



## National Unit specification

### General information

**Unit title:** Produce Basic Stonemasonry Components (SCQF level 5)

**Unit code:** H8WX 45

**Superclass:** TG

**Publication date:** February 2015

**Source:** Scottish Qualifications Authority

**Version:** 01

### Unit purpose

This Unit is suitable for learners with no or limited experience in the construction and heritage industries who wish to gain knowledge and understanding of the production of basic stonemasonry components, stonemasonry surface finishes or natural sedimentary stone when applied to new build construction.

It is also suitable for learners from the construction and related service industries and trades, both skilled manual professions and non-manual professions, who wish to gain knowledge and understanding of the production of basic stonemasonry components and stonemasonry surface finishes.

### Outcomes

On successful completion of the Unit the learner will be able to:

- 1 Produce a basic stonemasonry component in natural stone.
- 2 Produce a range of different tooled surfaces to natural stone.

### Credit points and level

1.5 National Unit credits at SCQF level 5: (9 SCQF credit points at SCQF level 5)

### Recommended entry to the Unit

Entry is at the discretion of the centre, however it may be beneficial if the learner had some industry experience and knowledge.

## **National Unit specification: General information (cont)**

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### **Core Skills**

Opportunities to develop aspects of Core Skills are highlighted in the Support Notes for this Unit specification.

There is no automatic certification of Core Skills or Core Skill components in this Unit.

### **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.

### **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](http://www.sqa.org.uk/assessmentarrangements).

## **National Unit specification: Statement of standards**

**Unit title:** Produce Basic Stonemasonry Components (SCQF level 5)

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 SQA.

### **Outcome 1**

Produce a basic stonemasonry component in natural stone.

#### **Performance Criteria**

- (a) Identify natural stone products and manufacturing processes.
- (b) Cut natural, sedimentary stone to a flat, tooled surface.
- (c) Cut a face on natural stone at right angles to an existing flat surface.
- (d) Cut a simple/basic moulding in natural stone.
- (e) Cut top and bottom beds and jointed surfaces on natural stone.

### **Outcome 2**

Produce a range of different tooled surfaces to natural stone.

#### **Performance Criteria**

- (a) Identify traditional stone surface finishes and the tools used to make them.
- (b) Produce at least two common surface finishes on natural stone to given dimensions.

### **Evidence Requirements for this Unit**

#### **All Outcomes**

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

Learners will be presented with real or simulated projects and will be given a clear brief to ensure that they have the opportunity to achieve all the Performance Criteria.

Evidence must be provided to show that learners can demonstrate, and work with, an understanding of information, materials, terminology, practices and techniques related to stonemasonry repairs. Evidence must also be provided to show that learners can apply relevant knowledge and skills in a practical context.

Evidence is required to show that learners can identify the needs of other occupations associated with stonemasonry repairs and work accordingly.

Written and oral recorded evidence is required to demonstrate that the learner has achieved all Outcomes to the standards specified in the Performance Criteria. Learners will be required to demonstrate their knowledge of terminology, techniques, practices, and health and safety issues associated with stonemasonry repairs.

## **National Unit specification: Statement of standards (cont)**

**Unit title:** Produce Basic Stonemasonry Components (SCQF level 5)

### **Outcome 1**

**Produce a basic stonemasonry component in natural stone.**

#### **Performance Criteria**

##### **(a) Identify natural stone products and manufacturing processes.**

Evidence must be provided to show that learners can:

- ◆ identify different stone types and their geological classifications.
- ◆ identify commonly used building stones and quarrying procedures for dimensional stone.
- ◆ demonstrate understanding of the economic and environmental impact of extracting indigenous dimensional building stones.
- ◆ identify natural, sedimentary stone types, bedding planes, faults and flaws.
- ◆ explain methods, machinery, tools and processes for the production of dimensional building stone components.
- ◆ identify stonemasonry hand tools and portable power tools, terminology and uses.
- ◆ identify stonemasonry building components and terminology.
- ◆ identify a range of details commonly used on stone walling and how these details affect short, medium and long term performance.
- ◆ identify structural and non-structural uses of dimensional natural stone products.
- ◆ identify why replacement stone used for masonry repair work should be a best possible match to the existing stone walling.
- ◆ identify how a stone type can be acknowledged as a best like-for-like match.
- ◆ identify stone testing procedures for durability, compressive strength and more and the relationship results have to longevity and usage.
- ◆ identify man-made stone type products.
- ◆ explain the need for bonding between adjacent components in masonry construction and how it is achieved.
- ◆ explain the Health and Safety implications associated with working natural stones.

#### **Performance Criteria**

##### **(b) Cut natural, sedimentary stone to a flat, tooled surface.**

Evidence must be provided to show that learners can:

- ◆ explain how to safely lift, handle and transport finished stonemasonry components.
- ◆ identify, select and use stonemasonry tools to remove an area of natural sedimentary stone to produce a broken face with minimal tool marks.
- ◆ identify, select and use tools to mark-out a flat surface with dimensions at the discretion of the centre with guide dimensions of 250 mm x 250 mm, within a suggested tolerance of  $\pm 2$  mm, on natural sedimentary stone.

## National Unit specification: Statement of standards (cont)

### Unit title: Produce Basic Stonemasonry Components (SCQF level 5)

- ◆ identify select and use stonemasonry tools and auxiliary to establish the corners of a flat surface on natural sedimentary stone.
- ◆ identify, select and use stonemasonry and auxiliary tools to produce straight borders around an area of natural sedimentary stone.
- ◆ identify, select and use stonemasonry and auxiliary tools to produce a flat, even, tooled surface with dimensions at the discretion of the centre with dimensions of 250 mm x 250 mm, within a suggested tolerance of  $\pm 3$  mm, on natural sedimentary stone
- ◆ ensure that there are no more than two spalls exceeding 10 mm across.
- ◆ work in accordance with current health and safety legislation at all times.

#### Performance Criteria

##### (b) Cut a face on natural stone at right angles to an existing flat surface.

Evidence must be provided to show that learners can:

- ◆ identify, select and use stonemasonry tools to mark-out a flat surface with dimensions at the discretion of the centre with guide dimensions of 250 mm x 250 mm, a suggested tolerance of  $\pm 2$  mm, at right angles to an existing flat surface on natural sedimentary stone.
- ◆ identify, select and use stonemasonry tools to cut a flat surface, with dimensions at the discretion of the centre with guide dimensions of 250 mm x 250 mm, within a suggested tolerance of  $\pm 3$  mm, at right angles to an existing flat surface on natural sedimentary stone.
- ◆ ensure the ariss has no more than more than two chips exceeding 10 mm.
- ◆ ensure there are no more than two spalls exceeding 10 mm across.
- ◆ work in accordance with current health and safety legislation at all times.

#### Performance Criteria

##### (c) Cut a simple/basic moulding to natural, sedimentary stone.

Evidence must be provided to show that learners can:

- ◆ identify select and use stonemasonry tools to mark out a simple/basic moulding, with dimensions at the discretion of the centre, guide dimensions of 30 mm x 250 mm, within a suggested tolerance of  $\pm 2$  mm, on natural sedimentary stone.
- ◆ identify, select and use stonemasonry tools to cut a simple/basic (splay) moulding, with a minimum dimension of 18 mm x 18 mm along the length of one side of the stone, suggested dimension 250 mm, within a suggested tolerance of  $\pm 2$  mm, on natural, sedimentary stone.
- ◆ work in accordance with current health and safety legislation at all times.

## **National Unit specification: Statement of standards (cont)**

**Unit title:** Produce Basic Stonemasonry Components (SCQF level 5)

### **Performance Criteria**

**(d) Cut top and bottom beds and jointed surfaces on natural stone.**

Evidence must be provided to show that learners can:

- ◆ identify and select tools to mark-out top and bottom beds and a jointed surface to given dimensions on natural, sedimentary stone that has two surfaces at right-angles to each other.
- ◆ identify, select and use stonemasonry tools to produce top, bottom and jointed surfaces suitable to provide a straight visible joints, and surfaces that bond with mortars on a natural sedimentary stone.
- ◆ ensure there are no more than three chips exceeding 10 mm on the seen edges
- ◆ work in accordance with current health and safety legislation at all times.

### **Outcome 2**

**Produce a range of different tooled surfaces to natural stone.**

### **Performance Criteria**

**(a) Identify traditional stone surface finishes and the tools used to make them.**

Evidence must be provided to show that learners can:

- ◆ identify stonemasonry surface finishes and the machinery and tools used to make them, both traditional and non-traditional.
- ◆ identify the best possible match surface finish for a given replacement stonemasonry component.

### **Performance Criteria**

**(b) Produce at least two common surface finishes on natural stone to given dimensions.**

Evidence must be provided to show that learners can:

- ◆ identify, select and use stonemasonry tools on a natural, sedimentary stone, to produce at least two traditional surface finishes from the following:
  - Stugged/Dabbed
  - Broached/Furrowed
  - Tooled/Droved
  - Fine rubbed
- ◆ work in accordance with current health and safety legislation at all times.

In the completion of this Unit all working practices must be in accordance with current and relevant health and safety legislation and regulations.

## **National Unit specification: Statement of standards (cont)**

**Unit title:** Produce Basic Stonemasonry Components (SCQF level 5)

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)



## National Unit Support Notes

**Unit title:** Produce Basic Stonemasonry Components (SCQF level 5)

Unit Support Notes are offered as guidance and 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 the Conservation of Masonry at SCQF level 6. It can also be delivered as a free-standing Unit.

Within the context of the Conservation of Masonry award this Unit provides learners successfully completing it with knowledge, understanding and practical experience in order to be competent in producing basic stonemasonry components and stonemasonry surface finishes for working on conservation and restoration projects on traditional stone-built structures.

It also provides learners with knowledge, understanding and practical experience in order to be competent in the production of basic stonemasonry components and stonemasonry surface finishes applicable to new-build construction where indigenous, natural dimensional stone is used in sympathetic way that enhances the material, its use and longevity. Learners will also have applied relevant knowledge and skills in a practical context.

The Unit is suitable for learners with limited experience in the construction and heritage industries who wish to gain knowledge and understanding of working and cutting natural sedimentary stone.

It is also suitable for learners from the construction and related service industries and trades. It is applicable to skilled manual professions and non-manual professions. The skills are transferable within different working environments, but the Unit is aimed at learners whose normal work is related directly to a site, construction project, or a similar working environment.

It also includes the safe working practices associated with working with sedimentary indigenous stones and is complemented by other building Units in Stonemasonry.

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 learners have completed the following Units:

- ◆ *Understanding Conservation, Repair and Maintenance of Traditional Structures* (SCQF level 6)
- ◆ *Prepare and Mix Traditional Lime Mortars* (SCQF level 6)
- ◆ *Consolidation of Masonry Structures* (SCQF level 6)



## National Unit Support Notes (cont)

**Unit title:** Produce Basic Stonemasonry Components (SCQF level 5)

This Unit has been developed to gain knowledge, understanding and practical application related to the National Occupational Standard:

### **VR188 Produce Standard Stonemasonry Components**

However, the Unit only covers the first of the compulsory elements Performance Criteria 5, point 9 in this NOS, that is:

#### **9 Produce natural stone components to given working instructions.**

##### **9.1 Shaped true and square.**

This Unit does not cover training related to the other three specified elements in point 9, therefore this Unit does not attempt to provide training required to satisfactorily achieve competencies defined in NOS VR188.

This Unit is relevant and provides underpinning knowledge for progression to HNC/HND qualifications in the conservation and restoration of traditional (pre–1919) structures.

### **Guidance on approaches to delivery 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 manufacturers of dimensional natural sedimentary stonemasonry components, codes of practice; building standards; statutory regulations.

Teachers/Lecturers should demonstrate practical elements step-by-step until the learner 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 and Performance Criteria.

### **Guidance on approaches to assessment of this Unit**

Evidence can be generated using different types of assessment. The following are suggestions only. There may be other methods that would be more suitable to learners.

Centres are reminded that prior verification of centre-devised assessments would help to ensure that the national standard is being met. Where learners experience a range of assessment methods, this helps them to develop different skills that should be transferable to work or further and higher education.

It is recommended that learners be assessed on an Outcome by Outcome basis. However centres may choose to assess a combination of Outcomes on a single assessment occasion or combined assessments.

## National Unit Support Notes (cont)

**Unit title:** Produce Basic Stonemasonry Components (SCQF level 5)

A multiple-choice type question paper could be used for formal assessment of all underpinning knowledge for both Outcomes, delivered under closed-book controlled, supervised conditions at an appropriate point in the Unit.

An appropriate instrument of assessment for Outcomes 1 and 2 would be a series of practical assignments which the learners complete in a real or simulated workplace environment. The practical assignments should require learners to:

- ◆ produce a basic stonemasonry component in natural stone.
- ◆ produce a range of different tooled surfaces to natural stone.

What is to be formerly assessed is knowledge, understanding and practical Performance Criteria defined in the Outcomes. Reliance on a real environment could compromise achievement. Centres can provide a suitable simulated environment allowing learners to gain knowledge, understanding and the practical Performance Criteria in a controlled environment.

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

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

Feedback should be provided to learners, this and all assessment material will be subject to internal and external verification.

### Opportunities for e-assessment

E-assessment may be appropriate for some assessments in this Unit. By e-assessment we mean assessment which is supported by Information and Communication Technology (ICT), such as e-testing or the use of e-portfolios or social software. Centres which wish to use e-assessment must ensure that the national standard is applied to all learner evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. The most up-to-date guidance on the use of e-assessment to support SQA's qualifications is available at [www.sqa.org.uk/e-assessment](http://www.sqa.org.uk/e-assessment).

### Opportunities for developing Core and other essential skills

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 the production of basic stonemasonry components and stonemasonry surface finishes will be essential to ensure successful results.

Initially learners 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.

## National Unit Support Notes (cont)

### Unit title: Produce Basic Stonemasonry Components (SCQF level 5)

The ability to identify appropriate materials, test their properties, and select solutions which use appropriate approaches to working is a critical competence. Learners will devise an appropriate and safe approach to work, based on assessment of performance characteristics, and demonstrate 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 learners should independently identify and determine best practice. Class discussions with assessor support during formative work could encourage the analytical evaluation of producing stonemasonry components with a variety of surface finishes 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. 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.

## History of changes to Unit

Version	Description of change	Date

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## General information for learners

### Unit title: Produce Basic Stonemasonry Components (SCQF level 5)

This section will help you decide whether this is the Unit for you by explaining what the Unit is about, what you should know or be able to do before you start, what you will need to do during the Unit and opportunities for further learning and employment.

This Unit is about producing basic stonemasonry components and stonemasonry surface finishes, the type of stonemasonry components where templates are not required. It is suitable for those with limited experience in the construction and heritage industries; it is also suitable for those with existing competencies in the construction industries who wish to be able to apply existing competencies to the production of basic stonemasonry components for new-build work and the conservation/restoration, repair and maintenance of traditional buildings.

This Unit is suitable for those who wish to gain knowledge, understanding and practical experience of rudimentary Banker (bench) Stonemasonry work through producing basic stonemasonry components for both new-build and conservation/restoration repair and maintenance construction work.

Successful completion of this Unit will provide you with the underpinning knowledge, understanding and practical skills that can be applied to consolidating and repairing masonry structures.

On completion you will be able to:

- 1 Produce a basic stonemasonry component in natural stone.
- 2 Produce a range of different tooled surfaces to natural stone.

Assessment is through completion of closed-book multiple-choice questions and in the completion of practical assignments.

Elements of the Core Skills of *Problem Solving*, that is; Critical Thinking, Planning and Organising, and Reviewing and Evaluating, will be developed in the successful completion of this Unit, but they will not be assessed or certificated.

The Unit is valuable in the potential development of enterprise, employability and citizenship in the new-build and the repair and maintenance part of the construction sector, specifically in respect of traditional structures, this Unit provides underpinning knowledge and understanding to gain relevant competency.