SQA Advanced Unit specification

General information for centres

Unit title: Quantitative Building Studies: Substructures and Drainage

Unit code: HT12 47

Unit purpose: This Unit is designed to enable candidates to gain skills in the measurement and descriptions and take off quantities for a simple substructure, a tanked basement and underground drainage.

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

1 Prepare quantified item descriptions for simple substructures.
2 Prepare quantified item descriptions for a tanked basement.
3 Prepare quantified item descriptions for underground drainage.

Credit points and level: 1 SQA Credit at SCQF level 7: (8 SCQF credit points at SCQF level 7*).

**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 simple substructures, tanked basements and underground drainage technology. It would also be of benefit for candidates to have experience in interpreting construction drawings. Prior experience in taking off quantities would be useful.

Provision of basic knowledge and understanding of simple substructures, tanked basements and underground drainage technology, would be evidences by possession of a Unit or Units in construction technology at SQA Advanced level. Experience in the interpretation of construction drawings may be demonstrated by possession of a Unit or Units in construction technology or construction drawing at Higher or SQA Advanced level. Prior experience in taking off quantities might be demonstrated by possession of any one of the suite of quantitative building studies Units at SQA Advanced or Higher.

Core Skills: There are opportunities to develop the Core Skill(s) of Communication, Numeracy, 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: The assessment instruments for this Unit might employ a single case study for take off purposes.

The drawings provided for assessment purposes must be detailed and include plans, elevations, cross sections and details of the building. In addition, specification notes must be provided to the candidate.

It is possible to assess candidates either on an individual Outcome basis, combinations of Outcomes or by a single holistic assessment combining all Outcomes. Assessment should be conducted under supervised, controlled open-book conditions with the current Standard Method of Measurement of Building Work provided. The candidate will have access to their own notes. 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 this Unit and to indicate the national standard of achievement at SCQF level 7.

SQA Advanced Unit specification: statement of standards

Unit title: Quantitative Building Studies: Substructures and Drainage

Unit code: HT12 47

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.

Outcome 1

Prepare quantified item descriptions for simple substructures.

Knowledge and/or skills

- quantified items for groundwork
- quantified items for in-situ concrete
- quantified items for brickwork
- quantified items for damp-proof courses/membranes

Evidence Requirements

Candidates will need evidence to demonstrate their knowledge and/or skills by showing that they can:

- produce comprehensive lists of items
- draft comprehensive item descriptions
- express quantities in the correct unit of measurement
- take off quantities accurately
- produce accurate waste calculations
- correct interpret the technology
- correctly analyse drawings

In any assessment of this Outcome, **all** knowledge and/or skills should be included. Candidates must provide a satisfactory response to all items.

Evidence should be generated through assessment undertaken in controlled, supervised open-book conditions with the current Standard Method of Measurement of Building Work provided. The candidate will have access to their own notes.

Assessment guidelines

Drawings and specification notes provided to elicit candidate evidence should be based on a single building of straightforward construction and a maximum of two storeys in height. The drawings must be accurate and detailed as regards the substructure. Specification notes must accompany the drawing. Detailed drawings must be provided of the substructure to clarify details and sizes.

The assessment for this Outcome might be combined with that for Outcomes 2 and 3 to form a single assessment paper.

Outcome 2

Prepare quantified item descriptions for a tanked basement.

Knowledge and/or skills

- quantified items for groundwork
- quantified items for in-situ concrete
- quantified items for brickwork
- quantified items for mastic asphalt tanking

Evidence Requirements

Candidates will need evidence to demonstrate their skills and/or knowledge by showing that they can:

- produce comprehensive lists of items
- draft comprehensive item descriptions
- express quantities in the correct unit of measurement
- take off quantities accurately
- produce accurate waste calculations
- correctly interpret the technology
- correctly analyse drawings

In any assessment of this Outcome **all** knowledge and/or skills should be included. Candidates must provide a satisfactory response to all items.

Evidence should be generated through assessment undertaken in controlled, supervised, open-book conditions with the current Standard Method of Measurement of Building Work provided. The candidate will have access to their own notes.

Assessment guidelines

Drawings and specification notes provided to elicit candidate evidence should be based on a single building straightforward construction and a maximum of two storeys in height. The drawings must be accurate and detailed as regards the tanked basement. Specification notes must accompany the drawing. Detailed drawings must be provided of the tanked basement members to clarify details and sizes.

The assessment of this Outcome should be separate from that of Outcomes 1 and 3, but it is recommended that a common set of drawings is used for all of the Outcomes.

Outcome 3

Prepare quantified item descriptions for underground drainage.

Knowledge and/or skills

- quantified items for groundwork
- quantified items for underground pipework
- quantified items for underground pipework fittings
- quantified items for manholes

Evidence Requirements

Candidates will need evidence to demonstrate their knowledge and/or skills by showing that they can:

- produce comprehensive lists of items
- draft comprehensive item descriptions
- express quantities in the correct unit of measurement
- take off quantities accurately
- produce accurate waste calculations
- correct interpret the technology
- correctly analyse drawings

In any assessment of this Outcome **all** knowledge and/or skills should be included. Candidates must provide a satisfactory response to all items.

Evidence should be generated through assessment undertaken in controlled, supervised, open-book conditions with the current Standard Method of Measurement of Building Work provided. The candidate will have access to their own notes.

Assessment guidelines

Drawings and specification notes provided to elicit candidate evidence should be based on a single building of straightforward construction and a maximum of two storeys in height. The drawings must be accurate and detailed as regards the tanked basement. Specification notes must accompany the drawing.

The assessment of this Outcome should be separate from that of Outcomes 1 and 2, but it is recommended that a common set of drawings is used for all of the Outcomes.

Administrative information

Unit code: HT12 47

Unit title: Quantitative Building Studies: Substructures and Drainage

Superclass category: TC

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SQA acknowledges the valuable contribution that Scotland's colleges have made to the development of SQA Advanced qualifications.

FURTHER INFORMATION: Call SQA's Customer Contact Centre on 44 (0) 141 500 5030 or 0345 279 1000. Alternatively, complete our Centre Feedback Form.

SQA Advanced Unit specification: support notes

Unit title: Quantitative Building Studies: Substructures and Drainage

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 provides the candidate with the knowledge and understanding of the relationship between economic concepts and theories and the construction industry context. Attention should be paid in the delivery of this Unit to the syllabus content of the other Units in the programme, particularly the introduction to the industry.

Recommended time allocations to each Outcome are given as guidance towards the depth of treatment which might be applied to each topic. This guidance has been used in the design of the assessment exemplar material provided with the Unit.

1 Prepare quantified item descriptions for simple substructures (16 hours)

The preparation of quantified items for groundwork:

- topsoil excavation and removal/backfill
- reduce level excavation and removal/backfill
- trench excavation and removal/backfill
- earthwork support
- hardcore fill
- foundations
- cavity fill
- common brick
- facing brick
- forming cavity
- damp-proof courses
- damp-proof membranes

2 Prepare quantified item descriptions for a tanked basement (12 hours)

- basement excavation and removal/backfill
- excavation below ground water level
- earthwork support
- working space
- hardcore fill
- foundations
- in-situ concrete beds
- in-situ concrete slab
- openings, reinforcement and formwork to beds and slabs
- brick walls
- protective brickwork
- horizontal and vertical mastic asphalt tanking
- mastic asphalt angle fillets

3 Prepare quantified item descriptions for underground drainage (12 hours)

- excavating drain tracks
- disposal of water
- beds/haunching/surround
- underground pipework
- pipe fittings
- pipe accessories
- rodding eyes
- work in connection with manholes, including:
  - excavation, concrete, formwork, reinforcement
  - brickwork, building in ends of pipes
  - channels, benching, step irons and covers
  - connection to sewer
  - testing and commissioning

Guidance on the delivery and assessment of this Unit

This Unit is a specialist Quantitative Building Studies Unit which is recommended as a second-year Unit in the SQA Advanced Certificate and SQA Advanced Diploma Quantity Surveying programme. It appears in other areas of SQA Advanced Certificate and SQA Advanced Diploma Built Environment awards. As a specialist Unit, it is recommended that the Unit be delivered towards the end of these awards and after candidates have acquired a knowledge of construction technology.

Where this Unit is incorporated into 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.

Details on approaches to assessment are given under Evidence Requirements and assessment guidelines under each Outcome in the SQA Advanced Unit specification: statement of standards section. It is recommended that these sections be read carefully before proceeding with assessment of candidates.

The volume of evidence required for each assessment should take into account the overall number of assessments being contemplated within this Unit and the design of the overall teaching programme.

In designing the assessment instrument/s, opportunities should be taken to generate appropriate evidence to contribute to the assessment of Core Skills Units.

Opportunities for developing Core Skills

Core Skills Signposting

This Unit provides opportunities for the development of Core Skills in Communication, Numeracy and Problem Solving. 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	▤	▤	▤		
Oral					
2 Numeracy					
Using Number	▤	▤	▤		
Using Graphical Information	▤	▤	▤		
3 IT					
Using Information Technology					
4 Problem Solving					
Critical Thinking	▤	▤	▤		
Planning and Organising	▤	▤	▤		
Reviewing and Evaluating	▤	▤	▤		
5 Working with Others					

Open learning

Given that appropriate materials exist, this Unit could be delivered by distance learning, which may incorporate some degree of online support. However, with regard to assessment, planning would be required by the centre concerned to ensure the sufficiency and authenticity of candidate evidence. Arrangements would be required to be put in place to ensure that assessment/s were conducted under controlled, supervised conditions.

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.

General information for candidates

Unit title: Quantitative Building Studies: Substructures and Drainage

On completion of the Unit you should be able to:

1 Prepare quantified item descriptions for simple substructures.
2 Prepare quantified item descriptions for a tanked basement.
3 Prepare quantified item descriptions for underground drainage.

Evidence that you can satisfy the knowledge and skill elements of this Unit will be obtained by assessment in controlled, supervised open-book conditions with the current Standard Method of Measurement of Building Work provided. You will be allowed access to your own notes.