



## National Unit Specification: general information

**UNIT** Consolidation of Masonry Structures (SCQF level 6)

**CODE** F2G0 12

### SUMMARY

This Unit is suitable for candidates with limited experience in the construction and heritage industries who wish to gain knowledge and understanding of consolidation of masonry structures. It is particularly suitable for candidates who wish to work in the industrial field of conservation masonry.

This Unit has been designed to develop the candidate's ability to undertake the consolidation of general stone rubble walling and repointing rubble and ashlar masonry. It also develops the candidate's knowledge and understanding of the causes, effects and treatment of organic growth on masonry.

### OUTCOMES

- 1 Identify the causes, effects and treatment of organic growth on masonry.
- 2 Remove existing defective pointing in rubble masonry.
- 3 Build in required pieces of missing and salvaged masonry pinnings and carry out traditional pointing to match existing masonry.
- 4 Remove defective pointing in ashlar masonry and repoint to match existing pointing.

### RECOMMENDED ENTRY

Entry is at the discretion of the centre.

### CREDIT VALUE

1.5 credits at Higher (9 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.*

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### Administrative Information

**Superclass:** TG

**Publication date:** October 2007

**Source:** Scottish Qualifications Authority

**Version:** 01

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## **National Unit Specification: general information (cont)**

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### **CORE SKILLS**

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

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

### **UNIT Consolidation of Masonry Structures (SCQF level 6)**

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**

Identify the causes, effects and treatment of organic growth on masonry.

##### **Performance Criteria**

- (a) Identify algae and herbaceous plants, shrubs and woody growth that have an adverse effect on masonry structures.
- (b) Explain the nature of the adverse effects on these structures.
- (c) Explain appropriate techniques and methods for removal of this destructive growth.
- (d) Explain the processes that are necessary to protect masonry once growth has been removed.

#### **OUTCOME 2**

Remove existing defective pointing in rubble masonry.

##### **Performance Criteria**

- (a) Identify and remove defective mortar in rubble and local vernacular masonry walling correctly.
- (b) Store and number stone pinnings to be rebuilt as original wall.
- (c) Protect stone walling using the appropriate process to prevent further damage.
- (d) Select, use, clean and store appropriately all tools used in the task.
- (e) Work in accordance with current health and safety legislation through out.

#### **OUTCOME 3**

Build in required pieces of missing masonry pinnings and carry out traditional pointing to match existing masonry.

##### **Performance Criteria**

- (a) Source and prepare missing and salvaged masonry pinnings.
- (b) Build in missing and salvaged stonework pinnings to match existing.
- (c) Point joints and beds to rubble masonry to match existing walling.
- (d) Undertake different types of pointing finishes to stone rubble walling.
- (e) Select, use, clean and store appropriately all tools used in the task.
- (f) Work in accordance with current health and safety legislation through out.

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

### **UNIT Consolidation of Masonry Structures (SCQF level 6)**

#### **OUTCOME 4**

Remove existing defective pointing in ashlar masonry and repoint to match existing pointing.

#### **Performance Criteria**

- (a) Remove defective pointing from ashlar walling correctly.
- (b) Prepare joints and beds to receive lime pointing.
- (c) Point ashlar joints and beds to match existing ashlar finish.
- (d) Clean surplus mortar from the face of ashlar and protect completed works correctly.
- (e) Complete all works without damaging adjacent walling.
- (f) Select, use, clean and store appropriately all tools used in the task.
- (g) Work in accordance with current health and safety legislation throughout.

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

Evidence is required to demonstrate that the candidates have achieved all Outcomes and Performance Criteria.

Written and/or recorded oral evidence is required to demonstrate that the candidate has achieved the Outcome 1 and its Performance Criteria. The evidence for this should be obtained under closed-book, controlled, supervised conditions at an appropriate point in the Unit. Candidates will be presented with a real or simulated project and will be given a clear brief to ensure that they have the opportunity to achieve all the Performance Criteria.

Product evidence and performance evidence supported by an assessor observation checklist is required to show that the candidate has achieved the standard specified in Outcomes 2,3 and 4 and all related Performance Criteria.

Performance Evidence supported by an Assessor observation checklist should be used to show that the candidate has completed the following tasks correctly and safely:

- ◆ remove defective pointing from joints and beds and demonstrate skills in recording and storage of loose stonework pinnings
- ◆ remove existing cementitious pointing at various depths on an area of not less than 1.5 metre square
- ◆ prepare and replace missing stone pinnings
- ◆ source missing pinnings and rebuild all other pinnings laid aside on a minimum of three joints
- ◆ carry out tamping and pointing using various techniques on an area of not less than 1.5 square metres
- ◆ protect the works correctly
- ◆ prepare joints and beds in ashlar build of 1 metre squared to receive lime pointing
- ◆ point ashlar joints and beds to match existing on complete area

The product evidence will be the candidates repair and surfaced masonry walling. Where it is impractical to store and keep the work of each candidate, photographic evidence or video evidence will be acceptable. The evidence will be produced at appropriate points throughout the Unit under supervised conditions.

## National Unit Specification: support notes

### UNIT Consolidation of Masonry Structures (SCQF level 6)

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 60 hours.

#### GUIDANCE ON THE CONTENT AND CONTEXT FOR THIS UNIT

This Unit has been developed as a mandatory Unit in the National Progression Award in Conservation of Masonry at SCQF level 6 and can also be delivered as a freestanding Unit.

Candidates successfully completing this Unit will gain the knowledge and understanding to be competent in the conservation and consolidation of stone rubble and ashlar walling and the removal of organic growth. They will also develop the underpinning knowledge relating to practical applications and use of tools and equipment for removal of defective pointing and re-pointing in lime mortars.

The Unit is suitable for candidates from the construction and related service industries and trades. The skills are transferable within different working environments but the Unit is aimed at candidates whose normal place of work would be a site, a conservation project or a similar working environment.

The Unit is applicable to all areas of construction or other related industries but specifically with the consolidation of general stone rubble walling and re-pointing of traditional rubble and ashlar masonry. It also includes the safe working practices associated with working with lime based mortars and is complemented by other building Units in Stonemasonry.

The Unit is applicable to all areas of construction or other related industries but specifically includes the safe working practices associated with working with lime based mortars.

The Unit deals specifically with the application of surface finishing to walls, including any background preparation and repair of masonry Units and components where appropriate. Where this Unit is being taken as part of the National Progression Award in Conservation of Masonry at SCQF level 6, it is recommended that it is delivered after candidates have completed the following Units: before undertaking this Unit:

F2FW 12	<i>Principles of Conservation in the Built Heritage (SCQF level 6)</i>
F2FX 12	<i>Working with Traditional Mortars (SCQF level 6)</i>
F2FY 12	<i>Masonry Materials and Performance (SCQF level 6)</i>

This Unit may be assessed on a live project or alternatively on a simulation module incorporating a stone built structure.

## **National Unit Specification: support notes (cont)**

### **UNIT Consolidation of Masonry Structures (SCQF level 6)**

All working practices must be in accordance with current and relevant health and safety legislation and regulations and the following acts in their most current form are relevant. The following health and safety regulations, acts, approved codes of practice and any amendments or updates made by statutory bodies apply to all Outcomes in this Unit:

- ◆ Health & Safety at Work Act 1974
- ◆ The Personal Protective Equipment at Work Regulations 1992 (as amended)
- ◆ Provision and Use of Work Equipment Regulations 1998 (as amended)
- ◆ The Construction (Design & Management) Regulations 2007
- ◆ The Control of Substances Hazardous to Health 2002 (as amended)
- ◆ The Lifting Operations and Lifting Equipment Regulations 1998 (as amended)
- ◆ The Work at Height Regulations 2005
- ◆ The Management of Health and Safety at Work Regulations 1999 (as amended)
- ◆ The Manual Handling Operations Regulations 1992 (as amended)

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

The achievement of skills and underpinning knowledge required for this Unit will be assisted by the provision of information sources in the form of: oral and/or written instructions; graphic and photographic materials; technical information and examples from manufacturers of limes, sands and pre-mixed mortars; codes of practice; building standards; statutory regulations; hands-on examination of sound and decayed lime-based pointing in masonry construction; hands-on exercises in removing and reinstating suspect pointing using lime mortars correctly and safely.

Teachers/ Lecturers should demonstrate practical elements step-by-step until the candidate feels competent enough to attempt them under assessment conditions. The requirement to adopt safe working practices and comply with safety legislation must be emphasised throughout.

It is recommended that this Unit be delivered in order of Outcomes as the order stated in the statement of standards is the logical order of the task of removing defective materials and re-pointing with lime mortars.

## **National Unit Specification: support notes (cont)**

### **UNIT            Consolidation of Masonry Structures (SCQF level 6)**

#### **OPPORTUNITIES FOR CORE SKILL DEVELOPMENT**

Elements of the Core Skill of Problem Solving, that is, critical thinking, planning and organising, and reviewing and evaluating, could be effectively developed and enhanced in the Unit, which requires the application of theoretical knowledge to a practical task. Identifying and examining the relevance of all factors at various stages of carrying out masonry repairs will be essential to ensure successful results. Initially candidates will have to establish the extent of repair needed before analysing requirements for materials in a range of environmental and seasonal contexts, which will involve a high level of critical thinking. The ability to identify appropriate materials, test their properties, and select solutions which use appropriate approaches to working is a critical competence. Candidates will devise an appropriate and safe approach to work based on assessment of performance characteristics, and demonstrates that they can comply with current and relevant Health and Safety legislation and regulations. Formative group discussion of issues such as site requirements, and the impact of environmental and seasonal factors may be useful to support decision making although candidates should independently identify and determine best practice. Class discussions with assessor support during formative work could encourage the analytical evaluation of typical repair strategies and would also be of value in developing problem solving skills.

The ability to calculate and consider the implications of data which may be presented numerically and graphically will underpin the competencies developed in the Unit. Candidates have to focus on practical analysis and calculation to determine and test the effects of exposure, environmental, and seasonal influences on the performance of existing and new repair materials. Knowledge and understanding of the mechanisms and effects of decay will be critical to the formulation of sound repair strategies. Practical exercises to support development of skills in the calculation and presentation of data could be undertaken as part of formative work and integrated with other work across the award, with an emphasis on Numeracy as a tool to be used and applied efficiently and critically in working contexts. The provision of appropriate reference materials in numeric and graphic format would assist this process.

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

It is recommended that Candidates be assessed on an Outcome by Outcome basis as this reflects how the work would progress in real working environment. However centres may chose to assess a combination of Outcomes on a single assessment occasion.

Written and/or oral evidence for Outcome 1 could be in the form of a case study with candidates producing a repair strategy for the removal of organic growth.

An appropriate instrument of assessment for Outcomes 2, 3 and 4 would be a series of practicable assignments which the candidates complete in a real or simulated workplace environment. The practical assignments should require candidates to remove defective pointing and to reinstate to match existing.

In order to allow candidates to achieve all Outcomes and Performance Criteria candidates should be given a clear brief detailing the nature of the exercises involved.

Centre should retain observation check lists and product evidence in the form of either candidates completed work evidence, photographic or video evidence.

## **National Unit Specification: support notes (cont)**

**UNIT** Consolidation of Masonry Structures (SCQF level 6)

### **CANDIDATES WITH DISABILITIES AND/OR ADDITIONAL SUPPORT NEEDS**

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. Further advice can be found in the SQA document *Guidance on Assessment Arrangements for Candidates with Disabilities and/or Additional Support Needs* ([www.sqa.org.uk](http://www.sqa.org.uk)).