



National Unit specification

General information

Unit title: Construction Technology: Superstructure and Finishes
(SCQF level 6)

Unit code: H65Y 46

Superclass: H65Y 46

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Unit purpose

This Unit has been developed as a mandatory Unit in the National Certificate Built Environment at SCQF level 6 but may also be taken as a free-standing Unit.

This Unit introduces the learner to the principles and processes of the superstructure construction and finishes of low rise domestic buildings on Greenfield sites. The content of the Unit includes the functional requirements and constructional detailing of the superstructure, components and finishes of a building. Learners will produce details of superstructure construction, including finishes.

This Unit is suitable for learners who have limited knowledge of the various factors which are involved with the superstructure, components and finishes of domestic buildings. Study of this Unit will contribute to the development of appropriate skills and knowledge for learners considering a career in the construction industry as technicians, technologists and other construction professionals.

National Unit specification: General information (cont)

Unit title: Construction Technology: Superstructure and Finishes (SCQF level 6)

Outcomes

On successful completion of the Unit the learner will be able to:

- 1 Describe common forms of domestic superstructure construction and the associated processes.
- 2 Describe the selection, position, fixing and application of components and finishes in buildings.

Credit points and level

1 National Unit credit at SCQF level 6: (6 SCQF credit points at SCQF level 6)

Recommended entry to the Unit

While entry is at the discretion of the centre, learners will normally be expected to have attained one of the following:

- Intermediate 2 Scottish Group Award in an appropriate area
- Intermediate 2 course in Structures, Craft and Design, Graphic Communication or Technological Studies
- Standard Grades at grade 3 or above, or Intermediate 2, in English, Mathematics, Physics or Technological Studies, Craft and Design or Graphic Communication.
- National 4 or above in English, Mathematics, Physics or Technological Studies, Craft and Design or Graphic Communication

Core Skills

Achievement of this Unit gives automatic certification of the following Core Skills component:

Complete Core Skill None

Core Skill component Critical Thinking at SCQF level 6

There are also opportunities to develop aspects of Core Skills which are highlighted in the Support Notes of this Unit specification.

Context for delivery

If this Unit is delivered as part of a Group Award, it is recommended that it should be taught and assessed within the subject area of the Group Award to which it contributes.

The Assessment Support Pack (ASP) for this Unit provides assessment and marking guidelines that exemplify the national standard for achievement. It is a valid, reliable and practicable instrument of assessment. Centres wishing to develop their own assessments

should refer to the ASP to ensure a comparable standard. A list of existing ASPs is available to download from SQA's website (<http://www.sqa.org.uk/sqa/46233.2769.html>).

National Unit specification: General information (cont)

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Equality and inclusion

This Unit specification has been designed to ensure that there are no unnecessary barriers to learning or assessment. The individual needs of learners should be taken into account when planning learning experiences, selecting assessment methods or considering alternative evidence.

Further advice can be found on our website www.sqa.org.uk/assessmentarrangements.

National Unit specification: Statement of standards

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Acceptable performance in this Unit will be the satisfactory achievement of the standards set out in this part of the Unit specification. All sections of the statement of standards are mandatory and cannot be altered without reference to SQA.

Outcome 1

Describe common forms of domestic superstructure construction and the associated processes.

Performance Criteria

- (a) Describe examples of common forms of domestic superstructure.
- (b) Describe the forms of construction selected, with the aid of annotated details, in compliance with current standards.
- (c) Justify the selection of a form of construction in terms of functional requirements and performance.
- (d) Describe the process relating to the erection of structural superstructure elements with regards to health and safety, function and efficiency and in accordance with current industry practice.

Outcome 2

Describe the selection, position, fixing and application of components and finishes in buildings.

Performance Criteria

- (a) Produce annotated sketches with respect to the location, fixing and application of the components and finishes within structures.
- (b) Produce annotated sketches to an approximate scale and with respect to the materials and components.
- (c) Select materials with respect to the finish to be provided for a given situation and in compliance with relevant current standards.
- (d) Describe the methods of application of finishes.

National Unit specification: Statement of standards (cont)

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Evidence Requirements for this Unit

Written/recorded oral and product evidence is required which demonstrates that the learner has achieved all Outcomes and Performance Criteria of this Unit.

The assessment for this Unit is a combination of practical and knowledge-based activities. The Outcomes should be assessed with two assessments comprising:

- ◆ A 60 minute closed-book test for Outcomes 1 and 2.
- ◆ A folio of work for Outcome 1 (PC (b)) and Outcome 2 (PC (a) and (b)) produced in open-book conditions as a natural part of the learning and teaching process.

The closed-book test will include a series of short answer and/or restricted response questions on forms of superstructure construction, the processes associated with the erection of superstructure construction for a given project and suitable components and finishes for a given domestic building. This will be carried out in controlled conditions: learners are not permitted to collaborate in their responses.

The open-book assignment folio of work is a collection of annotated sketches of the construction of building superstructure, components and finishes. The production of the folio will be carried out in open-book, supervised conditions. Learners are free to co-operate with colleagues in the researching of technical information and construction technology details. They may also confer with regard to drawing and sketching techniques and presentation. Assessors must, nevertheless, satisfy themselves that learners' folios contain their own work.

The assessment instruments will sample the content and skills detailed in the Appendix to the Unit. The assessment instruments must, taken together, cover all Outcomes and all Performance Criteria.

Achievement in the closed-book test can be decided by the use of a cut-off score. The Assessment Support Pack items illustrate the standard that should be applied and also the nature and extent of the sample to be used. If a centre wishes to design its own assessments for this closed-book test, they should be of a comparable standard.

Achievement in the folio of work will be decided on an achieved/not achieved basis. The criteria for achievement in the folio of work are that the annotated sketches will:

- ◆ be accurate in terms of content and be well proportioned.
- ◆ be annotated and presented in accordance with current industry practice.
- ◆ demonstrate knowledge of the function of the materials and components included in the details.
- ◆ demonstrate knowledge of the specification of the materials and components.

An exemplar for the folio of work can be accessed via the SQA Co-ordinator for each centre. The exemplar illustrates the standard that should be applied for the folio of work.

National Unit specification: Statement of standards (cont)

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For the closed-book test for Outcomes 1 and 2, where learners fail to reach the agreed threshold score, reassessment should follow using an alternative instrument of assessment.

For the folio of work for Outcome 1(b) and Outcome 2(a) and (b), where learners fail to reach the required performance, re-assessment of one or more sub-tasks may be all that is required to bring the learner's performance up to an acceptable standard.

Evidence will be gathered at appropriate points throughout the delivery of the Unit.

Assessment must be manageable and practicable for centres and the closed-book, supervised assessment portion should not exceed 1 hour.

Appendix

NB: *All the content in this section should be covered and is liable to sample through Unit and/or Course assessment.*

Content to be covered (Outcome 1)

Outcome 1 deals with forms of superstructure and the erection process for superstructure in the context of low-rise domestic construction.

Based on a given construction project, learners will be expected to respond to questions dealing with the sequencing and processes involved in low-rise housing superstructure, including:

- ◆ The selection of a form of superstructure construction (either traditional or timber frame — although both will be covered in the teaching and learning).
- ◆ A description of the form of construction selected.
- ◆ A justification of the selection of the form of superstructure construction in terms of function and performance requirements, for the following building elements:
 - External walls
 - Internal walls and partitions
 - Timber suspended floors or beam and block floors
 - Flat roof structures or pitched roof structures.
- ◆ The selection of an erection sequence for the form of superstructure construction.
- ◆ A justification of the selected erection sequence in terms of function, efficiency and health and safety.

Content to be covered (Outcome 2)

Outcome 2 deals with the principles of component construction and the use of components and finishes in low-rise buildings.

Based on a given construction project, learners will be expected to respond to questions dealing with the selection, position, fixing and application of components and finishes suitable for low-rise housing.

National Unit specification: Statement of standards (cont)

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This Outcome:

- ◆ provides the learner with the ability to sketch sections through components and indicate their position and fixing within the structure, to include:
 - doors and frames (timber)
 - windows and frames (timber, PVCu)

- ◆ covers the application of finishes to external and internal walls, floors and ceiling and roofs for domestic, low rise buildings, to include:
 - external walls (render — smooth, wet dash, dry dash)
 - internal walls (plaster — premixed: various; plasterboard — skimmed, taped and feathered joints; paint)
 - floors (sand/cement screed and timber board/sheet; carpet finishes; vinyl finishes)
 - ceiling (as internal walls)
 - roofs (pitched — traditional natural slate; plain tiles; interlocking tiles; flat — mastic asphalts; bituminous felts)

- ◆ provides the learner with the ability to select components and finishes for a given building.

Open-book folio of work (Outcomes 1 (PC (B)) and 2 (PCs (a) and (b)))

A folio of work for the assignment will be prepared by each learner individually. Centres will ensure that the work submitted in the folio is the learner's own work. It is anticipated that the folio of work is produced as a natural part of the learning and teaching process.

The folio of work will include, for either traditional or timber frame construction (although both will be covered in the learning and teaching):

Annotated freehand sketches with details of building superstructure construction including the junction of the external wall with:

- ◆ Upper floor (suspended timber or beam and block floor — (although both will be covered in the learning and teaching).
- ◆ Eaves of roof (pitched or flat — although both will be covered in learning and teaching).

The sketches must:

- ◆ contain detailing that complies with current building legislation and good practice.
- ◆ contain appropriate content and be in proportion
- ◆ be presented in accordance with current good practice in the construction industry.

The annotations must:

- ◆ include appropriate specification of materials and components.
- ◆ appropriately describe the selected form of construction.
- ◆ be presented in accordance with current good practice in the construction industry.



National Unit Support Notes

Unit title: Construction Technology: Superstructure and Finishes
(SCQF level 6)

Unit Support Notes are offered as guidance and are not mandatory.

While the exact time allocated to this Unit is at the discretion of the centre, the notional design length is 40 hours.

Guidance on the content and context for this Unit

This Unit has been developed as a mandatory Unit in the National Certificate Built Environment SCQF level 6 and can also be taken as a free-standing Unit. Attainment may:

- ◆ improve employment opportunities as technicians or technologists in a related field.
- ◆ lead to work based training in a related SVQ award.
- ◆ allow progression to a related HNC/HND award in Civil Engineering or the Built Environment.

This Unit on the subject of superstructure construction is set in the context of low-rise domestic buildings or dwelling houses. No prior knowledge of building construction is required of learners undertaking this Unit.

Outcome 1 — provides the learner with knowledge of superstructure processes and construction, including different forms of low-rise domestic construction: traditional masonry cavity wall construction, timber frame construction. It focuses on the functional requirements of the building and its elements: external and internal walls; ground bearing, timber and beam and block floors; upper floors; pitched and flat roofs. Learners gain knowledge about the different forms of construction commonly employed in house-building and how these possess strength and stability, fire resistance, resistance to heat loss and other properties.

Outcome 2 — introduces the learner to the appropriate selection of materials, components and finishes, for given situations. It will provide the learner with the ability to correctly locate the components, doors and windows, within the structure and to specify an appropriate method of application of finishes to external and internal walls, floors, ceilings and roofs for domestic low-rise buildings.

Relevant health and safety considerations should be included and sketching skills developed in both Outcomes.

National Unit Support Notes (cont)

Unit title: Construction Technology: Superstructure and Finishes (SCQF level 6)

Superstructure construction

Learners will study the processes relating to the superstructure construction of a building. The following should be covered:

- ◆ Performance requirements of floors, walls and roofs
- ◆ Construction of loadbearing walls and floors
- ◆ Construction of pitched roofs and flat roofs

Safety aspects of superstructure work should be stressed, for example temporary works including scaffolding trestles, as well as screens and protective sheeting.

The functional requirements of external walls, internal walls and roofs will be explored, ie what these parts of the building are required to do and therefore what properties they must possess. For example, the functional requirements of external walls include:

- ◆ Strength and stability
- ◆ Dimensional stability
- ◆ Exclusion of rain and snow
- ◆ Resistance to heat loss
- ◆ Resistance to transmittance of airborne and impact noise
- ◆ Durability

Learners should be able to explain why superstructures are erected in the way they are and in what order. They should look at the materials and details associated with both traditional and timber frame construction. The ventilation of the cavity wall and roof space is a topic that must be given some time and attention.

Learners will study the properties of superstructure materials. The focus here should be on the functional requirements of superstructure elements and how the properties of commonly used building materials and components have led to their use in domestic construction. Such materials should include: bricks, blocks, timber and timber products including trussed rafters.

The learner should recognise and understand the hazards associated with superstructure construction. Specific legislation should be discussed when appropriate, for example, legislation covering manual handling. The focus for the learner must be on how such legislation is applied or put into practice. The importance of providing health and safety information to contractors at an early stage in the project should be emphasised.

Superstructure covers the building above damp-proof course level including internal walls and the roof structure.

- ◆ Building: low rise domestic building
- ◆ Design: performance requirements of walls, floors, roof, windows, doors and finishes
- ◆ Building elements: walls, floors, roofs; traditional masonry cavity walling, timber frame walling
- ◆ Building element details: roof/external wall junctions; intermediate floor; openings in external walls

National Unit Support Notes (cont)

Unit title: Construction Technology: Superstructure and Finishes
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Components and finishes

Outcome 2 introduces learners to the correct positioning and fixing of components, doors and windows, in buildings. This study will provide the learner with the knowledge of different types of windows and doors and the ability to draw details of horizontal and vertical sections through timber window and door frames and indicate their position and fixing within the wall structure. This should include the details at lintel sill and jamb. The fixing of PVCu windows and doors should also be included to highlight the different fixing techniques.

Finishes to external and internal walls, floor, ceiling and roof, their specification and method of application to the structure for low-rise domestic buildings will be covered. Reference should be made to the use of appropriate mixes for external and internal renders as detailed in current standards. In describing the method of application of the finishes, reference should be made to appropriate background materials and the consequences of applying finishes to inappropriate backgrounds.

The following finishes should be included:

- ◆ External wall finishes: renders with a dry dash finish, renders with a wet dash finish
- ◆ Internal wall finishes: premixed plasters, plasterboard, paint
- ◆ Ceiling finishes: as internal walls
- ◆ Floor finishes: timber finishes, sand/cement screeds, vinyl finishes, carpet finishes
- ◆ Pitched roof finishes: concrete interlocking roof tiles, plain tiles, natural slates,
- ◆ Flat roof finishes: mastic asphalt, bituminous felts.

Annotated sketches

The reasons for having standards in drawing layout/presentation should be emphasised. Sketches should be well proportioned, ie each component is depicted in sensible proportion to the rest of the sketch. They should include clarity of detail. Learners may refer to textbooks, technical literature and architectural drawings to gain an appreciation of the detail required for specific sketches. These should include intermediate floor/wall junctions, sill, jamb and lintel details and roof/wall junctions for flat and pitched roofs. Traditional masonry cavity walling and timber frame walling construction techniques should be covered but folio sketches are required of one only.

- ◆ Details: plan (horizontal section), vertical section through openings in walls
- ◆ Building elements: traditional masonry cavity walling, timber frame walling
- ◆ Finishes: renders, plaster finishes, floor finishes, roof finishes
- ◆ Application: preparation, protection
- ◆ Structure: external walls, internal walls, floors, roofs

National Unit Support Notes (cont)

Unit title: Construction Technology: Superstructure and Finishes
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Guidance on approaches to delivery of this Unit

Suggested teaching and learning methods for this Unit might include computer assisted learning, question and answer sessions, group work, directed investigative study, student learner guides, site/building visits, sketching and drawing.

The Outcomes in this Unit are arranged logically in the order in which the activities would take place in the construction of the building superstructure. This permits learners to relate the different elements of the building to one another and to think logically about the process of the construction of a building. Outcomes 1 and 2 could be addressed in terms of function and functional requirements.

The teaching of construction technology can be made visual with the use of construction drawings. Use of electronic whiteboards, projectors, photographic images and computer-aided drawings is increasing in some centres and is useful in illustrating the different stages of building work. Electronic resources are particularly useful for learners who are remote from their centre and for those wishing to access materials outwith centre hours.

Textbooks and DVDs on house construction are readily available. Some centres subscribe to electronic libraries that contain a vast wealth of written and pictorial information on house building. Resources also exist from national construction research organisations and trades organisations.

- ◆ Current British Standards
- ◆ Building Research establishment digests, information papers, good practice guides and defect action sheets
- ◆ Current Building Standard (Scotland) Regulations

Increasingly manufacturers and suppliers of building materials produce technical literature that highlights how their products comply with current building legislation. Learners will likely find that such literature is very informative and visual as well as being available online from the company website. The current legislation pertaining to building construction in Scotland should be referred to throughout the Unit. The technical guidelines provided by the NHBC (National House Building Council) will be of particular interest and value because they relate purely to house construction.

Field trips to building sites are always of benefit to learners. On housing sites there are often several plots under development at any one time; learners can often see at one glance the process of house construction in its various stages. Note should be taken of all plant and equipment being used in construction works. Aspects of health and safety should be particularly noted. After visiting the site learners could be encouraged to write down a simple method statement for the construction of the building element(s) observed. This activity will reinforce learning from the field trip.

National Unit Support Notes (cont)

Unit title: Construction Technology: Superstructure and Finishes
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Examples of visit observations relevant to this Unit:

- ◆ Order and method of superstructure erection including temporary works, use of plant and equipment and prefabrication techniques.
- ◆ Construction details, location and fixing of components
- ◆ Storage of components and materials
- ◆ Protection of finishes

Talks by site managers can be useful in describing, for example, traffic issues, issues regarding handling and storage, use of prefabricated components, weather restrictions. These talks can often be arranged through the construction company and allow a chance for learners to ask questions.

Freehand and instrument-aided sketching should take place throughout the Unit. Emphasis should be given to good drawing practice, neatness, clarity, the effective use of annotation and the layout of the drawings. Examples of good practice can often be obtained from drawings carried out by professional draughts people and designers. Displaying these will help illustrate good practice and the use of various drawing scales. These sketches will form the folio of work required for Outcomes 1 and 2.

Guidance on approaches to assessment of this Unit

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

This Unit gives learners experience of:

- ◆ explaining and detailing superstructure construction.
- ◆ selecting and detailing appropriate components and finishes.

Although learners will develop their knowledge and understanding of the factors and issues involved in superstructure construction, Unit assessment is focussed on the application of this knowledge and understanding.

The Outcomes should be assessed with two assessments comprising:

- ◆ A 60 minute closed-book test for Outcomes 1 and 2.
- ◆ A folio of work for Outcomes 1 and 2 produced in open-book conditions as a natural part of the learning and teaching process.

National Unit Support Notes (cont)

Unit title: Construction Technology: Superstructure and Finishes (SCQF level 6)

The closed-book test for Outcomes 1 and 2 will include a series of short answer and/or restricted response questions on forms of superstructure construction, the processes associated with the erection of superstructure construction for a given project and suitable components and finishes for a given domestic building.

The closed-book test will be carried out in controlled conditions: learners are not permitted to collaborate in their responses.

The open-book assignment folio of work is a collection of annotated sketches of the construction of building superstructure, components and finishes. The production of the folio of work will be carried out in open-book, supervised conditions. Learners are free to co-operate with colleagues in the researching of technical information and construction technology details. They may also confer with regard to drawing and sketching techniques and presentation. Assessors must, nevertheless, satisfy themselves that learners' folios contain the learner's own work.

Achievement in the closed-book test can be decided by the use of a cut-off score. Where learners fail to reach the agreed threshold score, reassessment should follow using an alternative instrument of assessment.

Achievement in the folio of work will be decided on an achieved/not achieved basis. Where learners fail to achieve the required performance, re-assessment of one or more sub-tasks may be all that is required to bring the learner's performance up to an acceptable standard.

The standard to be applied and the breadth of coverage are illustrated in the Assessment Support Pack available for this Unit. Where centres wish to develop their own assessment materials they should refer to the Assessment Support Pack to ensure a comparable standard.

Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at www.sqa.org.uk/e-assessment.

National Unit Support Notes (cont)

Unit title: Construction Technology: Superstructure and Finishes
(SCQF level 6)

Opportunities for developing Core and other essential skills

In this Unit learners will:

- ◆ explain, with the aid of annotated details, common forms of domestic superstructure construction and the associated processes.
- ◆ describe, with the aid of annotated sketches, the selection, position, fixing and application of components and finishes in buildings.

These offer opportunities to develop aspects of the Core Skill of:

- ◆ Using Graphical Information at SCQF level 4
- ◆ Critical Thinking at SCQF level 5

Throughout this Unit learners will be working to/learning national building standards and regulations.

This will offer opportunities in essential skills to develop:

- ◆ Vocational skills
- ◆ Employability skills

This Unit has the Critical Thinking component of Problem Solving embedded in it. This means that when candidates achieve the Unit, their Core Skills profile will also be updated to show they have achieved Critical Thinking at SCQF level 6.

History of changes to Unit

Version	Description of change	Date

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General information for learners

Unit title: Construction Technology: Superstructure and Finishes (SCQF level 6)

This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

This Unit is suitable for learners who have limited knowledge of the various factors which are involved with the superstructure, components and finishes of domestic buildings. Study of this Unit will contribute to the development of appropriate skills, eg sketching, drawing, detailing, and knowledge, eg familiarity with common materials used in the industry, for learners considering a career in the construction industry as technicians, technologists and other construction professionals.

This Unit introduces you to the principles and processes of the superstructure construction and finishes of low rise buildings on greenfield sites. The content of the Unit includes the functional requirements and constructional detailing of the superstructure, components and finishes of a building. You will produce details of superstructure construction, including finishes.

The assessment for this Unit is a combination of practical and knowledge-based activities. The Outcomes should be assessed with two assessments comprising:

- ◆ A 60 minute closed-book test for Outcomes 1 and 2, which will include a series of short answer and/or restricted response questions.
- ◆ A folio of work for Outcome 2 (PC (b)) produced in open-book conditions as a natural part of the learning and teaching process. The folio of work is a collection of annotated sketches of the construction of building superstructure. The production of the folio will be carried out in open-book, supervised conditions.

Study of this Unit will also develop the Core Skills components of Using Graphical Information and Critical Thinking as well as the essential skills in employability.

This Unit has been developed as a mandatory Unit in the National Certificate in Built Environment at SCQF level 6 but may also be taken as a free-standing Unit. Attainment may improve employment opportunities in a related field and will usually allow progression to a related HNC/HND course. This may, in turn, lead to a university degree course in a construction profession.