

SQA Advanced Unit Specification

General information for centres

Unit title: Construction Technology: Domestic Construction

Unit code: HR46 46

Unit purpose: This Unit is designed to enable candidates to gain knowledge and understanding of low-rise, domestic building construction. The Unit concentrates on the construction of walls, floors and roofs, and builds on the knowledge gained in the unit Construction Technology: Substructure.

On completion of the Unit the candidate should be able to:

- 1 Select and describe forms of masonry and timber frame wall construction and finishes.
- 2 Describe the performance requirements, materials, function and construction of the principal components in a building.
- 3 Select and describe forms of floor construction and sketch their junctions with other building element.
- 4 Select and describe forms of pitched and flat roof construction and finishes.

Credit points and level: 1 SQA Credit at SCQF level 6: (8 SCQF credit points at SCQF level 6*).

**SCQF credit points are used to allocate credit to qualifications in the Scottish Credit and Qualifications Framework (SCQF). Each qualification in the Framework is allocated a number of SCQF credit points at an SCQF level. There are 12 SCQF levels, ranging from National 1 to Doctorates.*

Recommended prior knowledge and skills: It would be an advantage for candidates to have a basic knowledge and understanding of substructure construction. This may be evidenced by possession of an appropriate SQA Advanced Unit of Construction Technology (substructure) or an appropriate Higher.

Core Skills: There are opportunities to develop the Core Skills of Communication and Problem Solving in this Unit, although there is no automatic certification of Core Skills or Core Skills components.

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.

Assessment: It is possible to assess candidates either on an individual Outcome basis, combinations of Outcomes or by a single holistic assessment combining all Outcomes. It is

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recommended that all outcomes be assessed by a question paper details of which are given at the end of each outcome under the heading 'Assessment guidelines'.

In this Unit it is proposed that Outcomes 1 and 2 be combined into a single question paper assessment and that Outcomes 3 and 4 shall also be combined into a single question paper assessment and that each assessment event shall last one and a half hours.

The assessment papers should be composed of a suitable balance of short answer, restricted response and structured questions. Assessment should be conducted under controlled, supervised conditions. It should be noted that candidates must achieve all the minimum evidence specified for each Outcome in order to pass the Unit.

An exemplar instrument of assessment and marking guidelines has been produced to provide examples of the type of evidence required to demonstrate achievement of the aims of the Unit and to indicate the national standard of achievement at SCQF level 6.

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SQA Advanced Unit specification: statement of standards

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The sections of the Unit stating the Outcomes, knowledge and/or skills, and evidence requirements are mandatory.

Where evidence for Outcomes is assessed on a sample basis, the whole of the content listed in the knowledge and/or skills section must be taught and available for assessment. Candidates should not know in advance the items on which they will be assessed and different items should be sampled on each assessment occasion.

Throughout this Unit emphasis will be placed where appropriate on the application of health, safety and sustainability. Safe working practices should be promoted in accordance with current safety codes of practice and regulations. Sustainability should include reference to the criteria affecting sustainability, the impact of not implementing sustainability on the environment and the legislation promoting sustainability.

Outcome 1

Sketch and describe forms of masonry and timber frame wall construction and finishes.

Knowledge and/or skills

- ◆ traditional masonry cavity wall construction and finishes
- ◆ timber frame cavity wall construction and finishes
- ◆ construction of load bearing and non-loadbearing partition walls
- ◆ construction of party walls

Evidence Requirements

Evidence for the knowledge and /or skills in this Outcome will be provided on a sample basis. The evidence may be presented in responses to specific questions. Each candidate will need to demonstrate that she/he can answer correctly questions based on a sample of the items shown above. In any assessment of this Outcome **two out of four** knowledge and/or skills items should be sampled.

In order to ensure that candidates will not be able to foresee what items they will be questioned on, a different sample of two out of four knowledge and/or skills items is required each time the Outcome is assessed. Candidates must provide a satisfactory response to all items being assessed.

Where sampling takes place, a candidate's response can be judged to be satisfactory where evidence provided is sufficient to meet the requirements for each item by showing that the candidate is able to:

- ◆ sketch and describe the forms of wall construction and finishes

Evidence should be generated through assessment undertaken in controlled, supervised conditions. Assessment should be conducted under closed book conditions and as such, candidates should not be allowed to bring any textbooks, handouts or notes to the assessment.

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Assessment guidelines

Questions used to elicit candidate evidence should take the form of an appropriate balance of short answer, restricted response and structured questions.

The assessment of this Outcome shall be combined with that of Outcome 2 into a single assessment question paper. The assessment event should last one and a half hours and be carried out under supervised controlled conditions.

Outcome 2

Describe the performance requirements, materials, function and construction of the principal components in a building.

Knowledge and/or skills

- ◆ door types; materials, function and performance requirements
- ◆ window types; materials, function and performance requirements
- ◆ stair types; materials, construction, function and performance requirements

Evidence Requirements

Evidence for the knowledge and /or skills in this Outcome will be provided on a sample basis. The evidence may be presented in responses to specific questions. Each candidate will need to demonstrate that she/he can answer correctly questions based on a sample of the items shown above.

In order to ensure that candidates will not be able to foresee what items they will be questioned on, a different sample of **two out of three** knowledge and/or skills items is required each time the Outcome is assessed. Candidates must provide a satisfactory response to all items for each topic selected.

Where sampling takes place, a candidate's response can be judged to be satisfactory where evidence provided is sufficient to meet the requirements for each item by showing that the candidate is able to:

- ◆ describe the performance requirements, materials, function and construction of door, window and stair components in a building

Evidence should be generated through assessment undertaken in controlled, supervised conditions. Assessment should be conducted under closed-book conditions and as such candidates should not be allowed to bring any textbooks, handouts or notes to the assessment.

Assessment guidelines

Questions used to elicit candidate evidence should take the form of an appropriate balance of short answer, restricted response and structured questions.

The assessment of this Outcome shall be combined with that of Outcome 1 into a single assessment question paper. The assessment event should last one and a half hours and be carried out under supervised controlled conditions.

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Outcome 3

Select and describe the forms of floor construction and sketch the junctions with other building elements.

Knowledge and/or skills

- ◆ solid ground floor construction and finishes
- ◆ suspended ground and upper floor construction and finishes
- ◆ solum treatment
- ◆ structural stability

Evidence Requirements

Evidence for the knowledge and /or skills in this Outcome will be provided on a sample basis. The evidence may be presented in responses to specific questions. Each candidate will need to demonstrate that she/he can answer correctly, questions based on a sample of the items shown above. In any assessment of this Outcome **two out of four** knowledge and/or skills items should be sampled.

In order to ensure that candidates will not be able to foresee what items they will be questioned on, a different sample of two out of four knowledge and/or skills items is required each time the Outcome is assessed. Candidates must provide a satisfactory response to all items being assessed.

Where sampling takes place, a candidate's response can be judged to be satisfactory where evidence provided is sufficient to meet the requirements for each item by showing that the candidate is able to:

- ◆ select, describe and sketch the various forms of floor construction and their junction with other building elements

Evidence should be generated through assessment undertaken in controlled, supervised conditions. Assessment should be conducted under closed book conditions and as such, candidates should not be allowed to bring any textbooks, handouts or notes to the assessment.

Assessment guidelines

Questions used to elicit candidate evidence should take the form of an appropriate balance of short answer, restricted response and structured questions.

The assessment of this Outcome shall be combined with that of Outcome 4 into a single assessment question paper. The assessment event should last one and a half hours and be carried out under supervised controlled conditions.

Outcome 4

Select and describe the forms of roof construction and finishes

Knowledge and/or skills

- ◆ pitched roof types
- ◆ pitched roof structures and finishes
- ◆ flat roof structures and finishes
- ◆ roof technology (cold, warm and inverted)

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Evidence Requirements

Evidence for the knowledge and/or skills in this Outcome will be provided on a sample basis. The evidence may be presented in responses to specific questions. Each candidate will need to demonstrate that she/he can answer correctly questions based on a sample of the items shown above. In any assessment of this Outcome **two out of four** knowledge and/or skills items should be sampled.

In order to ensure that candidates will not be able to foresee what items they will be questioned on, a different sample of two out of four knowledge and/or skills items is required each time the Outcome is assessed. Candidates must provide a satisfactory response to all items being assessed.

Where sampling takes place, a candidate's response can be judged to be satisfactory where evidence provided is sufficient to meet the requirements for each item by showing that the candidate is able to:

- ◆ select and describe the forms of roof construction and finishes

Evidence should be generated through assessment undertaken in controlled, supervised conditions. Assessment should be conducted under closed book conditions and as such candidates should not be allowed to bring any textbooks, handouts or notes to the assessment.

Assessment guidelines

Questions used to elicit candidate evidence should take the form of an appropriate balance of short answer, restricted response and structured questions.

The assessment of this Outcome shall be combined with that of Outcome 3 into a single assessment question paper. The assessment event should last one and a half hours and be carried out under supervised controlled conditions.

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Administrative information

Unit code:	HR46 46
Unit title:	Construction Technology: Domestic Construction
Superclass category:	TE
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SQA Advanced Unit specification: support notes

Unit title: Construction Technology: Domestic Construction

This part of the Unit specification is offered as guidance. The support notes 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 written in order to allow candidates to develop knowledge, understanding and skills in the following areas:

- 1 Select and describe forms of masonry and timber frame wall construction and finishes.
- 2 Describe the performance requirements, materials, function and construction of the principal components in a building.
- 3 Select and describe forms of floor construction and sketch their junctions with other building elements.
- 4 Select and describe forms of pitched and flat roof construction and finishes.

This Unit has been developed as part of a group of Construction Technology Units.

There are three other Units in the group entitled:

- ◆ Construction Technology: Substructure
- ◆ Construction Technology: Industrial/Commercial Superstructure
- ◆ Construction Technology: Specialist Systems

This Unit at SCQF level 6 is a mandatory Unit in the SQA Advanced Certificate in Construction and all SQA Advanced Diploma Built Environment awards.

The three Units mentioned above have been developed as an integrated suite of units to meet all the requirements of the SQA Advanced Certificate/Diploma Built Environment awards. However, this does not preclude the use of one or more of these Units in other awards where award designers feel this to be appropriate. As well as providing a substantial course in construction technology principles these Units provide important underpinning knowledge, understanding and skills in other parts of the SQA Advanced Certificate/Diploma Built Environment awards.

In designing this Unit the writers have identified the range of topics they would expect to be covered by lecturers. The writers have also given recommendations as to how much time should be spent on each outcome. This has been done to help lecturers decide what depth of treatment should be given to the topics attached to each of the Outcomes. Whilst it is not mandatory for a centre to use this list of topics, it is strongly recommended that it does so to ensure continuity of teaching and learning across the suite of Construction Technology Units and because the assessment pack for this particular unit is based on the knowledge and/ or skills and list of topics for each of the Outcomes.

The list of topics is given below. Lecturers are advised to study this list in conjunction with the assessment exemplar pack so that they can get a clear indication of the standard of achievement of candidates in this Unit.

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1 Select and describe forms of masonry and timber frame wall construction and finishes. (18 hours)

External cavity walling:

- ◆ Performance requirements

Traditional masonry construction:

- ◆ Materials: brick, dense block, lightweight block
- ◆ Bonding and coursing
- ◆ Wall ties — types, materials, location and purpose
- ◆ Mortar — materials and mixes
- ◆ Erection process

Timber frame construction:

- ◆ Materials used in frame construction:
 - breather paper
 - plywood (OSB and alternatives)
 - timber frame
 - brick/ block outer leaf
 - wall ties — types, materials, location and purpose
- ◆ Erection process

For each wall type the following topics should be covered:

- ◆ Structural strength and stability
- ◆ Load transfer
- ◆ Damp proof courses (DPCs)
- ◆ Cavity barriers
- ◆ Fire stops
- ◆ Movement joints
- ◆ Thermal insulation
- ◆ Vapour barrier
- ◆ Cavity ventilation
- ◆ External finishes: roughcast, render, facing brick (pointing), timber cladding, slate and tile cladding
- ◆ Internal finishes: lightweight plaster, plasterboard, insulated plasterboard, skim coat, tape fill and finish

Formation of openings:

- ◆ Lintols: types, materials and location
- ◆ Cills: types, materials and locations
- ◆ DPCs/cavity trays
- ◆ Cavity vents
- ◆ Cavity closers

Internal walls (partitions):

- ◆ Loadbearing
- ◆ Non-loadbearing
- ◆ Materials: Brick, block, timber
- ◆ Finishes: Plaster, plasterboard

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Party walls:

- ◆ Performance requirements
- ◆ Materials: Brick, block, timber frame
- ◆ Finishes: Plaster, plasterboard, skim coat, taped and filled

2 Describe the performance requirements, materials, function and construction of the principal components in a building. (8 hours)

Doors:

- ◆ Performance requirements: access, egress, continuity, security, privacy, fire protection
- ◆ Internal and external doors
- ◆ Flush and panelled doors
- ◆ Glazed doors
- ◆ Door linings and construction
- ◆ Door frames
- ◆ Ironmongery
- ◆ Location and fixing details within openings
- ◆ Thresholds and DPCs

Windows:

- ◆ Performance requirements: light, insulation, ventilation
- ◆ Types: sash and case, casement, pivot, tilt and turn
- ◆ Materials: timber, uPVC, metal
- ◆ Single and double glazing
- ◆ Ironmongery
- ◆ Location and fixing details within openings
- ◆ DPCs
- ◆ Regulation requirements: ventilation, cleaning, opening limitation

Stairs:

- ◆ Performance requirements
- ◆ Types: straight flight, quarter turn, half turn, winder, open tread
- ◆ Component parts
- ◆ Regulation requirements

3 Select and describe forms of floor construction and their junctions with other building elements. (8 hours)

Ground floors:

- ◆ Performance requirements

Solid floors:

- ◆ Excavation to formation
- ◆ Solum treatments
- ◆ DPCs and DPMs: location and materials
- ◆ Concrete (sub) floor slabs
- ◆ Reinforcement
- ◆ Screeds
- ◆ Insulation
- ◆ Finishes: ceramic tiles, clay tiles, sheet flooring, floating timber floor

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Suspended floors:

- ◆ Excavation to formation
- ◆ Solum treatments
- ◆ DPCs and DPMs

Timber: Methods of support
Joist sizing and spacing
Sleeper (dwarf) walls
Strutting
Insulation
Underfloor ventilation

Finishes: T&G boarding, chipboard

Concrete: Beam and block, concrete slab
Insulation
Underfloor ventilation

Finishes: Screed, ceramic tiles, clay tiles, floating timber floor

Upper floors:

- ◆ Performance requirements
- ◆ Contribution to structural stability
- ◆ Formation of openings

Timber: Methods of support
Joist sizing and spacing
Strutting
Sound insulation

Finishes: T&G boarding, chipboard, plasterboard ceiling finish

4 Describe forms of pitched and flat roof construction and finishes. (8 hours)

Roofs:

- ◆ Performance requirements
- ◆ Contribution to structural stability

Pitched roofs: Lean-to, monopitch, gable, hip, mansard
Couple, closed couple, collar, purlin (double), trussed rafter
Wind bracing
Water tank support
Cold roof, warm roof

Finishes: Slate, plain tiles, interlocking tiles
Sarking, sarking with battens and counterbattens,
Underslating felt
Ventilation
Insulation
Plasterboard ceiling finishes
Construction details at eaves, verges, ridges and hips
Structural continuity and lateral restraint
Formation of openings

Flat roofs: Concrete deck with screed to falls,
Timber deck with firrings

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Cold roof, warm roof
Finishes: asphalt, felt, lead, copper
Insulation
Vapour check
Plasterboard ceiling finishes
Construction details at eaves, parapets and gutters

Guidance on the delivery and assessment of this Unit

As this Unit provides core construction technology that underpins much of the studies in other areas of SQA Certificate/Diploma Built Environment awards, it is recommended that the Unit be delivered towards the start of these awards.

Where this Unit is incorporated in other Group Awards it is recommended that it be delivered in the context of the specific occupational area(s) that the award is designed to cover.

The Outcomes are presented in a logical sequence of walls, components (windows/doors, etc), floors and roofs. It is recommended to deliver Outcome 2 — the installation of components together with Outcome 1 — walls, because of the interdependent nature of the subject.

The content of the Unit forms the basis for much of the work to be undertaken in the construction technician study programme. It is essential that students are familiar with the basic forms of construction. To this end, the lecture programme should be supplemented with structured visits. Technical literature, current British Standards and the current Scottish Building Standards should also be used extensively to ensure the students understand the basic construction concepts.

Opportunities for developing Core Skills

The following grid provides a general guide to opportunities for the development of Core Skills in this Unit. Opportunities for the development of Core Skills at the output level are more fully identified in the Core Skills Signposting Guide.

Core Skill	Outcome 1	Outcome 2	Outcome 3	Outcome 4	Outcome 5
1 Communication					
Reading					
Writing	3	3	3	3	
Oral					
2 Numeracy					
Using Number					
Using Graphical Information					
3 IT					
Using Information Technology					
4 Problem Solving					
Critical Thinking			3		
Planning and Organising					
Reviewing and Evaluating					
5 Working with Others					

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Open learning

This Unit could be delivered by distance learning that may incorporate some degree of on-line support. However, with regard to assessment, planning would be required by the centre to ensure the sufficiency and authenticity of candidate evidence. Arrangements would be required to be put in place to ensure that the assessment, which is required to be a single event, is conducted under controlled and supervised conditions.

For information on normal open learning arrangements, please refer to the SQA guide *Assessment and Quality Assurance of Open and Distance Learning (SQA 2000)*.

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.

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General information for candidates

Unit title: Construction Technology: Domestic Construction

This Unit has been designed to allow you to develop knowledge and understanding of low-rise, domestic construction in both traditional and timber frame methods of construction. You will consider the functional and performance requirements of the various elements of low-rise construction and the construction methods and materials that are best suited to meet all the requirements.

Construction Technology: Domestic Construction is designed in such a way that it may be presented as a stand-alone unit. However, as the content of the Unit builds on the knowledge and understanding of foundations and substructure construction gained in the unit Construction Technology: Substructure, it is recommended that the Unit Construction Technology: Substructure is completed prior to the commencement of Construction Technology: Domestic Construction.

The content of the unit forms the basis for much of the work to be undertaken in the construction technician study programme. It is essential that you are familiar with the basic forms of construction. To this end, the lecture programme should be supplemented with the use of site visits, technical literature, current British Standards and the current Scottish Building Standards should be used extensively to ensure you understand the basic construction concepts.