



## National Unit specification: general information

**Unit title:** Bricklaying: Traditional Arch Construction (SCQF level 6)

**Unit code:** H091 12

**Superclass:** TG

**Publication date:** December 2016

**Source:** Scottish Qualifications Authority

**Version:** 02

## Summary

This Unit is suitable for candidates working towards a Modern Apprenticeship in Bricklaying and will develop the candidate's skills and knowledge in traditional arch construction. This Unit is designed to provide candidates with competence in the use of tools and equipment to set out and build a traditional segmental arch, an equilateral gothic arch and the ability to apply these skills in the workplace.

## Outcomes

- 1 Demonstrate knowledge and understanding of terminology, setting out techniques and construction practices used in traditional arch construction.
- 2 Set out and build traditional arches.

## Recommended entry

While entry is at the discretion of the centre, candidates undertaking the Professional Development Award in Bricklaying at SCQF level 6 must meet the requirements of the Modern Apprentice which include being employed in the relevant craft industry.

## Credit points and level

2 National Unit credits at SCQF level 6: (12 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.*

## **General information (cont)**

**Unit title:** Bricklaying: Traditional Arch Construction (SCQF level 6)

### **Core Skills**

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

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

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

**Unit title:** Bricklaying: Traditional Arch Construction (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 SQA.

### **Outcome 1**

Demonstrate knowledge and understanding of terminology, setting out techniques and construction practices used in traditional arch construction.

#### **Performance Criteria**

- (a) Identify and select terminology related to traditional arch construction correctly.
- (b) Identify and select setting out techniques correctly.
- (c) Identify and select construction practices correctly.

### **Outcome 2**

Set out and build traditional arches.

#### **Performance Criteria**

- (a) Set out and build rough ring and axed arches in accordance with the given specifications, Segmental Arch in English Garden Wall bond and Equilateral Gothic Axed Arch in English bond.
- (b) Comply with current Health and Safety and sustainability requirements during all work methods and activities.

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

**Unit title:** Bricklaying: Traditional Arch Construction (SCQF level 6)

### Evidence Requirements for this Unit

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

Written and/or oral recorded evidence is required to demonstrate that the candidate has achieved Outcome 1 to the standard specified in the Performance Criteria. Candidates will be required to demonstrate their knowledge of terminology, techniques and practices by successful completion of a question paper relating to traditional arch construction. This assessment will be conducted under controlled, closed-book supervised conditions.

Performance evidence is required to demonstrate that the candidate has achieved Outcome 2 to the standards specified in the Performance Criteria. Candidates will be required to set out and build a traditional rough ring segmental arch. Candidates will also be required to set out and build an axed equilateral gothic arch.

Assessment of these Outcomes will be evidenced through observation of work processes and assessment of the completed work. Candidates must meet the given standards during the practical assessment. An assessor observation checklist must be used to record this evidence. Assessment should be conducted under controlled, supervised conditions.

### Outcome 2 Segmental Arch

<b>Summary of standards (working towards industrial tolerances)</b>	
<b>Item</b>	<b>Measurement of standard</b>
Setting out openings	±5mm
Setting out overall length	±8mm
Gauge	±8mm
Plumb	±5mm
Level	±8mm
English Garden Wall Bond	Maintained
Faceplane	±6mm
Joint thickness	±5mm
Perpends	±5mm
Weather jointing on face	No gaps
Finish jointing on rear	Flush off the trowel
Segmental arch collar joint	±4mm
Skewback angle	±4mm
Temporary support 1	Props plumb
Temporary support 2	Wedges level
Cutting to extrados	±3mm
Facework	Left clean, minimum smudging, no visual defects

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

**Unit title:** Bricklaying: Traditional Arch Construction (SCQF level 6)

<b>Risk Assessment</b>	
Safety boots	Worn at all times
Hard hat	Worn at all times
High visibility vest	Worn at all times
All other PPE	As risk assessed
<b>Method Statement</b>	
Working area	Kept clear at all times
Materials	Stacked safely at all times
Tools (during working)	Handled correctly at all times
Tools (after work)	Cleaned and stored safely
<b>Sustainability</b>	
Waste	Kept to a minimum at all times.
Recycling	Materials recycled whenever possible.
Waste disposal	Waste disposed correctly/appropriately

### Outcome 2 Axed Equilateral Gothic arch

<b>Summary of standards (working towards industrial tolerances)</b>	
<b>Item</b>	<b>Measurement of standard</b>
Overall length	±6mm
Gauge	±5mm in overall height
Level	±5mm
Plumb (all 3 points)	±5mm
Internal face flush	Regular, consistent and to all arrises
Struck joint finish	Clean, minimal smudging, no defects
Joint thickness	±5mm
Faceplane deviation	±6mm
English Bond	Maintained
Perpends	No deviation exceeding 4mm
Voussoirs checked for accuracy to given template	±3mm
Voussoirs built into arch with uniform straight joints	±3mm
Cutting brickwork around arch to maintain normal joint	±3mm
Facework	Clean, minimal smudging, no defects
Faceplane of arch	±4mm
Cutting bricks at crown of arch, parallel joints	±3mm
Cut bricks at crown	Uniform and symmetrical
Projecting feature headers plumb	±4mm
Projecting feature projection uniform	±2mm
Decorative sill level	±3mm
Decorative sill straight	±3mm

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

**Unit title:** Bricklaying: Traditional Arch Construction (SCQF level 6)

<b>Risk Assessment</b>	
Safety boots	Worn at all times
Hard hat	Worn at all times
High visibility vest	Worn at all times
All other PPE	As risk assessed
<b>Method Statement</b>	
Working area	Kept clear at all times
Materials	Stacked safely at all times
Tools (during working)	Handled correctly at all times
Tools (after work)	Cleaned and stored safely
<b>Sustainability</b>	
Waste	Kept to a minimum at all times.
Recycling	Materials recycled whenever possible.
Waste disposal	Waste disposed correctly/appropriately

## **National Unit specification: support notes**

### **Unit title:** Bricklaying: Traditional Arch Construction (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 80 hours.

### **Guidance on the content and context for this Unit**

This Unit has been developed as a mandatory Unit in the Professional Development Award in Bricklaying at SCQF level 6.

The successful completion of the Unit will provide candidates with the required knowledge and skills relating to setting out, building techniques and construction practices associated with building traditional arches with specific knowledge and skills in forming skewbacks, checking voussoirs against a template, turning arches, cutting to the extrados and setting up and dismantling temporary supports.

This Unit would be offered to candidates working towards a Modern Apprenticeship in Bricklaying and will develop the candidate's skills in traditional arch construction. The skills and knowledge and understanding are transferable within different working environments but the Unit is primarily aimed at candidates whose normal place of work would be a site, workshop, or similar environment.

The Unit deals with setting out traditional arch construction, erecting and dismantling temporary supports and construction of traditional arches. It should be delivered as part of a structured programme of training and orientated to the context of the candidate's work and area of responsibility. 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 comply 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.

### **Guidance on learning and teaching approaches for this Unit**

Candidates must be given the opportunity to further develop their skills in bricklaying by learning about traditional arch construction and its principles. Candidate centred learning and teaching approach are encouraged with candidates actively participating in practical activities after lecturer demonstration of key construction practices and principles.

The use of effective questioning techniques to confirm understanding of salient learning objectives should be central to learning and teaching approaches used in classrooms or workshops. Candidates should be encouraged to learn at their own pace with e-learning opportunities available to suit their preferred learning style.

The use of e-learning as a teaching tool should be adopted by lecturers wherever possible to enable candidates to develop at their own pace using preferred learning styles.

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

**Unit title:** Bricklaying: Traditional Arch Construction (SCQF level 6)

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

Detailed assessment material for this Unit will be found in the Bricklaying Training and Assessment Programme (TAP). Centres may use the instruments of assessment which they consider to be most appropriate but are advised to use the Bricklaying TAP which has been developed centrally by SQA.

### **Opportunities for the use of 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 candidate evidence and that conditions of assessment as specified in the Evidence Requirements are met, regardless of the mode of gathering evidence. Further advice is available in *SQA Guidelines on Online Assessment for Further Education (AA1641, March 2003)*, *SQA Guidelines on e-assessment for Schools (BD2625, June 2005)*.

### **Opportunities for developing Core Skills**

Components of the Core Skill of Problem Solving at SCQF level 4, such as Planning and Organising and Critical Thinking will be developed as candidates undertake this Unit. Candidates will need to take account of a range of factors in order to work efficiently and safely, such as the interpretation of drawings, choice of tools and appropriate materials, application of scientific principles, risk assessments, health, safety and welfare and a sustainable approach. Individual discussions with assessors will enhance the evaluation of productive work practices.

There are opportunities to develop the Core Skill of Working with Others at SCQF level 4, particularly in Outcome 2, as these practical assessments should be carried out in pairs or teams. Candidates can agree responsibilities and provide support and information to each other during the practical group activities.

Opportunities also arise for candidates to develop the Core Skill of Information and Communication Technology at SCQF level 3 by researching Health and Safety legislation affecting their area of work, manufacturer's instructions and specifications, interpretation of drawings. There may be opportunities to develop ICT skills at SCQF level 3 where Centres opt to use e-assessment, e-portfolios and /or online learning materials.

Numeracy at SCQF level 4 could be enhanced through the knowledge evidence in set out traditional arch construction and the practical use of calculation and measuring scales required for teaching and learning assessments for Outcomes 1 and 2.

There will be opportunities for candidates to develop the Core Skills of Communications at SCQF level 4 through the knowledge part of the assessment for Outcome 1. As candidates complete practical tasks in Outcome 2, they should be expected to communicate with others using the correct terminology, tone and style suited to the workplace while interpreting drawings.



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

**Unit title:** Bricklaying: Traditional Arch Construction (SCQF level 6)

Any other instruments of assessment used must be comparable to the TAP and have been through prior verification.

The candidates' knowledge and understanding of terminology, techniques and construction practices and components related to traditional arch construction will be assessed through a closed-book question paper.

Candidates should be given as much practise as possible in traditional arch construction bricklaying techniques, prior to being set the assessment. Evidence will be gathered for Outcome 2 through observation that the candidates have met the given standards and tolerances during the practical assessments. An assessor observation checklist should be used to record this evidence.

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

## History of changes to Unit

Version	Description of change	Date
02	Amended to incorporate English Garden Wall Bond Arch Drawing.	19/12/2016

© Scottish Qualifications Authority 2011

This publication may be reproduced in whole or in part for educational purposes provided that no profit is derived from reproduction and that, if reproduced in part, the source is acknowledged.

Additional copies of this Unit specification can be purchased from the Scottish Qualifications Authority. Please contact the Business Development and Customer Support team, telephone 0303 333 0330.