



Higher National Unit Specification:

General information for centres

Unit title: Stonemasonry: Consolidation of Masonry Structures

Unit code: F8PV 34

Unit purpose: This Unit is designed to enable the candidate to develop their knowledge, understanding and skills relevant to the consolidation of masonry structures. The candidate will demonstrate their understanding of techniques and practices as well as their practical abilities in the taking down and rebuilding of stonemasonry walling.

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

- 1 Prepare and record unstable masonry and take down for re-build.
- 2 Re-build masonry to match existing.
- 3 Grout structural cracks using gravity grouting techniques.

Credit points and level: 1 HN 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 Access 1 to Doctorates.*

Recommended prior knowledge and skills: Access to this Unit is at the discretion of the centre. However it is recommended that candidates have completed the Professional Award in Stonemasonry at SCQF level 6 or have the equivalent level of industrial experience and prior learning.

Core Skills: There are opportunities to develop the Core Skills of *Communication, Numeracy, Working with Others* and *Problem Solving* all at SCQF level 5 and *Information and Communication Technology* at SCQF level 4 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 in the subject area of the Group Award to which it contributes. This Unit was developed as part of the Professional Development Award in Stonemasonry at SCQF level 7 and is aimed at candidates following a career in stonemasonry and with current industrial experience.

General information for centres (cont)

Assessment: The candidate will be given the opportunity to enhance their skills and knowledge in stonemasonry by fabricating a screen that will enable them to accurately record down taking of random rubble stonework. They will be required to mark stones in the down taking exercise for future rebuilding. Candidates will rebuild walling as per recorded details. Candidates will also undertake the consolidation of a wall core and cracking by filling voids with lime grout. The principles and techniques should be explained throughout the practical activities.

This Unit is assessed on the candidates' performance of recording and re-building to match existing also the stabilisation of the wall core and the ability to meet the Evidence Requirements in all Outcomes.

In order to achieve this Unit, candidates are required to present sufficient evidence that they have met all the knowledge and/or skills elements for each Outcome. Details of these requirements are given for each Outcome.

The assessment instruments used should follow the general guidance offered by the Scottish Qualifications Authority (SQA) assessment model and an integrative approach to assessment is encouraged. (See references at the end of support notes).

Evidence will be gathered through observation of work processes and assessment of completed work. Assessment should be carried out under controlled, supervised conditions. Candidates must achieve all of the knowledge and/or skills and Evidence Requirements specified for each Outcome to gain this Unit. Centres may use the instrument of assessment which they consider to be most appropriate but are advised to use the Stonemasonry Training and Assessment Programme (TAP) which has been developed centrally by SQA. Any other instruments of assessment used must be comparable to the TAP and have been through prior verification.

Accurate records should be made of the assessment instruments used showing how evidence is generated for each Outcome and giving marking schemes, checklists and recorded candidate feedback. Records of candidates' achievements should be retained. These records will be made available for external verification.

Higher National Unit Specification: statement of standards

Unit title: Stonemasonry: Consolidation of Masonry Structures

Outcome 1

Prepare and record unstable masonry and take down for re-build

Knowledge and/or skills

- ◆ Establish area for recording
- ◆ Fabricate a timber frame
- ◆ Record stonework
- ◆ Storage of frame.
- ◆ Down take stonework
- ◆ Number and place stone

Evidence Requirements

Candidates will need to provide evidence to demonstrate their knowledge and skills by showing they can:

- ◆ survey and establish area for recording stonework
- ◆ fabricate a timber frame in size to include all unstable walling to be re-built
- ◆ cover timber frame with a suitable membrane to allow recording of individual stones
- ◆ record stonework by marking individual stones on prepared timber frame
- ◆ store frame and protect for the future rebuild
- ◆ take down safely unstable masonry for re-building purposes, clean off all surplus mortar ensuring that no damage to the stone occurs
- ◆ number all individual stones for re-build and ensure this is recorded accurately
- ◆ place stone in order for rebuilding of down-taking

Evidence should be generated through assessments under supervised conditions. Candidates need to demonstrate their knowledge of all aspects of recording and re-use of information.

All working practices must be in line with current and relevant health and safety legislation and regulations.

Evidence will be gathered through observation of work processes and assessment of the completed work. Assessment should be carried out under controlled, supervised conditions. In order to achieve this Outcome, candidates are required to present sufficient evidence that they have met all the knowledge and/or skills elements.

Assessment guidelines

Candidates will be assessed on their ability to fabricate a timber screen and to clad with suitable membrane. They will undertake the marking of all individual stones that is surveyed to be re-built on the frame and safely set-aside for re-use.

Candidates will be required to take down stone walling and to clean off surplus mortar in preparation for re-build. They will be expected to number and place the stone in sequence. The base of the wall will be prepared for re-building of stone walling.

Higher National Unit Specification: statement of standards (cont)

Unit title: Stonemasonry: Consolidation of Masonry Structures

This will be assessed by a practical exercise and will be supported by an assessor observation checklist in Outcome 2. Each candidate will be observed in their ability to carry out given tasks correctly and safely.

The 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 and candidate will produce a risk assessment for the project.

Outcome 2

Re-build masonry to match existing

Knowledge and/or skills

- ◆ Re-build stone
- ◆ Use pre recorded frame
- ◆ Re-build
- ◆ Protection
- ◆ Appropriately tools used
- ◆ Health and safety

Evidence Requirements:

Candidates will need to provide evidence to demonstrate their knowledge and skills by showing they can:

- ◆ re- build rubble masonry as per sequence of numbers marked on individual stones
- ◆ match the build with the recorded frame to ensure a match of the existing build is attained
- ◆ point completed re-built stonework to match existing
- ◆ protect all rebuilt masonry with suitable materials
- ◆ select, use, clean and store appropriately all tools used
- ◆ work in accordance with current health and safety legislation

The following specification will assist the assessor in judging the candidate performance against the Evidence Requirements

Specification Checklist	Completed
Fabrication of timber frame	Yes/No
Marking accurately, stonework on frame	Yes/No
Numbering of stone in down take	Yes/No
Sequencing stone in down take	Yes/No
Cleaning stone avoiding damage	Yes/No
Re-build of stonework to match existing	Yes/No
Pointing to match existing	Yes/No
Face of Stone Clean	Yes/No
Protection of completed work	Yes/No

Higher National Unit Specification: statement of standards (cont)

Unit title: Stonemasonry: Consolidation of Masonry Structures

Evidence will be gathered through observation of work processes and assessment of the completed work. Assessment should be carried out under controlled, supervised conditions. In order to achieve this Outcome, candidates are required to present sufficient evidence that they have met all the knowledge and/or skills elements. An assessor observation checklist should be completed to ensure that the candidate has met the required specification and tolerances and this observation checklist should be retained as evidence.

Assessment guidelines

Candidates will demonstrate their skills by re-building numbered sequence of random rubble stonework. All building of stonework will be checked and matched to pre-recorded timber frame, and will be supported by an assessor observation checklist. Candidates must be observed in the attainment of Outcome and Evidence Requirements.

Each candidate will be observed in their ability to carry out given tasks correctly and safely. The evidence may be produced on one assessment occasion or on more than one occasion and should be carried out under supervised conditions. Candidates must be observed in the attainment of all Outcomes and Evidence Requirements.

Assessment should be carried out in a suitable workshop environment. Timing for this assessment should be determined prior to commencement. An observation checklist should be completed to ensure the candidate has evidenced all the knowledge and skills included in this Outcome to the specifications and tolerances required.

Outcome 3

Grout structural cracks using gravity grouting techniques.

Knowledge and/or skills

- ◆ Preparation for grouting
- ◆ Mixing lime grouts
- ◆ Grouting techniques
- ◆ Pointing

Evidence Requirements:

Candidates will need to provide evidence to demonstrate their knowledge and skills by showing they can.

- ◆ cut out 20mm diameter holes through joints of stonework at intervals of 1 metre apart
- ◆ prepare stone masonry walling for gravity grouting by flushing out with clean water through the prepared holes
- ◆ joint holes to be tightly filled with tow or clay to a depth of 50mm prior to grouting operations
- ◆ position steel grout pan approximately 3 metres above area of grouting
- ◆ insert nozzle at lowest hole and plug round with tow or clay
- ◆ mix lime grout to consistency that will enable mixture to flow into voids
- ◆ fill container at top and open stop cock to allow grout to flow freely into core of walling
- ◆ remove clay plug at upper level to ensure voids and defects are full on completion of grouting
- ◆ remove all clay or tow bungs when grout has set and point all open joints to match existing

Higher National Unit Specification: statement of standards (cont)

Unit title: Stonemasonry: Consolidation of Masonry Structures

The following specification will assist the assessor in judging the candidate performance against the Evidence Requirements.

Specification Checklist	Completed
Cut out holes through joints at approximately 1 metre intervals	Yes/No
Prepare stonework for grouting	Yes/No
Plug holes in preparation of grouting	Yes/No
Position steel grout pan	Yes/No
Mix grout to an even consistency	Yes/No
Grout voids in wall	Yes/No
Remove clay or tow bungs	Yes/No
Point completed work to match existing	Yes/No
Protection of completed work	Yes/No

Evidence will be gathered through observation of work processes and assessment of the completed work. Assessment should be carried out under controlled, supervised conditions. In order to achieve this Outcome, candidates are required to present sufficient evidence that they have met all the knowledge and/or skills elements. An assessor observation checklist should be completed to ensure that the candidate has met the required specification and tolerances and this observation checklist should be retained as evidence.

Assessment guidelines

Candidates will demonstrate their skills by undertaking a sequence of operations in gravity grouting the core of a stone wall. They will be assessed in their skills in the preparation and Outcome associated with a successful grouting exercise. Each candidate will be observed in their ability to carry out given tasks correctly and safely.

The evidence may be produced on one assessment occasion or on more than one occasion and should be carried out under supervised conditions. Candidates must be observed in the attainment of Outcome and Evidence Requirements.

The health and safety regulations, acts, approved codes of practice and any amendments or updates made by statutory bodies apply to the Outcome in this Unit and candidate will produce a risk assessment for the project.

Knowledge evidence is required to demonstrate candidate is competent in various grouting techniques and materials associated with grouting mixtures

Written and/or recorded oral evidence is required to demonstrate that the candidate has achieved the knowledge elements of the Unit to the standard specified in the Outcome. The evidence for this should be obtained under closed-book, controlled, supervised conditions.

Administrative Information

Unit code: F8PV 34

Unit title: Stonemasonry: Consolidation of Masonry Structures

Superclass category: TG

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History of changes:

Version	Description of change	Date

Source: SQA

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National Unit Specification: support notes

Unit title: Stonemasonry: Consolidation of Masonry Structures

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 developed as an optional Unit in the Professional Development Award in Stonemasonry at SCQF level 7 and may be delivered in a sequence suitable to individual candidates and centres.

This Unit is designed to enable the candidate to develop their knowledge, understanding and skills relevant to conservation practices in re-building and stabilisation of historic masonry.

Candidates following a career in stonemasonry and with current industrial experience will benefit from undertaking this Unit.

The knowledge and skills for this Unit should be incorporated with modern methods and materials associated with historic masonry, applied Terminology commonly associated with conservation practices should be used throughout this Unit.

It is vitally important that candidates gain an understanding and knowledge of the sequencing of operations with regard to rebuilding and consolidation of masonry structures.

Current Health and Safety, sustainability and waste management issues should be fully emphasised throughout the delivery of this Unit.

Working to specified tolerances and methods of checking completed work should be demonstrated and undertaken by the candidate.

Guidance on the delivery and assessment of this Unit

The principles and methods of this Unit should enable the candidate to examine options of consolidating stone masonry structures and the sequencing of operations. The conservation practise and methods adopted to ensure any re-building/consolidation will match existing detail of the construction. All aspects of the Unit should be demonstrated to the candidate before summative assessment takes place.

The differing constraints candidates could encounter on site with various construction methods with regard to conservation practices should be fully explained.

Health and Safety and Sustainability are integral and key to the Construction Industry therefore throughout the Unit emphasis will be placed where appropriate on the application of Health and Safety and Sustainability. Safety working practices should be looked at in accordance with current safety codes of practice and regulations. Sustainability should include reference to criteria affecting sustainability, impact of not implementing sustainability on the environment and the legislation promoting sustainability.

Higher National Unit Specification: support notes (cont)

Unit title: Stonemasonry: Consolidation of Masonry Structures

Opportunities for developing Core Skills

Communication skills at SCQF level 5 may be developed by the completion of the assignment for Outcome 1. Candidates are required to prepare and record masonry for take down and rebuild outlining the processes, techniques, health and safety and sustainability requirements related to consolidation of masonry structures.

Working with others at SCQF level 5 could be developed when working in pairs when taking down and rebuilding of masonry walling. Candidates can agree responsibilities and provide support and information to each other during the assessments. After assessment, they should be encouraged to consider how effectively they supported each other.

Information and Communication Technology at SCQF level 4 may be developed by the candidates' carrying out individual research of modern and traditional methods used in grouting and consolidation of masonry structures, construction techniques, health and safety legislation and sustainability relating to the task.

Problem Solving at SCQF level 5 could be developed as candidates compare and contrast modern and traditional methods and materials used in the consolidation of masonry structures. Candidates will need to take account of a range of factors in order to work efficiently and safely, such as the choice of tools, appropriate materials, safety issues, safety equipment and sustainability. Individual discussions with assessors will enhance the evaluation of efficient working practices.

Numeracy could be developed at SCQF level 5 when taking off dimensions from masonry walling, measuring, calculating and numbering of stones.

Open learning

Although this Unit could be delivered by distance learning, it would require a considerable degree of planning by the centre to ensure the sufficiency and authenticity of candidate evidence. Arrangements would have to be made to ensure that:

- ◆ the practical activity in outcome 2 and 3 is supervised by a responsible person and clearly recorded (using an assessment checklist, or on video) for the assessor
- ◆ the assessor is, at some point able to question the candidate on the performance (face to face, by telephone, online)
- ◆ the closed-book assignment for outcomes is conducted in a supervised environment

Disabled candidates and/or those with additional support needs

The additional support needs of individual candidates should be taken into account when planning learning experiences, selecting assessment instruments, or considering whether any reasonable adjustments may be required. Further advice can be found on our website

www.sqa.org.uk/assessmentarrangements

General Information for Candidates

Unit title: Stonemasonry: Consolidation of Masonry Structures

This Unit is designed to develop your practical skills and knowledge of conservation practices and techniques used in the re-building and stabilisation of historic masonry structures. You will develop your understanding of modern materials and traditional practices that comply with sustainability issues and current Health and Safety legislation throughout the Unit.

You will have to demonstrate the required techniques in recording and re-building of stonework to ensure an accurate match of existing masonry is achieved. You will also demonstrate knowledge and skills required to consolidate a masonry structure.

You will learn about sustainability issues and how new materials, techniques and systems can have an impact on improving the sustainability in general and you will comply with current Health and Safety regulations and legislation throughout.

Outcome 1

Prepare and record unstable masonry and take down for re-build.

You will be assessed on the completion of an assignment in which you will be required to fabricate a timber frame to record unstable masonry. Mark stonework for down taking on constructed frame and safely store frame for further use. Take down area of recorded unstable masonry and clean off excess mortar. Number stone and place in order to re-build.

Re-build stone as per numbered sequence and use of fabricated frame to ensure build matches existing.

Outcome 2

Re-build masonry to match existing.

You will be assessed on the completion of an assignment in which you will be required to Re-build stone as per numbered sequence and use of fabricated frame to ensure build matches existing and complete pointing as original.

Work in accordance with current health and safety legislation throughout.

Outcome 3

Grout structural cracks using gravity grouting techniques.

You will be assessed on the completion of an assignment in which you will be required to mix and determine flow rate for lime grouts and fill voids by gravity grouting. Candidate will complete work by pointing all open joints to match existing. Work in accordance with current health and safety legislation throughout.

You will be assessed in supervised workshop conditions to specified tolerances contained in an observation checklist. These tolerances should be fully explained and available prior to you commencing the assessment. You will be required to work individually for the assessment and where required in pairs. You will receive both oral and written feedback on your performance from the assessor.

General Information for Candidates (cont)

Unit title: Stonemasonry: Consolidation of Masonry Structures

There are opportunities for you to develop your Core Skills of *Communication, Numeracy, Working with Others* and *Problem Solving* all at SCQF level 5 and *Information and Communication Technology* at SCQF level 4 in this Unit, although there is no automatic certification of Core Skills or Core Skills components.