BRICKLAYER

Trailblazer Apprenticeship

On-Programme Training Specification

August 2018 Version 1.3

Contents

Introduction

Purpose

This document provides the detail of the skills and knowledge that an apprentice completing the Level 2 Bricklayer Trailblazer Apprenticeship must attain and demonstrate prior to attempting the End-Point Assessment.

This training specification will be rigorous and demanding to meet the ongoing needs of the industry.

Work-based portfolio

As a requirement of Gateway, a work-based portfolio must be generated that provides evidence (on-site performance evidence: witness testimonies, photographs) of how the apprentice has the following skills on-site:

- Preparing materials
- Safe working
- Maintaining a clean and efficient working environment
- Setting out, laying and shaping bricks/blocks
- Mixing mortar by hand or with a mechanical mixer
- Setting out and building radial and battered brickwork
- Setting out and building feature and reinforced brickwork
- Setting out and laying substructure materials

This portfolio should support the Centre and Employer to determine if the apprentice is ready to go through Gateway (ie has the skills and knowledge to the required standard). It is also useful for the apprentice as a way of determining if they feel ready for Gateway based on their experience of completing the portfolio.

This work-based portfolio will be reviewed by the appointed Independent End-Point Assessor prior to them observing the apprentice in their attempt at the Skills Test and will form a basis for a portion of the oral questioning. This portfolio ensures that the apprentice has demonstrated the above on-site skills in the workplace, which is necessary to receive Construction Skills Certification Scheme (CSCS) recognition.

Module 1 Basic principles in construction

Off-the-job training

Purpose

The purpose of this module is for learners to understand the factors that have to be considered when bricklaying work takes place on a property. This includes the types of buildings and materials used and the era the buildings are likely to belong to. This module also introduces learners to the environmental and sustainability considerations that relate to buildings to ensure that these factors are considered.

Knowledge requirements

1. Know building types

1.1 Types of building from different eras

Including types of construction methods and wall construction:

- Era building types– Victorian, Georgian, Edwardian, Elizabethan
- Building materials used in each era, e.g. density of materials used
- Types of buildings, residential e.g. terraced, semi-detached, detached, flats, commercial, industrial
- Restoration and heritage – listed buildings and their grading

1.2 Types of construction

- Modern methods of construction – timber frames, modular, thin-joint, monolithic
- Rapid build technology – pod construction, pre-fabricated, monolithic
- Cladding systems – steel frames, timber frames

2. Understand environmental and sustainability considerations for buildings

2.1 Environmental considerations

- Water management – services, foul and surface water management, grey water systems, soakaways
- Heat loss – air tightness, ventilation systems, insulation, material considerations and their energy efficiency
- Waste management – recycling, segregation of waste
- Material procurement - carbon footprints, locally sourced
- Foundations – location of trees and their impact on the types of foundation

2.2 Sustainability considerations

- Carbon footprint,
- Using reclaimed materials – recycling bricks

Module 2 Health and safety for bricklaying

Off-the-job training

Purpose

The purpose of this module is for learners to understand the principles of health and safety and identify how these can be applied in practice within bricklaying or construction related industries. Learners will be able to recognise common health and safety practices and processes which they will encounter within the workplace. Working in a construction environment is fast paced but presents many hazards and can be dangerous. Working in the industry requires essential health and safety knowledge in order to minimise harm to oneself and to improve attitudes and behaviour in the workplace.

This module also introduces learners to specific legislation, codes of practice and ways of working that can contribute to safety and smooth running of a job. It also covers the specific health and safety considerations for bricklayers and how the risks of the job can be minimised.

Knowledge requirements

1 Know the health and safety regulations affecting bricklaying work

1.1 Health and safety legislation

Learners must be aware of the health and safety regulations that apply to the construction industry. Employee and employer responsibilities under regulations and legislation:

- Health and Safety at Work Act
- Reporting Injuries, Diseases and Dangerous Occurrences Regulations (RIDDOR)
- Control of Substances Hazardous to Health (COSHH)
- Construction (Design and Management) (CDM) regulations
- Provision and Use of Work Equipment Regulations (PUWER)
- Manual Handling Operations Regulations
- Personal Protective Equipment (PPE) at Work Regulations
- Work at Height Regulations
- Control of Noise at Work Regulations
- Control of Vibration at Work Regulations
- Electricity at Work Regulations
- Lifting Operations and Lifting Equipment Regulations (LOLER)

1.2 Risk assessments

Risk assessment processes and considerations

- Identification of hazards and risks to the environment and individuals
- Recording and reporting requirements

- Legal requirement to carry out suitable and sufficient risk assessments, levels of responsibility

Stages in the risk assessment process

- Identification of the hazards and likelihood of causing harm
- Evaluation of the risks (low, medium, high) and decide how the level of risk may be controlled
- Recording and implementation of the results and communication to others
- Reviewing risk assessments and suggesting when risk assessments should be reviewed

Purpose and requirements of method statements

2 Understand how site procedures contribute to maintaining health and safety

2.1 Accidents and emergencies

Employee and employer responsibilities under accident and emergency procedures:

- Types of emergencies
- Emergency procedures – first aid, evacuation
- Recording requirements
- First aid regulations – levels of response and recording

2.2 Site procedures

Principles of site set up to maintain a safe and healthy environment including employee and employer responsibilities for:

- Training – Induction, toolbox talks
- Access and site layout
- Site access, security and personnel access – signing in and signing out
- Signage – warning, prohibition, mandatory, information
- Safe waste disposal
- Safeguarding – people (e.g. members of the public, children, clients), the environment

2.3 General welfare on site

Employer responsibilities in the provision of general welfare requirements on site including:

- Toilets and washing facilities
- Rest areas – canteen, drying room
- Designated areas – smoking, parking, assembly points, site information, site sign in
- PPE

3 Understand specific health and safety considerations relating to bricklaying work

3.1 Handling materials manually

Safe lifting:

- Weight consideration
- Technique
- Weight limits
- Kinetic methods

Materials:

- Bricks
- Blocks
- Cement
- Mortar

3.2 Handling materials with machinery

- Lifting and transporting techniques
- Mechanical lifting aids such as board trolley, pulleys, forklifts, lifts, hoists

Materials:

- Kirbs
- Pallets
- Concrete lintols
- Heavy loads
- Bricks, blocks, mortar

3.3 Personal protective equipment

Types and uses of personal protective equipment including employee and employer responsibilities:

- Respirators/dust masks
- Eye and ear protection
- Knee pads
- Gloves
- High visibility clothing
- Hard hats
- Work boots

3.4 Hazardous working conditions

Considerations when working in potentially hazardous working conditions on site:

- Working at height – access equipment, limits of responsibility, checking scaffolding tags, assessing conditions, safety measures and checks
- Slips, trips and falls – following good housekeeping when working, not allowing a build-up of waste, clearing away equipment (trailing leads, pipes etc.)
- Awareness of surrounding area – other tradesmen and resources
- Noise exposure
- Environmental exposure – sun exposure, temperature considerations, dust

3.5 Working with hazardous substances

Responsibilities and considerations when working with hazardous substances on site including:

- COSHH requirements
- Asbestos awareness – identification, reporting
- Safe disposal of waste
- Local ventilation extraction systems

3.6 Using tools and equipment safely

Considerations for working safely with tools and equipment on site including

- Testing - PAT testing requirements
- Safe storage
- Maintenance, repair and replacement – limits of responsibility
- Working procedures – voltages of electrical equipment, Residual Circuit Breaker (RCB)

Module 3 Communication and customer service in the construction industry

Off-the-job training

Purpose

The purpose of this module is for learners to be able to use recognised communication processes within the construction industry. They will know about communication methods and be able to use the most appropriate method in a range of situations.

Knowledge requirements

1 Understand how to communicate with colleagues and customers in the workplace

1.1 Communication methods

Advantages and disadvantages of a range of communication methods and their efficiency depending on the circumstances when liaising with customers and colleagues:

- Verbal and non-verbal communication
- Face to face
- Body language
- Remote communication
- E-platforms
- Written communication synchronous and asynchronous
- Multi-user web based project working platforms
- Signs

1.2 Importance of clear communication in the workplace

- Cost efficiency
- Clearly presented
- Avoid mistakes
- Good working relationships

2 Know company structures, professions and progression routes in the industry

2.1 Sectors within construction

Types that fund construction within the industry

- Public
- Private
- Voluntary

2.2 Types of companies

Range of organisations within the construction industry, including the types and features of companies and the role of those that provide specialist and support services:

- Small, medium and large companies
- Contractors, sub-contractors, sole traders
- Structure

2.3 Types of job roles within the building team

Including:

- Professionals
- Technicians
- Trade Operatives
- Specialist
- General Operatives

2.4 Roles and responsibilities of key personnel within the industry

Including lines of reporting and levels of accountability of:

- Building Control Officer
- Planning Officer
- Clerk of Works
- Civil Engineer
- Site Manager
- Contracts Manager
- Supervisor
- Charge Hand
- Quantity Surveyor
- Surveyor
- Architect

2.5 Progression routes in the industry

- Further education
- Self-employment
- Other roles within the industry

3 Know the information and documentation required for completing construction projects

3.1 Drawings used on construction projects

The types of drawings used and the different types of information they provide for construction projects

- Site plans
- Assembly
- General location
- Sectional

- Detailed
- Orthographic projection (first angle)
- Isometric projection

3.2 Common scales used in construction drawings

Their uses and why drawings are produced with different scales:

- 1:1
- 1:5
- 1:10
- 1.50
- 1:500
- 1:1250
- 1:2500

3.3 Graphic symbols and hatching used in the construction industry

Including why they are used:

- Brickwork
- Blockwork
- Concrete
- Hardcore
- Insulation
- Sub-soil
- Stone
- Timber
- Glass
- Sink
- Bath
- Wash basin
- Rain water pipe
- Gulley
- Vent pipe
- DPC
- DPM
- TBM
- OBM

3.4 Taking corrective actions to resolve discrepancies

Communicating with colleagues and customers to take corrective actions in order to resolve discrepancies within the drawings and documentation

- Verbal communication – escalating to line manager
- Written communication – confirmation of error

3.5 Purpose of contract documents

Including:

- Order requisitions and invoices
- Delivery notes
- Variation orders
- Permits to work
- Drawings
- Schedules
- Specifications
- Bills of quantities
- Variation orders
- Programmes of work
- Manufacturers' technical information

3.6 Types of information required when ordering materials

- Size
- Quantity
- Quality
- Location and time

3.7 Types of information sources

Sources of information that provide guidance and how they impact construction industry:

- British Standards
- Building regulations
- Manufacturers' information
- Planning regulations

4 Know methods for construction project planning

4.1 Methods used for planning and the order of work activities to communicate with others

- Bar charts
- Gantt chart
- Completion deadlines

5 Understand the expectations of the customer

5.1 Principles of customer service

Principles of how to deliver high quality customer service when dealing with stakeholders

- Behave in a manner that meets the requirements of the company and the client
- Personal hygiene

- Use of appropriate language, avoid acronyms and abbreviations, tone and situation
- Importance of good relationships with stakeholders (including other trades)
- Legal considerations and audit trails/records
- Establishing the needs of others - colleagues, customers and other trades
- Respect the working environment including customer's property ie keeping the work environment clean
- Good timekeeping
- Professional image and appearance
  - Showing honesty and integrity to build trust
  - Behaving in an ethical manner
  - Transparency of work requirements
  - Good morale
  - Knowing when matters need to be escalating
  - Reliability and professionalism

5.2 Prepare the working environment

Reasons for preparing and protecting the working environment, throughout the building process:

- Sheeting up
- Load out materials
- Plan and organise the siting of tools, plant and equipment
- Storage of materials
- Security of resources

6 Know methods of calculating using formulae for construction

6.1 Calculate costs and volumes in construction

Methods of calculating using formulae for identifying costings in construction:

- Quantities
- Linear measurements
- Areas
- Volumes
- Circles
- Triangles
- Angles
- Percentages
- Ratios

6.2 Tendering and costing processes

- Quotation
- Estimate
- Dayworks

- Priceworks
- Hourly rates

Module 4 Principles of setting out

Off-the-job training

Purpose

The purpose of this module is for learners to understand all building types need to be properly set out within the early stages of construction. The setting out of a small building will be undertaken prior to any foundation being completed as it ensures the building is located precisely to the location/site plan, and all building lines are established.

The module details the basic setting out procedures for a small square, or rectangular building, with all corners being correct and ready prior to any marking of the ground in readiness for excavation.

Skill requirements

1 Read and follow a working drawing

1.1 Types of working drawings

Read working drawings to establish accurate sizes and positions of internal and external walls and openings

- Location
- Site plans
- Elevation plans
- Orientation
- Frontage
- Building lines

1.2 Establish the lengths and sizes of walls for a building

Read measurements using meters and millimetres and use a tape to establish lengths of walls

2 Follow a working drawing to establish and position the frontage and building lines

2.1 Follow a working drawing establish the position of temporary profiles

2.2 Follow the working drawing to establish corner peg positions

2.3 Follow a working drawing to establish the frontage/building lines

2.4 Determine the position of the building on the building line

2.5 Square the building

Squaring the building using the following standard methods:

- Builder square
- 3,4,5 method
- Optical site square
- Measure diagonals

2.6 Implement corrective measures

Knowledge requirement

1 Understand the methods used to establish the sub-structure of a building

1.1 Methods used to set out a building

Using an optical square and tape measure

1.2 Process used for transferring and positioning building lines on to the ground

Preparing for excavation for foundation trenches following standard processes:

- Fix lines to profiles
- Run sand line
- Transferred lines onto ground

1.3 Methods used to excavate foundations trenches

Methods used to set out and excavate foundation trenches and the conditions the different foundation types are used:

- Strip – stepped foundation
- Trench fill
- Raft
- Pad

1.4 Methods of transporting and positioning concrete

Considerations when transporting and placing concrete and the methods used:

- Transporting - hand wheelbarrow, lorry, pumping
- Placing – tamping, vibrating

1.5 Process for transferring building lines onto the foundation concrete

Methods used to mark the positions of building lines onto the foundation concrete from the setting out lines following standard process

- Plumbing down using a level and straight edge
- Marking wall positions on a foundation concrete in mortar

1.6 Process of establishing levels from temporary benchmarks

Methods used to accurately transfer levels to the corners of a building from a temporary benchmark (TBM) using the following methods:

- Level and straight edge
- Optical level
- Laser level
- Water level
- Datums
- Ordinance benchmark

Module 5 Principles of building masonry structures

Off-the-job training

Purpose

The purpose of this module is for learners to understand how to prepare and set out masonry structures and understand the documentation that is used to assist them in this process.

The learner will gain an understanding of the documentation used in construction and how this assists them in the process of organising the building of the structure, they will also learn how to store the materials and stack them in preparation for the building process. The module also covers how mortar and concrete are produced and the composition of a range of walls that are used in construction.

Knowledge requirements

1 Understand how to set up the work area

1.1 Stacking and storing materials

To protect them from the elements and to ensure that they are in good condition for use

Materials:

- Bricks
- Blocks
- Cement
- Aggregate
- Sand
- Timber
- Frames
- Joists

1.2 Load out materials in the work area

To ensure that they are placed in the safest and most efficient position for working

- Bricks
- Blocks
- Mortar

1.3 Set out the dimensions of the structure

Setting out the position of the building to allow building to commence

- Tape measure site square
- Frames
- Lines

- Building line
- Gauge lines

1.4 Mix mortar in the correct proportions

Mixing mortar onsite and ensuring that the mortar is properly gauged, mixed to the correct consistency and that any required additives are used

Gauging

- Batching
- Mixing by mixer
- Mixing by hand
- Weight batching
- Gauging by volume

Additives

- Plasticiser
- Lime
- Colour

2 Understand the principles of building cavity walls

2.1 Design considerations

Reasons why cavity walls are used, how good insulation can be incorporated and the methods to ensure that water does not track to the inner leaf

- Treatments at opening
- Water tightness
- Air tightness
- Thermal insulation

2.2 Components

The range of components that are incorporated into cavity walls, their use and methods of installation

- Wall ties insulation
- DPC
- Lintels
- Weep holes
- Trays
- Lightweight blocks
- Insulation clips
- Fire stops
- Cavity closures
- Vents

2.3 Types and methods of insulating cavity walls

Insulation of cavity walls, the materials used, prevention of fire spreading and methods of installing various materials

Methods

- Full fill
- Partial fill
- Post applied

Materials

- Glass fibre
- Pir
- Sheep wool
- Insulation blocks
- Thin joint
- Hollow block

3 Know how to build solid walls

3.1 Bonding arrangements for solid walls

Different types of bonding arrangements, their strengths and appearance and the ways that the bonds are used in wall construction

Types of bonding arrangements

- English bond
- Flemish bond
- English garden wall bond
- Flemish garden wall bond
- Bonding block work

3.2 Materials used to construct solid walls

Suitability and range of materials used for constructing solid walls

- Bricks
- Blocks
- Engineering Bricks
- Specials

3.3 Bonding solid walls at returns and junctions

Bonding arrangements for a variety of applications including the below:

- T junctions
- Intersections
- To attached piers
- Brick to block
- Returns

3.4 Joint finishes

Methods of producing the different types of joint finishes

- Half round
- Movement Joints
- Weatherstruck
- Flush
- Recessed

4 Know how to build isolated and attached piers

4.1 Bonding arrangements for isolated and attached piers

Different types of bonding arrangements and their strengths and appearance for isolated (hollow/solid) and attached piers

Types of bonding arrangements:

- English bond
- Flemish bond
- Bonding blockwork

5 Know a range of finishes for the top of walls and piers

5.1 Finishes for wall and piers

The purpose of having finishes on the top of walls and the benefits of incorporating them in the construction

Types of finishes:

- Brick on edge
- Soldier course
- Specials
- Engineering bricks

Skill requirements

1 Build single skin walls

1.1 Set out and build single skin walls

Build a single skin wall to gauge, level, plumb and to line using the appropriate tools and equipment.

1.2 Materials used to build single skin walls

Materials

- Bricks
- Concrete blocks
- Lightweight blocks

1.3 Set out returns and junctions in single skin walls

With the correct bonding pattern

- Bonding at returns

- Bonding at T junctions

2 Build cavity walls

2.1 Setting out cavity walls

Build a cavity wall to gauge, level, plumb and to line using the appropriate materials and equipment, and according to a specification and drawing

2.2 Materials used to build cavity walls

Materials:

- Insulation Blocks
- Concrete Blocks
- Wall ties
- Vents
- DPC
- Insulation – full fill, partial fill
- Trays
- Wall ties

2.3 Methods used to insulate cavity walls

Methods used to insulate cavity walls and the materials that used to provide good insulation properties

Materials:

- Thin joint
- Hollow block
- Full fill
- Partial fill
- Post applied

3 Set out and build solid walls

3.1 Set out and build solid walls

Set out and build solid walls using the range of bonds listed below:

- English bond
- Flemish bond
- English garden wall bond
- Bonding blockwork

3.2 Set out and build solid walls at returns and junctions

- T junctions
- Intersections
- To attached piers
- Brick to block
- Returns

3.3 Apply joint finishes to walls

- Half round
- Weatherstruck
- Flush
- Recessed

4 Building attached and isolated piers

4.1 Isolated solid piers

Set out and build a pier ensuring it is square to the following size/bond

- Two brick square/English bond
- One Brick square

4.2 Isolated hollow piers

Set out and build a pier to the following size/bond

- Two brick square/stretcher bond

4.3 Attached piers at the ends of brick and block walls

Set out and build a 102mm thick wall with 215mm pier for the following:

- Block walls with piers at end
- Brick walls with piers at end

4.4 Attached piers in the middle of brick and block walls

Set out and build a 102mm thick wall with 215mm pier for the following:

- Block with piers in middle
- Brick walls with piers in middle

5 Apply finishes to the top of walls and piers

5.1 Apply brick finishes

Apply the following finishes on walls and piers

- Brick on edge
- Soldier course
- Specials
- Engineering bricks

Module 6 Repair and maintenance of masonry structures

Off-the-job training

Purpose

The purpose of this module is for learners to gain an understanding of the principles of maintaining and repairing masonry structures. Buildings suffer wear and tear during their lifespan and regular repair and maintenance is required if they are to withstand the test of time. Learners should gain a knowledge of the various faults that occur in masonry and how repairs can be properly affected.

In this module the learner should gain an understanding of how buildings are maintained and repaired and how domestic drainage systems work.

Knowledge requirements

1 Know a range of faults that occur in masonry structures

1.1 Removing and replacing faulty materials in masonry structures

The cause of faults and damages that occur in masonry structures and identify the cure and the remedial actions to take:

- Cracked bricks
- Blowing render
- Spalling brick faces
- Effflorescence
- Lime leaching
- Wall ties
- Matching mortar
- Sulphate attack
- Freezing

Appropriate methods of removing and replacing defective components:

- Cutting - cold chisel, disc cutter, plugging chisel
- Drilling - hammer drill

Considerations when replacing defective components:

- Reclaimed bricks – size, colour , texture
- Matching mortar – consistency, strength , colour, lime
- Sand – colour

1.2 Cleaning down the face of buildings

The correct process for cleaning the face of the building, the considerations required to protect the public and the environmental impact.

- Washing down
- Acid application/other brick cleaning fluids
- Power/jet wash
- Brushing

The appropriate PPE when cleaning down the face of the building

- Gloves
- Goggles
- Oilskins
- Mask

2 Understand how domestic drainage works

2.1 Types of drainage systems used for domestic buildings

The range of drainage systems used for domestic drainage, their features and how they can be recognized

- Combined
- Separate
- Partially combined
- Septic tanks
- Cesspits
- Soakaways

2.2 Materials used in domestic drainage

Materials used to construct domestic drainage systems

- Plastic pipe
- China/clay Pipe
- Bends
- Junctions
- Rodding eyes
- Half channels
- Manholes / inspection chambers
- Collars
- Covers

2.3 Types of inspection chambers

The range of inspection chambers and the components that are used to construct them

- Plastic
- Brick built

- Concrete section
- Frames
- Covers
- Step irons
- Benching
- Half channels
- Slipper bends

2.4 Falls or gradients for domestic drainage

The purpose of falls in drainage runs, why drains are laid to falls, and the methods that are used to achieve a regular gradient

Falls

- 1-100
- 1-40
- 1-60

Methods of setting a fall

- Boning rods
- Lines

Tapered straight edges

3 Understand the safe use of a range of masonry saws used in construction

3.1 Powered cutters and blades

The types of masonry saw that are currently used in industry and the blades that can be fitted to them.

Powered Cutters – handheld, table mounted:

- Air
- Electric
- Petrol

Blades:

- Corborundum
- Diamond tipped

3.2 Selecting the appropriate blade and process of fitting blades

The type and suitability of a range of blades for the work activity, select the appropriate blade for the work and the correct process of fitting the blade to a range of masonry saws in accordance with the manufacturers' guidelines

Types

- Size
- Fitting
- Peripheral speed
- Guard

Work activity cutting

- Concrete
- Bricks
- Steel
- Stone

3.3 Safety aspects of using the masonry saws correctly

Including appropriate PPE when using masonry saws. Adherence to the risk assessments and method statements for the work activity being carried out.

PPE:

- Goggles/visor
- Workboots
- Ear protection
- Respirators/dust masks
- Gloves
- Hard hats

4 Understand how concrete is produced on-site and its applications

4.1 Methods used to produce concrete

Understand the methods of gauging, mixing, placing and repairing concrete on site to suit the conditions.

Methods:

- Gauging
- Hand mixing
- Small mixer
- Batching
- Ready mixed

4.2 Materials used to make concrete

The range of materials that are used to make concrete on site

Materials:

- Coarse aggregate
- Fine aggregate
- Portland cement
- Additives
- Steel reinforcing
- Water

4.3 Range of defects that can occur in concrete

- Cracking
- Spalling

- Concrete cancer
- Blowing

4.4 Methods of repairing concrete

- Patching
- Refinishing
- Replacing reinforcement

Skill requirements

1 Be able to construct a manhole

1.1 Construct an inspection chamber, incorporating a half channel branches, and benching

Construct an inspection chamber with a half channel and branches, complete with benching to meet the specification and comply with building regulations

Materials

- Brick
- Engineering Brick
- Plastic

1.2 Fit an inspection cover

Fit an inspection cover on the completed inspection chamber

Types of inspection covers

- Cast Iron
- Steel
- Plastic

2 Correctly select and use a masonry saw

2.1 Identify a suitable masonry saw for the work

Selecting the appropriate type of saw for the work.

Saws:

- Petrol
- Air
- Electricity
- Hand held
- Table mounted

2.2 Identify the correct blade type for the given work

Selecting the correct type and size blade to fit to the saw to carry out the work safely and correctly fitting it to the saw.

2.3 Select and use the correct PPE for the work

Correctly identifying and selecting suitable PPE to wear when using a masonry saw to cut brick or blocks

PPE:

- Gloves
- Protective boots
- Face mask
- Eye protection

2.4 Correctly use the saw to cut a brick or block

To the correct size in a safe manner.

3 Be able to produce and place concrete on-site

3.1 Select materials to make concrete

Correctly gauge, mix, place and finish concrete using correct methods

Materials:

- Coarse aggregate
- Fine aggregate
- Portland cement
- Additives
- Steel reinforcing
- Water

3.2 Produce concrete

The methods used to produce quantities of concrete in on site conditions:

- Gauging
- Hand mixing
- Small mixer
- Batching

3.3 Place and finish concrete

The methods used to place, compact and finish concrete and how concrete is cured.

Placing:

- Pouring
- Pumping

Compacting:

- Tamping
- Vibrating
- Floating

Curing:

- Treating
- Wetting

Module 7 Decorative brickwork

Off-the-job training

Purpose

The purpose of this module is for learners to understand the knowledge and practical application used to build decorative brickwork and arch construction.

The learners would need to know about the different types of arch designs and the methods used to set out and build them.

Knowledge requirements

1 Know decorative features and how they can be into a incorporated to a structure

1.1 Decorative features and their positions in structures

Decorative features and the positions where they may be incorporated into a structure

Decorative features

- Corbel courses
- Dog toothing
- Dentil courses
- Rough ringed arches
- Decorative brick panels, and margin brickwork
- Banding course
- Battered brickwork

2 Understand how to set out and the methods of building decorative panels

2.1 Method of setting out

For a range of decorative panels, to include:

- Basket weave
- Vertical herringbone
- Diagonal herringbone

2.2 Method of placing reinforcement

For decorative panels to bond the decorative panels to the surrounding wall, to include:

- Basket weave
- Vertical herringbone
- Diagonal herringbone

Reinforcement type

- Galvanised Reinforcement

3 Know methods used to set out arches

3.1 Method used to set out a rough ringed arch

Segmental and semi-circular, including:

- Geometrical setting out for semi-circular and segmental
- Setting angle of skew back for segmental arch
- Traversing

3.2 Method used to set out an axed arch

- Segmental - geometrical setting out, template production
- Semi circular - geometrical setting out, template production

4 Understand the methods used to set out angled corners

4.1 Principles of setting out angled corners in brickwork

The common angles that are used when setting out quions for both acute and obtuse corners:

Angles

- acute – 30 degrees, 45 degrees
- obtuse – above 90 degrees, common angle used 135

4.2 Materials used to form angles

- Purpose made – specials
- Squint bricks
- Dog legs
- Cut and stuck bricks

Skill requirements

1 Set out and build three courses of different decorative brickwork features

1.1 Set out and build a dentil course between two corbelled banding courses

Following the standard method of construction.

2 Set out and build a basket weave panel

2.1 Set out and build a small decorative panel, three brick square, using basket weave:

- Identifying the correct resources to be used
- Setting out the panel dry on the floor
- Preparing the surrounding brickwork inserting horizontal joint reinforment to tie in the panel

3 Set out and build a small rough ringed arch

3.1 Set out a two ringed, one brick thick, rough ringed arch

Setting out a full size rough ringed arch for either a semi-circular or a segmental arch to the following specifications:

- Span equals 3 stretchers long
- Two rings
- Rough ringed arch

3.2 Build a two ringed, one brick thick, rough ringed arch

Using the standard method

- positioning of temporary support
- provide alignment of a face
- turn the two rings of the arch
- finishing of the joints to the specification
- methods of removing temporary support after completion
- finishing soffit joints
- complete surrounding brick work including cutting a neat joint to the extra dos of the arch

4 Be able to set out and build brickwork curved on plan (concave and convex)

4.1 Set out on plan, both convex and concave curves

Using appropriate equipment and standard process.

Equipment:

- Trammel rod
- Tape measure
- Profile boards

4.2 Build curved brickwork using trammel rods and profile boards

Constructing a wall half brick thick (curved, on-plan)

- Convex - Minimum radius 1.5 m
- Concave - Minimum radius 1.5 m

5 Be able to how to set out and build battered brickwork

5.1 Determine the angle of batter

Establish the method used to determine the angle of batter:

- Battered boards
- Tapered straight edge
- Line and pins

5.2 Set out brickwork to batter

Cut the first course of brickwork to the correct angle to form the batter to the wall

5.3 Build battered brickwork

Using the selected method

- Stretcher bond 6 bricks long, 9 courses high

- Line and pins
- Batter boards
- Tapered straight edge

Module 8 Chimneys flues and fireplaces

Off-the-job training

Purpose

The purpose of this module is for learners to gain an understanding of the principles of constructing a fireplace and chimney in a domestic dwelling using a range of methods and conforming to the building and other regulations. There should also be an understanding of how to use more modern methods of providing flues in buildings and how a fireplace is fitted.

Knowledge requirements

1 Know types of flashings and leadworks for chimneys

1.1 Identify a range of flashings and leadwork for chimneys

Identify the various types of lead trays and flashings that are used to waterproof the area where the chimney leaves the roof structure

- Aprons
- Back gutters
- Trays
- Step Flashings

2 Understand the method of constructing a chimney stack from drawings and specifications

2.1 Construction methods of chimney stacks

Materials:

- Bricks
- Clay/ concrete liners
- Pots
- Mortar

2.2 Interpret drawings and information from specifications and documentation

Interpret drawings, extracting information from specifications applying the appropriate regulations.

Documentation:

- Building Regulation approved Document J
- Drawings
- Specifications

3 Understand the methods of positioning a hearth and surround

3.1 Methods of positioning hearth and surround

Methods adopted to position a superimposed hearth and fire surround according to the regulations ensuring good practice.

Materials:

- Fireback
- Surround
- Hearth
- Vermiculite fill
- Throat unit

Regulations:

- Building Regulations Approved Document J
- HEATAS Regulations

Methods:

- Bedding
- Fixing
- Filling

4 Understand modern methods of providing chimneys and flues

4.1 Modern methods of providing chimney and flues

Methods used to provide chimneys and flues to modern buildings, and the range of modern methods used.

Modern methods:

- Gas flues
- Ducted flues
- Enclosed appliances
- Pre-cast flues
- Pre –fabricated flues

Materials:

- Flue blocks
- Metal Liners
- Ducting

Methods:

- Hollow block construction
- Ducted
- Balanced Flue

Module 9 Maintaining health and safety when bricklaying

On-the-job training

Purpose

The purpose of this module is for learners to demonstrate practically the skills and knowledge they have been taught in Module 2 Health and safety for bricklaying.

This module will be assessed in a real working environment and learners will have to complete different tasks a number of times in order to achieve the module.

The module will provide the learner with the skills to work in the bricklaying environment safely and consider the safety aspects that impact them, their colleagues and others around them.

Skill requirements

1 Produce a risk assessment and method statement for a work activity

1.1 Produce a risk assessment for a work activity

Considerations for risk assessments:

- Hazards - slips, trips, falls, plant and machinery, falling from height, falling objects, asbestos
- Dust, chemicals, inhalation
- Likelihood – high, medium, low
- Control measures

1.2 Produce a method statement for a work activity

2 Use appropriate PPE for work activity

2.1 Select the appropriate PPE for work activity

PPE:

- Work boots
- Gloves
- High visibility vest
- Hard hat
- Safety glasses/goggles

3 Be able to work safely at height for work activity

3.1 Demonstrate ability to work off the ground

3.2 Carry out safety measures and checks when working at height

3.3 Access and egress to and from the platform safely

4 Be able to move materials using lifting techniques

4.1 Plan the move of materials

- How to assess a load
- Moving the load
- Route safety
- Duration of lift
- Informing others

4.2 Select the correct method of moving materials

- Manual handling
- Mechanic - eg kirbs, pallets, concrete lintols

4.3 Use safe lifting methods when moving materials

- Weight consideration
- Techniques
- Weight limits
- Kinetic methods

4.4 Select the correct PPE when moving materials

Module 10 Providing effective communication and customer service in the construction industry

On-the-job training

Purpose

The purpose of this module is for learners to demonstrate practically the skills and knowledge they have been taught in Module 3 - Communication and customer service in the construction industry.

This module will be assessed in a real working environment and learners will have to complete different tasks a number of times in order to achieve the module.

The module will provide the learner with the skills to communicate effectively with customers and stakeholders, as well as learners identifying own development needs and producing a development plan.

Skill requirements

1 Communicate with colleagues and customers in the workplace

1.1 Communicate effectively with colleagues and stakeholders using a range of methods

Communication methods

- Verbal and non-verbal communication
- Face to face
- Body language
- Remote communication
- E-platforms
- Written communication synchronous and asynchronous
- Multi-user web based project working platforms
- Signs

Stakeholders

- Colleagues
- Clients
- Architects
- Contract managers
- Line managers
- Building control officers
- Other trades

2 Demonstrate good customer service

2.1 Features of good customer service

- Behaving in a manner that meets the requirements of the company and the client
- Personal hygiene
- Use of appropriate language, avoid acronyms and abbreviations, tone and situation
- Cleaning the working environment
- Importance of good relationships with stakeholders (including other trades)
- Showing respect for customers property
- Good timekeeping
- Professional image and appearance
- Behaving in an ethical manner
- Transparency of work requirements
- Good morale
- Knowing when matters need to be escalating
- Being punctual, reliable and conscientious

3 Maintain a safe and secure work environment for customers during construction works

3.1 Maintain the security of the work area

Ensuring the working environment is safe and secure to ensure customers and their property is safe during the construction process

3.2 Store tools and equipment to ensure customer safety

3.3 Clean the work area when required

4 Produce a development plan

4.1 Identify own development needs

4.2 Produce and complete a plan based on individual development needs

Module 11 Setting out

On-the-job training

Purpose

The purpose of this module is for learners to demonstrate practically the skills and knowledge they have been taught in Module 4 – Principles of the setting out.

This module will be assessed in a real working environment and learners will have to complete different tasks in order to achieve the module.

The module will provide the learner with the skills for setting out of a small building. The learner will be able to read and follow a working drawing and establish both frontage and building lines for the building. The learner will also be able to transfer the building line from the ranging line to foundation concrete.

Skill requirements

1 Read and follow a working drawing

1.1 Use working drawings to establish wall positions

Interpret working drawings to position profiles, corner pegs, and frontage/building lines:

- Location
- Site plans
- Elevation plans
- Orientation

1.2 Use measurements to establish walling positions

Using a tape measure calculate and record all measurements to position both the building and frontage lines.

Measurements:

- Millimetres
- Meters

2 Set out a building to square

2.1 Form right angles using profiles and ranging lines

Use a range of methods to square a building

- Builder square
- 3,4,5 method
- Optical site square
- Measure diagonals

2.2 Transfer building line positions to the ground/concrete

2.3 Check and correct calculations to horizontal/diagonal measurements

Module 12 Building masonry structures

On-the-job training

Purpose

The purpose of this module is for learners to demonstrate practically the skills and knowledge they have been taught in Module 5 – Principles of building masonry structures.

The learners will be able to apply the knowledge and skills that they have already gained in other modules to constructing cavity walls, isolated and attached piers and wall finishing's.

Skill requirements

1 Prepare for building a masonry structure

1.1 Set up the work area

- Above ground
- Below ground
- On platforms

1.2 Load out materials in the work area

Loading out materials by placing safely and conveniently to allow efficient and safe working

- Bricks
- Blocks
- Insulation blocks
- DPC
- Lintols
- Insulation
- Wall ties
- Frames

1.3 Set out the dimensions of the structure

Set out the position and size of the structure according to the information provided:

- Plans
- Site square

1.4 Mix mortar

Mix mortar according to the specification using a suitable method

- Guaging
- Plasticiser
- Mixer
- Potable water

1.5 Cut bricks-blocks using hand and power tools

Cut building materials correctly and safely using a range of tools and equipment:

- Hammer
- Bolster
- Petrol disc cutter
- Electric disc cutter

2 Build cavity walls

2.1 Set out cavity walls below and above ground level

To ensure correct bond and positioning of openings and components

Bonds:

- Half bond
- Reverse bond
- Broken bond

Components:

- Windows
- Doors
- Vents
- Service entries

2.2 Construct cavity walls using a range of materials

As per the drawings and specifications and as required by regulations

Materials:

- Brick
- Block
- Insulation Block
- Thin Joint

2.3 Install insulation to full and partial fill cavity walls

Install insulation into cavity wall as the work proceeds in accordance with the specification, manufacturers' information and regulations

Insulation

- Full fill
- Partial fill
- Retaining clips
- Joint tape
- Wall ties

2.4 Construct cavity walls and install a range of components

According to drawings, specification and regulations

Using materials according to the specification and place components as required by the drawings and regulations.

Components:

- Lintols
- Trays
- DPC
- Ties
- Clips
- Vents
- Frames
- Weep holes
- Restraint straps

3 Build solid walls

3.1 Set out and build solid walls using a range of materials and bonds

Set out and build solid walls using a range of bricks blocks in bonds as specified by the drawings and specifications

Bricks and blocks

- Concrete blocks
- Insulation blocks
- Trench blocks
- Cellular blocks
- Clay blocks
- Clay bricks
- Facing bricks
- Engineering bricks
- Common bricks

Bonds

- Half bond
- Quarter bond
- English bond
- Flemish bond
- Stretcher bond
- Broken bond
- Reverse bond

3.2 Bond walls correctly at corners and junctions

Construct walls at corners and junctions using the correct methods of bonding and to provide the strongest and the most attractive bond.

3.3 Finish joints with a range of joint finishes

Finish the joints with a range of joint finishes according to the specification and to form a full joint

Joint finishes

- Half round
- Cut from the trowel
- Raked
- Weatherstruck
- Recessed

4 Build isolated and attached piers

4.1 Build a two brick square pier in stretcher bond

Using the materials specified and with joint finishes to comply with the specification

5 Construct walls with attached piers in brick and block

5.1 Bond attached piers at the end of half brick and block walls

Build walls in brick and blockwork with an attached pier bonded at the end of the wall using good practice

5.2 Bond attached piers in the centre of brick and block walls

Build brick walls and block walls with piers in the centre, bonded using good practice

6 Apply finishes to the top of walls

6.1 Apply a range of finishes in brick

Apply brick finishes to the top of walls to provide protection from the weather and to form an attractive finish.

Finishes:

- Brick on edge
- Soldier courses
- Special bricks
- Engineering bricks

Module 13 Repairs, maintenance and restoration of masonry structures

On-the-job training

Purpose

The purpose of this module is for learners to demonstrate practically the skills and knowledge they have been taught in Module 6 – Repair and maintenance of masonry structures.

The learner will demonstrate the skills to be able to select materials to mix place compact and finish concrete on site.

The learner will also demonstrate safe practice in selecting a masonry saw for given work, selecting suitable blades and wearing the correct PPE to carry out a basic cutting task on site.

Skill requirements

1 Construct a brick inspection chamber

1.1 Construct a brick inspection chamber

To comply with the specification and building regulations and fit a cover

Materials

- Brick
- Engineering Brick
- Plastic

Inspection cover

- Cast Iron
- Steel
- Plastic

1.2 Incorporate a half channel and branches

1.3 Produce benching

1.4 Fit an inspection cover

2 Produce and place concrete on-site

2.1 Select materials to make concrete

Select materials for concrete production and gauge to the correct ratios

Materials:

- Coarse aggregate
- Fine aggregate
- Portland cement

- Additives
- Steel reinforcing
- Water

2.2 Produce concrete

On site using correct methods to gauge materials and mix in a mixer ready for use:

- Gauging
- Hand mixing
- Small mixer
- Batching

2.3 Place and finish concrete

Place concrete for a work activity, properly compact the concrete and produce a specified surface finish

Compacting methods:

- Tamping
- Vibrating
- Floating

Finishes:

- Tamped
- Floated
- Trowelled

3 Select and use a masonry saw

3.1 Identify a suitable masonry saw for the work

Choose the correct masonry saw for a given work activity and select the correct blade size and type for the work:

- Air
- Petrol
- Electric
- Blade

Blade Types:

- Diamond Tipped
- Carborundum

PPE:

- Goggles/visor
- Workboots
- Ear protection
- Respirators/dust masks
- Gloves

- Hard hats

3.2 Correctly fit the blade to saw

For a given piece of work

3.3 Select and use the correct PPE for the work

To carry out cutting of a brick or block

PPE:

- Goggles
- Mask
- Protective footwear
- Helmet
- Gloves

3.4 Correctly use the saw to cut a brick or block

To a given size.

Module 14 Producing decorative brickwork

On-the-job training

Purpose

The purpose of this module is for learners to demonstrate practically the skills and knowledge they have been taught in Module 7 - Decorative brickwork.

Learners will understand their role in the construction when completing decorative brickwork on site.

Skill requirements

1 Be able to set out and build a decorative feature using over-sailing and dentil courses.

1.1 Bond different decorative bonds and features

Use decorative bonds to build a feature into a wall:

- Over-sailing courses in stretcher or header bond at any location on a structure.
- Dentil course inserted between Banded courses (over sailing) at any location on a structure.

2 Be able to set out and build a small rough ringed semi circled arch

2.1 Set and build a two ringed, one brick thick on the face, rough ringed arch.

- The span of the opening should be no smaller than four stretchers long
- The arch has two rough rings
- The arch is to be one brick thick. (215mm)
- The rough ringed arch is to show wedge shaped joints

3. Be able to set out and build a decorative brick panel using basket weave bond

3.1 Set out and build a small decorative panel, using basket weave.

- The panel is to be built three stretchers in length with a minimum of nine courses high
- The panel is to be built using basket weave