Unit 308: Erect masonry to form architectural and decorative structures

# Delivery guide

Unit information

This unit is about preparing and erecting brickwork and blockwork and/or structures of local materials, incorporating arches, curves, chimneys, battered and decorative features.

Learners may be introduced to this unit by asking themselves questions such as:

* How is an arch supported during construction?
* How do I set out a curved wall?
* How can battered brickwork be constructed to a fixed batter?

Learning outcomes

1. Understand resource selection
2. Understand working to a contract specification
3. Comply with the given contract information to carry out the work safely and efficiently to the required specification

Suggested resources

Textbooks

* Jones, M. (2019) *The City & Guilds Textbook: Bricklaying for the Level 2 Technical Certificate & Level 3 Advanced Technical Diploma (7905), Level 2 & 3 Diploma (6705) and Level 2 Apprenticeship (9077)*. London: Hodder Education.

ISBN 978-1-5104-5814-7

Websites

* [Historical and Masonry Structures | Decorative Brickwork: Past and Present](http://www.hms.civil.uminho.pt/ibmac/2008/14IBMAC_54.pdf)
* [Ibstock Brick | Decorative details](https://www.ibstockbrick.co.uk/brickwork-components/decorative-details)
* [Microsoft Bing | Images of decorative brickwork](https://www.bing.com/images/search?q=decorative+brickwork&qpvt=decorative+brickwork&FORM=IGRE)
* [Tylers and Bricklayers | Glossary: Decorative brickwork](https://www.tylersandbricklayers.co.uk/tiling-a-bricklaying/glossary/decorative-brickwork/category)

| **Learning outcomes** | **Criteria** | **Delivery guidance** |
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| 1. Understand resource selection | * 1. Characteristics of the resources | * Learners to know how to select the required quantity and quality of resources for the methods of work to erect masonry structures and to be able to describe the characteristics, quality, uses, sustainability, limitations and defects associated with those resources. Types of resources and the knowledge required include: * bricks, including special bricks and their uses * blocks (insulation and solid) – learners to understand the types available and their uses, including hollow blocks and clay * mortars, including gauges, methods of gauging, additives * frames (windows and doors), including temporary frames * insulation types (full fill, partial fill and post applied) * vertical and horizontal damp-proof barriers (membranes, plastic) * learners to understand the position and application of radon barriers * learners to understand the types and application of cloak systems * cills including stone, reconstructed stone and concrete * learners to understand the types and reasons for use of copings and cappings * lintel types (steel and concrete) * types of fixings and their application in use * types of ties and spacings * learners to understand the methods of positioning and application of different flue types * positions of use and types of trays (lead) * reasons for use and application of aprons. |
| * 1. Use of resources | * Learners to know how to recognise the resources and how they should be used correctly. * Learners to be able to identify any problems with the resources and to know who to report defects in the resources to. * Learners to be able to identify any problems in relation to materials, components and equipment relating to types, quantity, quality and sizes. Component terminology to include: * arches, including setting out semi-circular and segmental arches * methods of setting out and applications for walls curved on plan * types of chimneys and their relevant construction methods and waterproofing methods * battered work to include methods of setting out and maintaining the batter during construction * learners to understand the types of application, ways of setting out and checking for accuracy in decorative features (including dog toothing, dentil work string courses, necking courses, corbelling etc.). |
| * 1. Organisational procedures to select resources | * Learners to understand the organisational procedures for reporting defects in resources. * Learners to know how the organisational procedures have been developed and how they are used for the selection of required resources. * Learners to understand the limits of their own authority when reporting defects and rectifying problems that occur with the use of resources. * Learners to know the hazards associated with the resources, methods of work and use of hand and power tools. * Learners to know how to use resources safely and correctly and how to safely use hand and power tools to carry out the work. Learners to be provided with examples from actual site work to contextualise the points being taught. |
| * 1. Hazards | * Learners to know how to identify hazards from the risk assessment and how to use a method statement for safe working practices. * Learners to know how to use manufacturers’ technical information and specifications when using components. * Learners to know how to use health and safety control equipment in accordance with health and safety legislation. * Learners to know the types and purpose of each piece of equipment, the work situations and general work environment that they are associated with, including: * collective protective measures * personal protective equipment (PPE) * respiratory protective equipment (RPE) * local exhaust ventilation (LEV). * Learners to know why the disposal of waste should be carried out safely in accordance with environmental responsibilities, organisational procedures, manufacturers’ information, statutory regulations and official guidance. * Learners to be able to identify the materials that are difficult to dispose of (asbestos, plasterboard etc.) and suggest methods of correct disposal. * Learners to know how to respond to emergencies and to know the correct response to situations in accordance with organisational authorisation and personal skills when involved with fires, spillages and injuries. |
| 1. Understand working to a contract specification | * 1. Methods of work | * Learners to know safe and healthy work practices, procedures and skills relating to the method/area of work and materials used to: * measure * mark out * lay * position * plumb * level and secure. * In relation to: * battered work * curved work * arch construction * decorative features (dog toothing, band courses, dentil courses, diaper work). * Learners should be shown the methods of setting out the range of features and arches etc. and should understand the methods used to construct the range of decorative features. |
| * 1. Tools and equipment | * Learners to know the importance of keeping tools and equipment clean and to know the correct methods used to maintain tools and equipment relating to erecting masonry structures. |
| 1. Comply with the given contract information to carry out the work safely and efficiently to the required specification | * 1. Demonstration of work skills to measure, check, mark-out, lay, position and secure | * Learners to be able to erect masonry in suitable materials to given working instructions for at least three of the stated structures, including: * Range of arches: * segmental (rough and axed) * bullseye * three-centred semi-elliptical * Gothic * semi-circular. * Range of decorative brickwork: * learners to be shown the setting out procedures for horizontal and diagonal panels * learners to be shown the setting out procedures for basket weave and herring bone * learners to be given examples of where dog-toothing is used * learners to be given examples of oversailing courses, e.g. chimney stacks * corbels * dentil work * tumbling in * learners to be shown methods of cutting angles for ramped work and battered work * learners to be given examples of use for string courses * vertical and horizontal reinforcement * Quetta bond * 327mm-thick walling (one-and-a-half-brick thick). * Range of decorative bonds: * Flemish * English * Flemish garden wall bonds * English garden wall bonds. * Range of chimney components: * throat lintels * flue liners and types * fireback and jambs * chimney pots * cowls * firebricks * flaunching * reducers * adhesives * obtuse and acute angles (dogleg and squints) – learners to be shown methods of bonding angles. * Materials include brick, purpose-made brick, solid brick, natural stone, reconstructed stone, etc. |
|  | * 1. Use and maintain hand and power tools | * Learners to know how to use and maintain hand and power tools and equipment to erect masonry structures in brick and block and/or local materials to given working instructions and to be able to form architectural and decorative features, including forming joint finishes, for at least three of the following: * arch (rough-ringed, axed, gauged) – learners to be shown methods of positioning and easing arch centres * chimney stack * fireplaces * wall with flush projecting or decorative features * obtuse angles (more than 90 degrees including batters) * acute angles (less than 90 degrees) * learners to be shown methods of setting out and maintaining the curve for walls curved on plan * reinforced brickwork * learners to be shown methods of setting out and maintaining a curve during the construction of walls curved in elevation. * Range of arches: * segmental (rough and axed) * bullseye * three-centred semi-elliptical * Gothic * semi-circular * learners to be shown methods of positioning centres and easing when completed. * Range of decorative brickwork: * horizontal and diagonal panels * basket weave and herring bone * dog-toothing * oversailing courses * corbels * dentil work * tumbling in * ramped work and battered work * string courses * vertical and horizontal reinforcement * Quetta bond * 327mm-thick walling (one-and-a-half-brick thick). * Range of decorative bonds: * Flemish * English * Flemish garden wall bonds * English garden wall bonds. * Range of chimney components: * throat lintels * flue liners and types * fireback and jambs * chimney pots * cowls * firebricks * flaunching * reducers * adhesives * obtuse and acute angles (doglegs and squints). * Learners to be given examples of where each of the features is used, with typical examples in practice. |