



Higher National Unit specification

General information for centres

Unit title: Stonemasonry: Indenting and Repair of Stonemasonry

Unit code: F8PN 34

Unit purpose: This Unit is designed to enable the candidate to develop their knowledge, understanding and skills relevant to indenting and repair of stonemasonry. The candidate will demonstrate their understanding of techniques and practices to carry out cutting of stone, prepare ashlar stonework, full and part repair as well as small scale grouting techniques and stone cleaning.

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

- 1 Cut stone with hand tools.
- 2 Assess and prepare stone indent.
- 3 Prepare surface finishes on stone indents.
- 4 Build in stone indent and part indent.
- 5 Identify the principles of stone cleaning.

Credit points and level: 2 HN credits at SCQF level 7: (16 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 centres. However it is recommended that candidates have completed the Professional Development Award in Stonemasonry at SQF 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 and conservation by learning about indenting and repair work. Techniques and practices used to set out, template production and stone cutting should be integrated in the practical tasks undertaken. The principles and techniques should be explained throughout the practical activities.

This Unit is assessed on the candidates' performance of assessing stonework and building indents 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: Indenting and Repair of Stonemasonry

Unit code: F8PN 34

The sections of the Unit stating the Outcomes, Knowledge and/or Skills, and Evidence Requirements are mandatory.

Outcome 1

Cut stone with hand tools

Knowledge and/or Skills

- ◆ Cut stone
- ◆ Cut marginal draughts
- ◆ Pitch stone
- ◆ Tools and equipment
- ◆ Safe working practices
- ◆ Sustainability
- ◆ Working to specifications/tolerances

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ cut stone to receive boning blocks and check for wind/twist
- ◆ cut marginal draughts in accordance with specification, work stone down to a flat surface
- ◆ pitch the stone to guidelines working to a flat even surface
- ◆ ensure work activities correct in terms of sequencing of operations
- ◆ select, use, clean and store all tools used in the task
- ◆ follow current safe working practices
- ◆ minimise the waste of materials throughout practical work
- ◆ work to specified tolerances identified in the specification

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

This Outcome is assessed on the candidates' actual performance of cutting stone to given specification and required tolerances.

Candidates should be provided with specifications for the practical task. 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.

Higher National Unit specification: statement of standards (cont)

Unit title: Stonemasonry: Indenting and Repair of Stonemasonry

Outcome 2

Assess and prepare stone indent

Knowledge and/or Skills

- ◆ Assess damage
- ◆ Cut out damage
- ◆ Return heads
- ◆ Bedding of stone
- ◆ Tools and equipment
- ◆ Safe working practices
- ◆ Sustainability
- ◆ Working to specifications/tolerances

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ assess size of indent required by measuring the damaged stone
- ◆ cut out area of damaged stone using varying chisels and mallet
- ◆ return heads on prepared stone to match the size required for wall
- ◆ identify the correct method for bedding of stone
- ◆ select, use, clean and store all tools used in the task
- ◆ follow current safe working practices
- ◆ minimise the waste of materials throughout practical work
- ◆ work to specified tolerances identified in the specification

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

This Outcome is assessed on the candidates' actual performance of assessing and repairing stone indents to a given specification and required tolerances.

Candidates should be provided with specifications for the practical task. 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.

Higher National Unit specification: statement of standards (cont)

Unit title: Stonemasonry: Indenting and Repair of Stonemasonry

Outcome 3

Prepare surface finishes on stone indents

Knowledge and/or Skills

- ◆ Types of surface finishes
- ◆ Setting out
- ◆ Producing surface finishes
- ◆ Tools and equipment
- ◆ Safe working practices
- ◆ Sustainability
- ◆ Working to specifications/tolerances

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ identify types of surface finish for stone indents
- ◆ ensure surface finishes are set out in accordance with the specification, to match the original
- ◆ ensure surface finish is produced in accordance with the specification
- ◆ select, use, clean and store all tools used in the task
- ◆ follow current safe working practices
- ◆ minimise the waste of materials throughout practical work
- ◆ work to specified tolerances identified in the specification

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

This Outcome is assessed on the candidates' actual performance of preparing surface finishes to given specification and required tolerances.

Candidates should be provided with specifications for the practical task. 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.

Higher National Unit specification: statement of standards (cont)

Unit title: Stonemasonry: Indenting and Repair of Stonemasonry

Outcome 4

Build in full indent and part indent

Knowledge and/or Skills

- ◆ Part indents
- ◆ Full indents
- ◆ Lime Mortar
- ◆ Pointing
- ◆ Grouting
- ◆ Tools and equipment
- ◆ Safe working practices
- ◆ Sustainability
- ◆ Working to specifications/tolerances

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ build in full indent using appropriate lime mortar
- ◆ point joints and beds to match existing finish
- ◆ build in part stone indents correctly using non ferrous metals pins
- ◆ mix and prepare lime grouting to correct consistency
- ◆ select, use, clean and store all tools used in the task
- ◆ follow current safe working practices
- ◆ minimise the waste of materials throughout practical work
- ◆ work to specified tolerances identified in the specification

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

This Outcome is assessed on the candidates' actual performance of building indents to given specification and required tolerances.

Candidates should be provided with specifications for the practical task. 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.

Higher National Unit specification: statement of standards (cont)

Unit title: Stonemasonry: Indenting and Repair of Stonemasonry

Outcome 5

Identify the principles of Stone Cleaning.

Knowledge and/or Skills

- ◆ Methods of cleaning
- ◆ Advantages and disadvantages
- ◆ Affects on stone
- ◆ Tools and equipment
- ◆ Safe working practices
- ◆ Sustainability
- ◆ Working to specifications/tolerances

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ describe methods of stone cleaning
- ◆ state advantages and disadvantages of stone cleaning
- ◆ define mechanical and chemical cleaning and how they affect the stone structure
- ◆ select, use, clean and store all tools used in the task
- ◆ follow current safe working practices
- ◆ minimise the waste of materials throughout practical work
- ◆ work to specified tolerances identified in the specification

All the Evidence Requirements must be met and all items in the knowledge and skills covered. Evidence should be gathered through a question paper outlining the principles of stone cleaning. Assessment should be conducted under open-book supervised conditions.

Higher National Unit specification: statement of standards (cont)

Unit title: Stonemasonry: Indenting and Repair of Stonemasonry

Assessment Guidelines

In the assessment candidates will be required to complete a question paper. This could be conducted as an assignment in a classroom environment lasting up to three hours.

Performance Evidence supplemented with an assessor observation checklist/record should be used to show that the candidate has achieved the practical elements of the Unit to the standard specified in Outcomes 1–4 and Performance Criteria. Each candidate will be observed in their ability to carry out given tasks correctly and safely.

- ◆ Cut stone by forming a working surface out of twist to a plane surface, minimum surface area of stone worked to a plane surface to be 300mm × 250mm.
- ◆ Identify appropriate tools and use and maintain them to complete the task.
- ◆ Measure accurately size of indent required after cutting out damaged area of stone, minimum surface area of 300mm × 430mm.
- ◆ Form a return head on a stone at 90 degrees to the face, joint off face and head to specified lengths and work top and bottom beds to a specified height. (these sizes will be determined by the area which will receive the indent. Stone to be built on its natural bed.
- ◆ Produce the surface finishes on all indents to match the existing stonework.
- ◆ Build in part indent 150mm × 300mm using anchors and pins, into a designated place in a wall.
- ◆ Ensure work activities correct in terms of sequencing of operations.
- ◆ mix lime grout suitable for small scale grouting purposes. Of ashlar stonework using clay cups to hold in grout.
- ◆ Carry out pointing of fine ashlar stonework to match existing — min area of ½ square metre and implement curing method.

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 Performance Criteria in the statement of standards.

Written and/or recorded oral evidence is required to demonstrate that the candidate has achieved Outcome 5 and 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.

Administrative Information

Unit code:	F8PN 34
Unit title:	Stonemasonry: Indenting and Repair of Stonemasonry
Superclass category:	TG
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History of changes:

Version	Description of change	Date

Source: SQA

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Higher National Unit specification: support notes

Unit title: Stonemasonry: Indenting and Repair of Stonemasonry

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 80 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 can also be delivered as a freestanding Unit.

Candidates successfully completing this Unit will have the knowledge and understanding to be competent in the skills of hewing stone down to a flat/plane surface, and be able to return each head to a specified size for building purposes. The candidate successfully completing this Unit will gain underpinning knowledge relating to practical applications and use of tools and equipment for hewing stone, preparing lime mortars for building, small scale lime grouting and pointing fine ashlar.

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 includes the safe working practices associated with hewing of stone, mixing of lime-mortars and their use in re-pointing and grouting of fine ashlar stonework, and is complimented by other Units in the Personal Development Award in Stonemasonry at level 7

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

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.

- ◆ Health and 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 and 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)

Higher National Unit specification: support notes (cont)

Unit title: Stonemasonry: Indenting and Repair of Stonemasonry

Guidance on the delivery and assessment of 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 suppliers of stone and manufacturers of limes, sands and pre-mixed mortars; codes of practice; building standards; statutory regulations; hands-on exercises in hewing new stone indents, and building in and grouting, reinstating area of ashlar pointing to match existing, and underpinning knowledge of stone cleaning.

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.

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 choose to assess a combination of Outcomes on a single assessment occasion.

Written and/or oral evidence for Outcome 4 could be in the form of a question paper relating to the principles associated with 'Stone Cleaning'.

An appropriate instrument of assessment for Outcomes 1, 2, and 3 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 cut stone and build in cut stone indents.

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.

Higher National Unit specification: support notes (cont)

Unit title: Stonemasonry: Indenting and Repair of Stonemasonry

Opportunities for developing Core Skills

Communication skills at SCQF level 5 may be developed by the completion of the assignment. Candidates are required to produce a written assignment outlining the principles of stone cleaning.

Information and Communication Technology at SCQF level 4 may be developed by the candidates' carrying out individual research of traditional conservation techniques, health and safety legislation and sustainability relating to the task.

Problem Solving at SCQF level 5 could be developed as 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 working drawings, measuring, calculating and setting out.

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 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)

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: Indenting and Repair of Stonemasonry

This Unit is designed to develop your practical skills and knowledge of conservation practices and techniques used in the repair of stonework that will require cutting stone and preparing area to receive part and full indents. This will also include the building in of the prepared stones using appropriate materials and techniques. All practices will comply with sustainability issues and current Health and Safety legislation throughout the Unit.

You will have to demonstrate the required techniques in indenting and repair of stonework. You will also learn about sustainability issues and how new materials, techniques and systems can have an impact on improving the sustainability.

Outcome 1

Cut stone with hand tools

- ◆ cut stone
- ◆ cut marginal draughts
- ◆ pitch stone
- ◆ tools and equipment
- ◆ safe working practices
- ◆ sustainability
- ◆ working to specifications/tolerances

You will be assessed on the completion of an assignment in which you will be required to cut stone to a flat surface and to ensure that the face is out of wind/twist. Cut marginal draughts to a flat surface ensuring edges are intact. Pitch stone between draughts to a consistent finish working to specified tolerances identified in the specification.

Outcome 2

Assess and prepare stone indent

- ◆ assess damage
- ◆ cut out damage
- ◆ return heads
- ◆ bedding of stone
- ◆ tools and equipment
- ◆ safe working practices
- ◆ sustainability
- ◆ working to specifications/tolerances

You will be assessed on the completion of an assignment in which you will be required to cut out area of damaged stone and measure for stone replacement. Ensure replacement stone is cut and prepared with return heads and correct bedding is maintained. remove and store materials in appropriate locations.

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

General information for candidates (cont)

Unit title: Indenting and Repair of Stonemasonry

Outcome 3

Prepare surface finishes on stone indents

Knowledge and/or Skills

- ◆ types of surface finishes
- ◆ setting out
- ◆ producing surface finishes
- ◆ tools and equipment
- ◆ safe working practices
- ◆ sustainability
- ◆ working to specifications/tolerances

You will be assessed on the completion of an assignment in which you will be required to identify types of surface finishes. Prepare and cut various types of surface finishes to specified tolerances identified in the specification. Minimise the waste of materials throughout practical work

Outcome 4

Build in full indent and part indent

- ◆ part indents
- ◆ full indents
- ◆ lime mortar
- ◆ pointing
- ◆ grouting
- ◆ tools and equipment
- ◆ safe working practices
- ◆ sustainability
- ◆ working to specifications/tolerances

Evidence Requirements

Candidates will need to provide evidence to demonstrate their Knowledge and/or Skills by showing that they can:

- ◆ build in full indent using appropriate lime mortar
- ◆ point joints and beds to match existing finish
- ◆ build in part stone indents correctly using non ferrous metals pins
- ◆ mix and prepare lime grouting to correct consistency
- ◆ select, use, clean and store all tools used in the task
- ◆ follow current safe working practices
- ◆ minimise the waste of materials throughout practical work
- ◆ work to specified tolerances identified in the specification

General information for candidates (cont)

Unit title: Indenting and Repair of Stonemasonry

You will be assessed on the completion of an assignment in which you will be required to build in full and part stone indents. Mix and prepare materials required to bed and grout stone indents. Build in replacement stonework using proper procedures and metal fixings. Point all beds and joints to match existing finishes. Work to specified tolerances identified in the specification

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. You will receive both oral and written feedback on your performance from the assessor.

There are opportunities for you to develop your Core Skills of *Communication*, *Numeracy*, 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.