

## National Unit Specification: general information

<b>UNIT</b>	Building Construction: Components and Finishes (Higher)
<b>CODE</b>	DV3T 12
<b>COURSE</b>	Building Construction (Higher)

### SUMMARY

This Unit is a mandatory Unit of the *Higher Building Construction* Course but may also be taken as a free-standing Unit.

This Unit introduces a range of components and finishes associated with low-rise housing. The content of the Unit includes the technology of doors and windows and the application of internal finishes (such as timber flooring and gypsum plaster) and external finishes (such as roof tiles and roughcast). Stairs are given special attention due to the legislation that dictates their design. The Unit also includes a consideration of the functional requirements of the components studied and the properties of different building finishes.

The Unit is suitable for candidates who aim for a career in the construction industry as technicians, technologists and other construction professionals. The Unit may be undertaken by both full-time and part-time candidates in further education as well as candidates currently at school. Candidates may use this qualification to progress to further study at Higher National or Degree level.

### OUTCOMES

- 1 Produce annotated sketches showing the location and fixing of doors and windows in buildings.
- 2 Select and justify appropriate components and finishes for a given situation and describe the methods of application of finishes.
- 3 Identify key parts and critical dimensions of a stair and confirm compliance with current legislation.

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### Administrative Information

<b>Superclass:</b>	TG
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## National Unit Specification: general information (cont)

### RECOMMENDED ENTRY

While entry is at the discretion of the centre, candidates would normally be expected to have attained one of the following, or equivalent:

- ◆ An Intermediate 2 Course in Product Design, Graphic Communication or Technological Studies, or their Units
- ◆ Two Standard Grades at Credit level, one from each of the following groupings:
  - Mathematics, Physics or Technological Studies
  - Either Craft and Design or Graphic Communication

No prior knowledge of building technology is required of candidates undertaking this Unit.

### CREDIT VALUE

1 credit at Higher (6 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 Access 1 to Doctorates.*

### CORE SKILLS

Achievement of this Unit gives automatic certification of the following

Complete Core Skill	None
Core Skills components	Using Graphical Information at SCQF level 4 Critical Thinking at SCQF level 5

## **National Unit Specification: statement of standards**

### **UNIT Building Construction: Components and Finishes (Higher)**

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 the Scottish Qualifications Authority.

#### **OUTCOME 1**

Produce annotated sketches showing the location and fixing of doors and windows in buildings.

##### **Performance Criteria**

- (a) Sketches produced are clear and contain correct detailing of the location and fixing of components within structures in accordance with current good practice.
- (b) Details produced by sketches are correct with respect to current building legislation and good practice.
- (c) Sketches produced are accurate and well proportioned.
- (d) Annotations produced are correct with respect to the specification of materials and components.
- (e) Annotation and presentation of sketches is in accordance with current industry practice.

#### **OUTCOME 2**

Select and justify appropriate components and finishes for a given situation and describe the methods of application of finishes.

##### **Performance Criteria**

- (a) Materials and mixes selected are in accordance with current standards and good practice.
- (b) The selection of components and finishes is clearly justified for a given situation in terms of functional requirements and performance.
- (c) The methods of application of finishes are described correctly in accordance with current good practice.

#### **OUTCOME 3**

Identify key parts and critical dimensions of a stair and confirm compliance with current legislation.

##### **Performance Criteria**

- (a) Key parts and critical dimensions of a stair are correctly identified from a given stair design.
- (b) Compliance or non-compliance of a given stair with current legislation is correctly confirmed by calculation.

## **National Unit Specification: statement of standards (cont)**

### **UNIT Building Construction: Components and Finishes (Higher)**

#### **EVIDENCE REQUIREMENTS FOR THIS UNIT**

Written/oral and product evidence is required which demonstrates that the candidate has achieved all Outcomes in this Unit and all Performance Criteria within Outcomes. The content for this Unit is detailed in the Appendix.

The assessment for Outcomes 2 and 3 in this Unit is a 60 minute closed-book test. This covers the selection and justification of components and finishes and the key parts and dimensions of a stair. In addition, candidates will confirm by calculation the compliance (or non-compliance) with current legislation of a given stair design.

The assessment for Outcome 1 in this Unit is a folio of work. This covers annotated sketches of the location and fixing of doors and windows.

The closed book test covering Outcomes 2 and 3 will be carried out in controlled conditions: candidates are not permitted to collaborate in their responses.

The compilation of the folio of work will be an open-book task carried out in supervised conditions. Candidates may co-operate and collaborate in their research and information gathering for this task. They may similarly compare notes on technical details and building standards. Assessors must, nevertheless, be satisfied that the folio of work submitted by each candidate is the candidate's 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 Outcomes 2 and 3 can be decided by the use of a cut-off score. The National Assessment Bank (NAB) 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 Unit, they should be of a comparable standard.

Achievement in the folio of work for Outcome 1 will be decided on an achieved/not achieved basis. The criteria for achievement in the folio of work are the Performance Criteria in Outcome 1.

An exemplar for the folio of work for Outcome 1 can be accessed via the SQA Coordinator for each centre. The exemplar illustrates the standard that should be applied for the folio of work.

For the closed-book test for Outcomes 2 and 3, where candidates fail to reach the agreed threshold score, reassessment should follow using an alternative instrument of assessment.

For the folio of work for Outcome 1, where candidates fail to achieve the required performance, reassessment of one or more sub-tasks may be all that is required to bring the candidate's performance up to an acceptable standard.

## National Unit Specification: statement of standards (cont)

### UNIT Building Construction: Components and Finishes (Higher)

#### APPENDIX

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

In this Unit, candidates will cover both traditional **and** timber framed buildings in learning and teaching, but will only have to deal with **one** of these in the assessment for the Unit. In addition, candidates will consider the location and fixing of both external doors and windows in learning and teaching, but will only have to include one or the other in their folio of work.

#### Folio of work containing annotated sketches of location and fixing of components (Outcome 1)

The candidate will complete:

- ◆ Annotated sketches showing details of the location and fixing of the component (window **or** external door) in the external wall structure, including:
  - a horizontal section (plan)
  - a vertical section

The external wall structure may be either traditional masonry cavity construction **or** timber frame. Candidates may be given an outline sketch of the external wall structure as a starting point for their work.

The sketches must:

- ◆ be clear and contain correct detailing of the location and fixing of components within the structure
- ◆ be correct with respect to current building legislation and good practice
- ◆ be accurate, well proportioned

The annotations must:

- ◆ include correct specifications of materials and components
- ◆ be in accordance with current good practice

The annotated sketches for Outcome 1 may be compiled either manually or by computer-aided means.

#### Closed book test covering selection and justification of components and finishes (Outcome 2)

The content to be covered for this Outcome is as follows:

- 1 The selection of materials, mixes, components and finishes in terms of functional requirements and performance for:
  - ◆ type of window **and** external doors
  - ◆ material for selected door **and** window(s)
  - ◆ finishes for:
    - outside face of external wall
    - inside face of external wall
    - faces of internal walls and partitions

## National Unit Specification: statement of standards (cont)

### UNIT Building Construction: Components and Finishes (Higher)

- floors (finishings and coverings)
  - ceilings
  - roof covering (flat or pitched) including perimeter treatments
- 2 A description of the methods of application of the finishes selected, including:
- ◆ preparations of backgrounds
  - ◆ methods of application of finishes
  - ◆ methods of temporary protection of finishes
- 3 Materials and mixes selected must be in accordance with current standards and good practice.

#### Closed book test covering stair parts and critical dimensions

The content to be covered for this Outcome (3) is as follows:

- 1 The identification of *stair parts* and associated *critical dimensions* from given drawings:
- ◆ riser
  - ◆ rise
  - ◆ tread
  - ◆ going
  - ◆ nosing
  - ◆ pitch
  - ◆ pitch line
  - ◆ stringer (or string)
  - ◆ headroom
  - ◆ balustrade
  - ◆ handrail
  - ◆ newel post
  - ◆ landings
  - ◆ stair width
- 2 Confirmation of the compliance (or otherwise) with *current building legislation* of the given stair design in respect of:
- ◆ number of risers in a flight
  - ◆ maximum and minimum rise
  - ◆ minimum going
  - ◆ going of landing
  - ◆ combination of (2 x rise) plus (1 x going)
  - ◆ maximum pitch
  - ◆ width of stair
  - ◆ headroom

## National Unit Specification: support notes

### UNIT Building Construction: Components and Finishes (Higher)

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 on the subject of construction is set in the context of low-rise domestic buildings or dwelling houses. It shares some subject matter in common with the topics of industrial and commercial construction technology. However, there are some distinct differences between domestic and other forms of construction.

No prior knowledge of building construction is required of candidates undertaking this Unit.

#### Corresponding to Outcomes 1-3

**Outcome 1** This Outcome requires the candidate to sketch sections through building components, correctly locating the components within the building structure.

**Outcome 2** This Outcome provides the candidate with knowledge and understanding of components and internal and external finishes found in housing construction. Components include doors and windows. Internal finishes include floor, wall and ceiling finishes. External finishes include wall finishes and roof coverings. The Outcome concentrates on the functional requirements and performance of both components and finishes. It also gives attention to the method of application of the finishes to the building structure. Candidates will be able to select and justify components and finishes for a given building.

**Outcome 3** This Outcome requires candidates to identify the key parts and critical dimensions of stairs. Candidates will be able to calculate and confirm compliance (or otherwise) of a given stair design with current legislation.

Candidates who undertake this Unit will develop knowledge and understanding of the various components commonly found in domestic buildings. Doors, windows and stairs will be the focus of attention in this Unit. (Trussed rafters are undoubtedly a major component in a building. Nevertheless, the subject of roof structure is not covered in this Unit but rather in *Building Construction: Superstructure*).

Candidates will also develop knowledge and understanding of the various finishes commonly found in domestic buildings. Timber flooring, plasterboard and plaster are obvious examples. External finishes such as roughcast and render as well as facing brick will also be covered. Roof coverings for both flat and pitched roofs will be considered.

- ◆ For plaster and plasterboard finishes, fixing details and treatment of joints, junctions and edges are important areas of study.
- ◆ For render and roughcast finishes, reference will be made to common mixes and current standards. The treatment of perimeter details and allowance of expansion in the finish should be dealt with.

## National Unit Specification: support notes (cont)

### UNIT Building Construction: Components and Finishes (Higher)

- ◆ For roof coverings, particular attention will be given to eaves, verge and ridge details. Some time will be spent considering the detail around protruding pipes and the subjects of roof ventilation, insulation and allowance for thermal movement.

A domestic construction project requires the preparation of a range of backgrounds for the application of finishes. Candidates must understand the importance of sound preparation of, for example, brickwork and blockwork backgrounds to receive plaster or roughcast finishes. The following topics could be included:

- ◆ Bonding of materials; surface textures; bonding agents; plaster mixes; render mixes; screed mixes; expansion and contraction; moisture content; the effect of adverse weather.

Candidates should gain an appreciation of British and other international Standards that apply to the specification of building materials and components. Nevertheless, candidates will not be required to memorise BS, ISO or other reference numbers for assessment purposes.

Candidates will gain an appreciation of the functional requirements and properties of components and materials. Components and materials could include:

- ◆ timber doors
- ◆ PVCu, aluminium doors and doorsets
- ◆ timber windows
- ◆ PVCu and metal windows
- ◆ timber stairs

Candidates will understand the properties of finishes. The focus here is on the functional requirements of the finish and the performance of different materials. Finishes should include:

- ◆ renders
- ◆ roughcast
- ◆ plaster and plasterboard
- ◆ timber flooring
- ◆ wall and floor tiles
- ◆ rooftiles: plain, interlocking
- ◆ roof slating
- ◆ flat roof finishes: built-up felt coverings, mastic asphalt, single-ply membranes

The study of components in buildings could include the following areas (although these will not form part of the Unit assessment): relevant health and safety practices and legislation; provision of health and safety information to tradespersons and other operatives; proper storage of materials and components and associated protection.



## National Unit Specification: support notes (cont)

### UNIT Building Construction: Components and Finishes (Higher)

#### GUIDANCE ON LEARNING AND TEACHING APPROACHES FOR THIS UNIT

By assigning research tasks to candidates, the study of building components and finishes can be candidate-centered and participative. Research could be based on the following sources:

- ◆ manufacturers' technical literature
- ◆ internet websites e.g. the website of a national manufacturer of roofing tiles
- ◆ diagrams and photographs
- ◆ building drawings and details
- ◆ samples of materials
- ◆ wallcharts of building components and their fixings

Use of electronic whiteboards, projectors, photographic images and computer-aided drawings is increasing in some centres to demonstrate the different stages of building work. Candidates who are remote from their centre will still benefit from these learning materials if they can be sent the files electronically. For those that have no access to such facilities, the use of hard copy resources will be appropriate.

Textbooks and videos 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.

Increasingly manufacturers and suppliers of building materials produce technical literature that highlights how their products comply with current building legislation. Candidates will likely find that such literature is very informative and visual. 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 value because they relate purely to house construction.

Candidates could be exposed to the BS: EN documents for some of the common materials and for workmanship applicable to these finishes. This will allow them to become familiar with the layout of such technical documentation and allow them to read other such documents with greater confidence. Candidates are not required to remember standards or their references.

Field trips to building sites are always of benefit to candidates. On housing sites there are invariably several plots under development at any one time. Candidates can view the process of applying finishes and installing components at various stages. Note could be taken of all plant and equipment being used in the construction works. Aspects of health and safety should be particularly noted. After visiting the site, candidates could be encouraged to write down a simple method statement for the installation of components, the preparation of backgrounds and the application of finishes.

On site visits attention could be paid to on-site storage requirements for components and finishing materials in terms of space and stacking. Manual handling techniques pertaining to different components are worth noting.

## National Unit Specification: support notes (cont)

### UNIT Building Construction: Components and Finishes (Higher)

A visit to a building site to study building components and finishes is an opportunity to examine other aspects of building work. Candidates who are also studying the Unit *Building Construction: Superstructure (Higher)*, for example, could make use of the chance to examine how the components are fitted into the building envelope. Particular note might be taken of the detail at the junction of components and the adjacent finishes, for example, a window with the plaster or roughcast finish surrounding it.

When candidates are sketching construction details they could be coached in techniques that result in sketches which have clean lines and are free of repeated correction marks.

#### GUIDANCE ON APPROACHES TO ASSESSMENT FOR THIS UNIT

This Unit gives candidates experience of selecting components and finishes. Although candidates will develop their knowledge and understanding of building materials and their properties, Unit assessment is focused on the *application* of this knowledge and understanding.

Candidates should achieve a satisfactory mark in the tests for Outcomes 2 and 3. The standard to be applied is detailed in the National Assessment Bank item for the Unit.

Candidates should produce a satisfactory folio of work for Outcome 1. The standard to be applied is exemplified in the exemplar provided. The folio of work will be assessed on an achieved/not achieved basis only.

#### CANDIDATES WITH ADDITIONAL SUPPORT NEEDS

This Unit Specification is intended to ensure that there are no artificial barriers to learning or assessment. The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments or considering alternative Outcomes for Units. For information on these, please refer to the document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* (SQA, 2004).