health, safety and welfare issues are paramount and should be reinforced through close supervision of all workshops and activity areas, and risk assessments must be undertaken before practical activities are taken. Centres are advised to read the *Delivery approach* section in the specification, and *Annexe H: Provision and Use of Work Equipment Regulations 1998 (PUWER)*.

Outline learning plan

The outline learning plan has been included in this unit as guidance and can be used in conjunction with the programme of suggested assignments.

The outline learning plan demonstrates one way in planning the delivery and assessment of this unit.

| Topic and suggested assignments/activities and/assessment |
|---|
| Tutor introduction |
| The role of the building surveyors |
| Whole-class, tutor-led session on the role of the building surveyor. Individual learner research into the interaction between the building surveyor and other team members – followed up by tutor-led discussion and compilation of organisational charts that clearly show interactions |
| Assignment 1: The Role of the Building Surveyor |
| Building surveying procedures and equipment |

Topic and suggested assignments/activities and/assessment

Whole-class tutor-led session on the various types of building survey and the purpose of each

Small-group work, ideally four groups of equal size. Each group to research and collate one topic area and make a short presentation to the whole-class with supporting handout. Q&A session to follow, guided by the tutor. Tutor to issue comprehensive handouts on each topic **after** the small group presentations. The four topics should be (a) equipment, (b) procedures and techniques, (c) legislation and (d) health, safety and welfare – all in terms of building surveying

Assignment 2: Building Surveying Procedures and Equipment

Carrying out a building survey

Tutor-led session, supported by audio-visual aids, on simple measured surveys

Learners to work in small groups to practise a measured survey – individual evidence required, some tutor guidance is acceptable

Tutor-led session, supported by audio-visual aids, on dilapidation surveys

Learners to work in small groups to practise a dilapidation survey – individual evidence required, some tutor guidance is acceptable

Tutor-led session, supported by audio-visual aids, on condition surveys

Learners to work in small groups to practise a condition survey – individual evidence required, some tutor guidance is acceptable

Producing a survey report

Learners to interpret given survey reports and schedules of maintenance and repair in terms of the data to be collated and the format to be used for each

Learners to work in small groups to compile and present data in survey reports and maintenance and repair schedules – individual evidence required, some tutor guidance is acceptable

Assignment 3: Building Surveys, Survey Reports and Maintenance Schedules

Review of unit and assignment feedback

Assessment

Evidence for this unit may be gathered from a variety of sources, including well-planned investigative assignments, case studies or reports of practical assignments.

There are many suitable forms of assessment that could be used, and tutors are encouraged to consider and adopt these where appropriate. Some example assessment approaches are suggested below. However, these are not intended to be prescriptive or restrictive, and are provided as an illustration of the alternative forms of assessment evidence that would be acceptable.

Some criteria could be assessed directly by the tutor during practical activities. If this approach is used then observation records or witness statements are suitable evidence. Guidance on their use is provided on the Edexcel website.

To achieve a pass grade learners must meet the 13 pass criteria listed in the grading grid.

For P1, learners must describe the roles and responsibilities of the building surveyor. This will require a clear understanding of the nature of building surveyor work.

For P2, learners must describe the other members of the building team the building surveyor interacts with and the nature of these interactions. This will require a clear understanding of building surveyor work and the wider team context which the surveyor functions within.

For P3, learners must outline the training and qualifications required if a trainee building surveyor is to progress to professional level. This requires a clear understanding of building surveyor work, and the education, training, development and experience that will need to be put in place.

For P4, learners must describe the procedures and techniques used to carry out each of the different type of building survey. This should be differentiated in terms of what kind of survey is being performed.

For P5, learners must identify the equipment used to perform each of the different types of building survey. This should be differentiated in terms of what kind of survey is being performed.

For P6, learners must identify the legislation appropriate to each of the different types of building survey. A detailed understanding of the legislation is not required.

For P7, learners must describe the health, safety and welfare issues associated with each of the different types of building survey. This should include the use of appropriate PPE.

For P8, learners need to perform a simple measured survey for a low-rise domestic or commercial building, either of traditional construction or modern construction. This will require access to appropriate case-study properties which could include the learners' own home. Should the latter be problematical, the centre will need to provide an alternative.

For P9, learners are required to perform a simple dilapidation survey for a low-rise domestic or commercial building, either of traditional or modern construction. This will require access to appropriate case study properties which could include learners' own homes. If this is problematical, the centre will need to provide an alternative.

For P10, learners must perform a simple condition survey for a low-rise domestic or commercial building, either of traditional or modern construction. This will require access to appropriate case study properties which could include learners' own homes. If this is problematical, the centre will need to provide an alternative.

For P11, learners must collect and compile survey data, during building surveys, using standard techniques, and record and present the data in appropriate formats. Evidence would likely be based on the surveys of case study properties used for P8, P9 and P10.

For P12, learners must record and present the data in appropriate formats. Learners must produce final measured, dilapidation and condition survey reports for a low-rise domestic or commercial building. Evidence would likely be based on the surveys of the case study property used for P5.

For P13, learners must prepare schedules of maintenance and repair including planned maintenance. Evidence could include standard schedule proforma and examples of completed maintenance and repair schedules.

To achieve a merit grade learners must meet all of the pass grade criteria and the three merit grade criteria.

For M1, learners are required to prepare a typical job description for a building surveyor. This should include an explanation of the functional interdependence of the surveyor and other team members.

For M2, learners are required to differentiate between the equipment, techniques and processes used in two different kinds of building survey.

For M3, learners must relate the nature of the data collected to the type of building survey being carried out. It is anticipated that the type of building surveys used to support the evidence will be the same as for M2.

To achieve a distinction grade learners must meet all of the pass and merit grade criteria and the two distinction grade criteria.

For D1, learners must evaluate the contractual obligations and legal constraints applicable to a building survey. Learners do not need to restrict themselves to the two forms of building survey used for M2 and M3. The evidence must evaluate the legislation used in terms of where it is used, what it is used for, who it affects and how it is generally used. There is no requirement for a detailed understanding of individual sections of the legislation.

For D2, learners must justify the recommendations made in two different types of building survey. It is anticipated that the type of building surveys used to support the evidence will be the same as for M2 and M3, although the use of suitably anonymised, professional reports would be good practice.

Programme of suggested assignments

The table below shows a programme of suggested assignments that cover the pass, merit and distinction criteria in the grading grid. This is for guidance and it is recommended that centres either write their own assignments or adapt any Edexcel assignments to meet local needs and resources.

| Criteria covered | Assignment title | Scenario | Assessment method |
|------------------------------------|--|--|--|
| P1, P2, P3, M1 | The Role of the Building Surveyor | As a training manager for a medium size company, you have been asked to produce an information pack for a young person starting their training as a building surveyor. | Pack to include details of job roles and responsibilities, organisational charts and a flow diagram showing how a building surveying trainee can progress to full professional status. |
| P4, P5, P6, P7, M2, D1 | Building Surveying Procedures and Equipment | As a trainee surveyor, you are asked to prepare for a variety of building surveys. | Report containing text, images, drawings and tables as appropriate. |
| P8, P9, P10, P11, P12, P13, M3, D2 | Building Surveys, Survey Reports and Maintenance Schedules | As a trainee surveyor, you are asked to carry out a variety of building surveys and compile reports and schedules from those surveys. | Pre-survey paperwork and completed checklists. Observation of performance and witness testimony. Schedules, survey reports, presentations. |

Links to National Occupational Standards, other BTEC units, other BTEC qualifications and other relevant units and qualifications

This unit forms part of the BTEC Construction and the Built Environment sector suite. This unit has particular links with the following unit titles in the Construction and the Built Environment suite:

| Level 1 | Level 2 | Level 3 |
|---------|--|--|
| | Exploring Health, Safety and Welfare in Construction | Health, Safety and Welfare in Construction and the Built Environment |
| | Construction Processes and Operations for Low-Rise Buildings | Construction Technology and Design in Construction and Civil Engineering |
| | Construction Methods and Techniques for Low-rise Buildings | Building Technology in Construction |

| Level 1 | Level 2 | Level 3 |
|---------|---------|--|
| | | Surveying in Construction and Civil Engineering |
| | | Mechanical and Electrical Services in Construction |

Essential resources

A suitable, safe property must be found in order for learners to undertake the various surveys. If a suitable property cannot be found, then parts of the centre could be used. The use of a scenario could also be considered.

Specialist equipment will be required to perform a range of building surveys including steel and fibre tape, folding rule, electronic distance measurement device, moisture meter, camera, inspection chamber keys, binoculars, boroscope, thermal imaging equipment, sectional ladder, spirit level, electric torch, optical levels, basic land surveying equipment and personal protective equipment. Samples of industry-standard documentation and completed condition surveys, as well as dilapidation and maintenance schedules, will prove useful.

All practical building surveys carry some element of risk, so close attention must be given to instruction in health, safety and welfare and, where applicable, supervision on site.

Employer engagement and vocational contexts

Support to enable centres to initiate and establish links to industry, and to networks arranging visits to industry and from property practitioners is given below:

- Learning and Skills Network – www.vocationallearning.org.uk
- National Education and Business Partnership Network – www.nebpn.org
- The Royal Institution of Chartered Surveyors – www.rics.org
- Work Experience/Workplace learning frameworks – Centre for Education and Industry (CEI University of Warwick) – www.warwick.ac.uk/wie/cei/

Indicative reading for learners

Textbooks

Dickinson P and Thornton N – *Cracking and Building Movement* (Royal Institute of Chartered Surveyors, 2004) ISBN 184219156X

Glover P – *Building Surveys, 6th Edition* (Butterworth-Heinemann, 2006) ISBN 0750681284

Hollis M – *Pocket Surveying Buildings, 2nd Edition* (Royal Institute of Chartered Surveyors Books, 2006) ISBN 1842192426

Hollis M – *Surveying Buildings, 5th Edition* (Royal Institute of Chartered Surveyors Books, 2005) ISBN 1842191926

Noy E and Douglas J – *Building Surveys and Reports, 3rd Edition* (Blackwell Science, 2005) ISBN 1405121475

Websites

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| www.nebpn.org | Institute for Education Business Excellence |
| www.rics.org | Royal Institute of Chartered Surveyors |
| www.vocationallearning.org.uk | Learning and Skills Improvement Service |

Delivery of personal, learning and thinking skills (PLTS)

The following table below identifies the personal, learning and thinking skills (PLTS) opportunities that have been included within the assessment criteria of this unit.

| Skill | When learners are ... |
|--------------------------------|--|
| Independent enquirers | exploring the role of the surveyor, researching the tools and qualifications required |
| Creative thinkers | designing own paperwork |
| Self-managers | organising themselves to carry out and write up surveys |
| Effective participators | preparing solutions to observed defects |
| Reflective learners | assessing own survey in the light of comparisons to others' work on the same building |
| Team workers | working together to carry out surveys and identifying, then proposing, practical solutions to building defects as a group. |

● Functional Skills – Level 2

| Skill | When learners are ... |
|---|--|
| Mathematics | |
| Understand routine and non-routine problems in a wide range of familiar and unfamiliar contexts and situations | performing a measured survey |
| Use appropriate checking procedures and evaluate their effectiveness at each stage | checking the measured survey |
| Draw conclusions and provide mathematical justifications | writing up a measured survey |
| English | |
| Writing – write documents, including extended writing pieces, communicating information, ideas and opinions, effectively and persuasively | writing survey reports and schedules of maintenance. |