QUALIFICATION HANDBOOK

City & Guilds Level 3 Diploma in Stonemasonry (6715-03)

February 2022 Version 1.2

City & Guilds

Qualification at a glance

Subject area	Construction
City & Guilds number	6715
Age group approved	16-18, 19+
Entry requirements	None
Assessment	Multiple choice/assignment
Support materials	Centre handbook Assessor guidance Practical task manual
Registration and certification	Consult the Walled Garden/Online Catalogue for last dates

Title and level	GLH	TQT	City & Guilds number	Accreditation number
Level 3 Diploma in Stonemasonry	447	470	6715-03	601/3598/0

Version and date	Change detail	Section
1.1 December 2015	Amended units 201/601	Units
1.2 February 2022	GLH and TQT clarified and highlighted	Qualification at a glance, and Structure

Contents

1 Introduction

This document tells you what you need to do to deliver the qualification:

Area	Description
Who is the qualification for?	It is for candidates who work or want to work in the stonemasonry industry.
What does the qualification cover?	It allows candidates to learn, develop and practise the skills required for employment and/or career progression in stonemasonry. In addition to covering the health and safety and the principles of organising, planning and pricing construction work, it covers the following skills: • setting out and templet making for complex stonemasonry components • working complex stonemasonry components • fixing complex stonemasonry components • conservation and restoration techniques.
What opportunities for progression are there?	It allows candidates to progress into employment.

Structure

To achieve the **Level 3 Diploma in Stonemasonry (6715-03)**, learners must achieve **49** credits from the mandatory units.

Unit accreditation number	City & Guilds unit number	Unit title	Credit value	GLH
Mandatory				
A/504/6719	Unit 201 / 601	Health, safety and welfare in construction	7	70
F/504/7029	Unit 301 / 701	Principles of organising, planning and pricing construction work	7	67
J/506/4804	Unit 325	Setting out and templet making for complex stonemasonry components	9	83
L/506/4805	Unit 326	Working complex stonemasonry components	16	148
R/506/4806	Unit 327	Fixing complex stonemasonry components	5	41
Y/506/4807	Unit 328	Conservation and restoration techniques for architectural heritage	5	38

Total Qualification Time

Total Qualification Time (TQT) is the total amount of time, in hours, expected to be spent by a Learner to achieve a qualification. It includes both guided learning hours (which are listed separately) and hours spent in preparation, study and assessment.

Title and level	GLH	TQT
Level 3 Diploma in Stonemasonry	447	470

2 Centre requirements

Approval

The approval process for construction qualifications is available at our website. Please visit **www.cityandguilds.com/construction** for further information.

Resource requirements

Physical resources and site agreements

Centres will have well equipped workshops with a comprehensive range of hand and portable power tools that meet current industry standards. All powered equipment should be well maintained and PAT certified. Centres will have special designated areas within their workshop (cubicles or project areas) allowing candidates to practice the requirements of the units and carry out the Practical Assignments.

Centre staffing

All staff who assess (tutor/deliver) these qualifications must:

- have recent relevant experience in the specific area they will be teaching;
- be technically competent in the area for which they are delivering training and/or have experience of providing training;
- have a CV available demonstrating relevant experience and any qualifications held.

All staff who quality assure these qualifications must:

- have a good working knowledge and experience within the construction industry;
- have an established strategy and documentary audit trail of internal quality assurance;
- have a good working knowledge of quality assurance procedures;
- have a CV available demonstrating relevant experience and any qualifications held.

While the Assessor/Verifier (A/V) units/TAQA are valued as qualifications for centre staff, they are not currently a requirement for these qualifications. However, we encourage trainers and assessors to qualify to the current TAQA standard.

Continuing professional development (CPD)

Centres must support their staff to ensure that they have current knowledge of the occupational area, that delivery, mentoring, training, assessment and verification is in line with best practice, and that it takes account of any national or legislative developments.

Candidate entry requirements

City & Guilds does not set entry requirements for this qualification. However, centres must ensure that candidates have the potential and opportunity to gain the qualification successfully.

Age restrictions

City & Guilds cannot accept any registrations for candidates under 16 as this qualification is not approved for under 16s.

3 Delivering the qualification

Initial assessment and induction

An initial assessment of each learner should be made before the start of their programme to identify:

- if the learner has any specific training needs,
- support and guidance they may need when working towards their qualification
- any units they have already completed, or credit they have accumulated which is relevant to the qualification
- the appropriate type and level of qualification.

We recommend that centres provide an induction programme so the learner fully understands the requirements of the qualification, their responsibilities as a learner, and the responsibilities of the centre. This information can be recorded on a learning contract.

Support materials

The following resources are available for this qualification:

Description	How to access
Assessor guidance	**www.cityandguilds.com**
Practical task manual	**www.cityandguilds.com**
Qualification approval form	**www.cityandguilds.com/construction**

4 Assessment

Unit	Title	Assessment method	Where to obtain assessment materials
201 / 601	Health, safety and welfare in construction	City & Guilds e-volve multiple choice test or on demand externally marked paper. The test covers all of the knowledge in the unit.	Examinations provided e-volve or question papers ordered via Walled Garden.
301 / 701	Principles of organising, planning and pricing construction work	City & Guilds e-volve multiple choice test or on demand externally marked paper. The test covers all of the knowledge in the unit.	Examinations provided e-volve or question papers ordered via Walled Garden.
325	Setting out and templet making for complex stonemasonry components	Multiple choice question paper, covering knowledge outcomes. Practical assignment, covering performance outcomes. Both assessments are set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure they are properly carried out.	**www.cityandguilds.com**

Unit	Title	Assessment method	Where to obtain assessment materials
326	Working complex stonemasonry components	Multiple choice question paper, covering knowledge outcomes. Practical assignment, covering performance outcomes. Both assessments are set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure they are properly carried out.	**www.cityandguilds.com**
327	Fixing complex stonemasonry components	Multiple choice question paper, covering knowledge outcomes. Practical assignment, covering performance outcomes. Both assessments are set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure they are properly carried out.	**www.cityandguilds.com**
328	Conservation and restoration techniques for architectural heritage	Multiple choice question paper, covering knowledge outcomes. Practical assignment, covering performance outcomes. Both assessments are set by City & Guilds, delivered and marked by the tutor/assessor, and will be externally verified by City & Guilds to make sure they are properly carried out.	**www.cityandguilds.com**

Test specifications

The way the knowledge is covered by each test is laid out in the tables below:

Test 1: Unit 201/601 Health, safety and welfare in construction
Duration: 1 hour

Unit	Outcome	Number of questions	%
201/601	1 Know the health and safety regulations, roles and responsibilities	7	17.5
	2 Know accident and emergency reporting procedures and documentation	5	12.5
	3 Know how to identify hazards in the workplace	7	17.5
	4 Know about health and welfare in the workplace	3	7.5
	5 Know how to handle materials and equipment safely	2	5
	6 Know about access equipment and working at heights	3	7.5
	7 Know how to work with electrical equipment in the workplace	4	10
	8 Know how to use personal protective equipment (PPE)	5	12.5
	9 Know the cause of fire and fire emergency procedures	4	10
	Total	**40**	**100**

Test 2: Unit 301/701 Principles of organising, planning and pricing construction work
Duration: 60 minutes

Unit	Outcome	Number of questions	%
301/701	1 Understand different types of drawn information in construction	7	17.5
	2 Understand energy efficiency and sustainable materials for construction	8	20
	3 Understand how to estimate quantities and price work for construction	10	25
	4. Understand how to plan work activities for construction	6	15
	5. Understand how to communicate effectively in the workplace	9	22.5
	Total	**40**	**100**

Test 3: Unit 325 Setting out and templet making for complex stonemasonry components

Duration: 30 minutes

Unit	Outcome	Number of questions	%
325	1 Understand how to set out for complex stonemasonry components	16	100
	Total	**16**	**100**

Test 4: Unit 326 Working complex stonemasonry components

Duration: 40 minutes

Unit	Outcome	Number of questions	%
326	1 Understand how to work complex stonemasonry components	19	100
	Total	**19**	**100**

Test 5: Unit 327 Fixing complex stonemasonry components

Duration: 40 minutes

Unit	Outcome	Number of questions	%
327	1 Understand how to plan and select resources required for fixing complex stonemasonry components	6	29
	3 Understand how to set out for fixing complex stonemasonry components	7	33
	5 Understand how to fix complex stonemasonry components	8	38
	Total	**21**	**100**

Test 6: Unit 328 Conservation and restoration techniques for architectural heritage

Duration: 30 minutes

Unit	Outcome	Number of questions	%
328	1 Understand how to prepare for conservation and restoration work	5	36
	3 Understand how carry out conservation and restoration work	9	64
	Total	**14**	**100**

5 Units

Availability of units

The following units can also be obtained from The Register of Regulated Qualifications: **http://register.ofqual.gov.uk/Unit**

Structure of units

These units each have the following:

- City & Guilds reference number
- unit accreditation number (UAN)
- title
- level
- credit value
- guided learning hours
- unit aim
- learning outcomes which are comprised of a number of assessment criteria

Range explained

Range gives further scope on what areas within an assessment criteria must be covered. The range in a unit **must** be taught to learners and parts of the range will be assessed.

Unit 201/601 Health, safety and welfare in construction

UAN:	**A/504/6719**
Level:	2
Credit value:	7
GLH:	70
Endorsement by a sector or regulatory body:	This unit is endorsed by Construction Skills, the Sector Skills Council for the construction industry.
Aim:	The aim of this unit is to provide the learner with the knowledge to carry out safe working practices in construction, in relation to sourcing relevant safety information and using the relevant safety procedures at work

Learning outcome
The learner will: 1. know the health and safety regulations, roles and responsibilities
Assessment criteria
The learner can: 1.1 identify **health and safety legislation** relevant to and used in the construction environment 1.2 state **employer and employee responsibilitie**s under the Health and Safety at Work Act (HASWA) 1.3 state **roles and responsibilities** of the Health and Safety Executive (HSE) 1.4 identify **organisations** providing relevant health and safety information 1.5 state the importance of holding on-site safety inductions and toolbox talks.

Range
Health and safety 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)

Employer responsibilities

Safe working environment, adequate staff training, health and safety information, site inductions, toolbox talks, risk assessment, supervision, PPE, reporting hazards, accidents and near misses, sections 2 to 9 of Health and Safety at Work Act, CDM reg's, construction phase plans, welfare, display public liability Insurance and health and safety law poster.

Employee responsibilities

Working safely, working in partnership with the employer, reporting hazards, accidents and near misses, following organisational procedures as per Sections 2 to 9 of Health and Safety at Work Act.

Roles and responsibilities:

Enforcement (including fees for intervention), legislation and advice, inspection, investigation eg site investigations.

Organisations

Health and Safety Executive (HSE) website, Institute of Occupational Safety and Health, British Safety Council, 'manufacturer', ROSPA.

Learning outcome
The learner will: 2. know accident and emergency reporting procedures and documentation
Assessment criteria
The learner can: 2.1 state legislation used for reporting accidents 2.2 state major **types of emergencies** that could occur in the workplace 2.3 identify reportable injuries, diseases and dangerous occurrences as per RIDDOR 2.4 state main types of **records** used in the event of an accident, emergency and near miss and reasons for reporting them 2.5 identify **authorised personnel** involved in dealing with accident and emergency situations 2.6 state **actions** to take when discovering an accident.

Range
Types of emergencies Fires, security incidents, gas leaks. **Records**: Accident book, first aid records, organisational records and documentation. **Authorised personnel**

First aiders, supervisors/managers, health and safety executive, emergency services, safety officer.

Actions
Area made safe, call for help, emergency services.

Learning outcome
The learner will: 3. know how to identify hazards in the workplace
Assessment criteria
The learner can: 3.1 state the importance of **good housekeeping** 3.2 state reasons for risk assessments and method statements 3.3 identify **types of hazards** in the workplace 3.4 state the importance of the correct storage of combustibles and chemicals on site 3.5 identify different **signs and safety notices** used in the workplace.

Range
Good housekeeping: Cleanliness, tidiness, use of skips and chutes, segregation of materials, clear access to fire escapes, clear access to fire extinguishers. **Types of hazards:** Fires, slips, trips and falls, hazardous substances (relating to inhalation, absorption, exposure, ingestion, cross-contamination), electrical, asbestos, manual handling, plant and vehicle movement, adverse weather. **Signs and safety notices:** Prohibition, mandatory, warning, safe condition, supplementary.

Learning outcome
The learner will: 4. know about health and welfare in the workplace
Assessment criteria
The learner can: 4.1 identify requirements for welfare facilities in the workplace as per Construction Design Management (CDM) 4.2 state health effects of noise and **precautions** that can be taken 4.3 state **risks** associated with drugs, alcohol and medication which could affect performance in the workplace.

Range
Precautions Reducing noise at source, PPE, isolation, exposure time.

Risks
Reduced risk perception, loss of concentration, balance problems, absenteeism and reduced productivity.

Learning outcome
The learner will: 5. know how to handle materials and equipment safely
Assessment criteria
The learner can: 5.1 identify legislation relating to safe handling of materials and equipment 5.2 state procedures for safe lifting and manual handling activities in accordance with guidance and legislation 5.3 state the importance of using **lifting aids** when handling materials and equipment.

Range
Lifting aids Wheelbarrow, sack barrow, mechanical lifting aids, pallet truck.

Learning outcome
The learner will: 6. know about access equipment and working at heights
Assessment criteria
The learner can: 6.1 identify legislation relating to working at heights 6.2 identify types of **access equipment** 6.3 state **safe methods** of use for **access equipment** 6.4 identify **dangers** of working at height.

Range
Access equipment: Stepladders, ladders (pole, extension), trestles, hop-ups, proprietary scaffolding, podium, stilts **Safe methods** Regular inspection, check for broken, damaged or missing components, responsible use, consideration of adverse weather conditions, good housekeeping **Dangers** Falling tools, falling equipment, falling materials, persons falling from height (injuries to themselves and others).

Learning outcome
The learner will: 7. know how to work with electrical equipment in the workplace
Assessment criteria
The learner can: 7.1 state **precautions** to take to avoid risks to self and others when working with electrical equipment 7.2 state **dangers** of using electrical equipment 7.3 identify **voltages** and voltage colour coding that are used in the workplace 7.4 state **methods** of storing electrical equipment.

Range
Precautions Check leads, check plugs, use of cable hangers, check tools and equipment, current valid PAT certificate **Dangers**: Burns, electrocution, fire. **Voltages** Battery powered, 110/115 volts, 230/240 volts and 415 volts. **Methods** Components present, equipment cleaned, checked for damage, stored in a clean and secure location.

Learning outcome
The learner will: 8. know how to use Personal Protective Equipment (PPE)
Assessment criteria
The learner can: 8.1 state the legislation governing use of Personal Protective Equipment (PPE) 8.2 state **types of PPE** used in the workplace 8.3 state the importance of PPE 8.4 state why it is important to store, maintain and use PPE correctly 8.5 state the importance of checking and reporting damaged PPE.

Range
PPE: Head protection, eye protection, ear protection, face/dust masks, breathing apparatus, high visibility clothing, safety footwear, gloves, sun protection, barrier cream, water proofs, knee pads, overalls/disposable clothing

Learning outcome
The learner will: 9. know the cause of fire and fire emergency procedures
Assessment criteria
The learner can: 9.1 state **elements** essential to creating a fire 9.2 identify methods of fire prevention 9.3 state actions to be taken on discovering a fire 9.4 state **types of fire extinguishers** and their uses.

Range
Elements Oxygen, fuel, heat. **Types of fire extinguishers:** Water, foam, CO2, dry powder.

Unit 301/701 Principles of organising, planning and pricing construction work

UAN:	F/504/7029
Level:	3
Credit value:	7
GLH:	67
Endorsement by a sector or regulatory body:	This unit is endorsed by ConstructionSkills.
Aim:	The aim of this unit is to provide the learner with the knowledge of building methods and construction technology in relation to: • understanding a range of building materials used within the construction industry and their suitability to the construction of modern buildings • processes for disseminating information • basic concepts of effective communication.

Learning outcome
The learner will: 1. understand different types of drawn information in construction.
Assessment criteria
The learner can: 1.1 compare advantages and disadvantages of computer-aided design (CAD) programs to traditional drawing method 1.2 explain **information** required to produce orthographic projection drawings 1.3 explain the process and purpose of producing a schedule from a drawing 1.4 explain the **benefits** of isometric projection drawings 1.5 explain **information** required to produce isometric projection drawings.

Range
Information (1.2)

Room dimensions, heights, width, sizes, heights and positions of walls, doors and window specifications, building regulations

Benefits

Pictorial view of an object, assembly or design; helps the client, customer, supplier or non-technical person understand how the finished product will look or what is required

Information (1.5)

Isometric axis, positioning and required view of the object, lines or surfaces relative to isometric axis; object dimensions and scale

Learning outcome
The learner will: 2. Understand energy efficiency and sustainable materials for construction
Assessment criteria
The learner can: 2.1 evaluate the uses of thermally insulated **materials** 2.2 describe **construction methods** used to insulate against heat loss and gain 2.3 calculate thermal values of **wall construction** 2.4 explain the purpose of an Energy Performance Certificate (EPC) 2.5 describe **sustainable materials** and their use in construction.

Range
Materials Polyisocyanurate (PIR), expanded polystyrene (EP) fibre glass, sheep wool, mineral wool, double glazed units, multi-foil insulation **Construction methods** Location of insulation, selection of materials, compliance with Building Regulations **Wall construction** Cavity, solid and timber frame **Sustainable materials** Locally sourced, managed timber (FSC), recycled materials

Learning outcome
The learner will: 3. Understand how to estimate quantities and price work for construction
Assessment criteria
The learner can:

3.1 describe how to estimate quantities of construction materials 3.2 describe **information required** to prepare a materials list using a schedule 3.3 explain the purpose of preferred suppliers lists when ordering materials 3.4 describe how to estimate quantities of construction materials 3.5 explain the purpose of the tendering process 3.6 explain the difference between quoting and estimating 3.7 calculate waste percentages for a construction task 3.8 describe the **information required** to prepare a quote.

Range
Information required (3.2) Quantity, quality, colour, dimensions, location, installation details **Information required (3.8)** Labour, operational costs, VAT, material cost

Learning outcome
The learner will: 4. understand how to plan work activities for construction.
Assessment criteria
The learner can: 4.1 outline the benefits of **planning** the sequence of material and labour requirements 4.2 outline advantages and disadvantages of purchasing or hiring plant and equipment 4.3 identify **planning methods** 4.4 identify information required to produce a Gantt chart for a building project.

Range
Planning Programmes of work, stock systems, critical path analysis, lead times, schedules, Gantt chart **Planning methods** GANTT chart, critical path analysis

Learning outcome
The learner will: 5. understand how to communicate effectively in the workplace
Assessment criteria
The learner can: 5.1 explain the purpose of **site documentation** 5.2 identify information to create an agenda for a meeting

5.3	explain information required to prepare a tool box talk and site induction
5.4	explain the purpose of a site survey and the information required to prepare a **defects** list
5.5	describe information required to prepare written communications to resolve **problems**.

Range
Site documentation Organisation chart, method statement, risk assessment, manufacturers' technical information, delivery notes, variation orders, permits to work, diaries, minutes, memos **Defects** Poor standard of work, poor quality of materials, damaged materials, human error **Problems** Delivery, materials, quality, human resources

Unit 325 Setting out and templet making for complex stonemasonry components

UAN:	J/506/4804
Level:	3
Credit value:	9
GLH:	83
Endorsement by a sector or regulatory body:	This unit is endorsed by ConstructionSkills.
Aim:	The aim of this unit is to provide learners with the underpinning knowledge and skills to set out and make templets for complex stonemasonry components.

Learning outcome
The learner will: 1. understand how to set out for complex stonemasonry components.
Assessment criteria
The learner can: 1.1 explain the **methods** of incorporating **arches** into surrounding masonry 1.2 explain the **methods** of setting out columns 1.3 state the different **methods** of setting out volutes 1.4 describe the suitability of **section details** for different applications 1.5 describe different types of **pediments** 1.6 describe the purpose of ramp and twist 1.7 describe the method of setting out for ramp and twist 1.8 explain the purpose of a helical surface 1.9 describe the method of setting out for spherical components 1.10 describe different types of **tracery** 1.11 describe architectural **enrichments**.

Range
Methods (1.1) Taking details from architects' drawings (new buildings) and existing stonework (replacement) **Arches**

Semi-circular, segmental, drop, lancet, equilateral, three centred, Tudor four centred, horseshoe, ogee, flat, elliptical, parabolic, relieving, rampant

Methods (1.2)

Diagonally (Conchoid of Nicomedes), vertically (from base up)

Methods (1.3)

Volutes formed through triangles (Goldman, Chambers), volutes formed through squares (Gibbs, Hill & David)

Section details

Parabolic, elliptical: astragal, bead, torus, scotia, corona, bowtell, keel, conge, echinus

Continuous curves, developed sections (raking): astragal, bead, torus, scotia, corona, bowtell, keel, conge, cyma recta

Pediments

Triangular (broken, open, scrolled), segmental (broken, open, scrolled)

Tracery

Plate, geometrical, intersecting, reticulated, flowing, perpendicular, blind

Enrichments

Egg and dart, leaf carving, bead and reel, flutes, reeds, ball flower, scrolls, chevron, foils, dogtooth, crockets

Learning outcome
The learner will: 2. be able to set out for complex stonemasonry components.
Assessment criteria
The learner can: 2.1 set out a rusticated arch into surrounding masonry 2.2 set out a column using diagonal and vertical methods 2.3 set out a volute 2.4 set out ramp and twist 2.5 set out tracery 2.6 set out spherical work 2.7 set out **section details** 2.8 set out positions of fixings 2.9 set out **bed moulds and face moulds** 2.10 set out for **enrichments**.

Range
Section details Astragal, bead, torus, scotia, corona, bowtell, keel, conge, developed sections (raking), continuous curves, ovolo, fillet, cavetto, cyma recta, cyma reversa, quirk **Bed moulds and face moulds** Curved on plan/elevation, straight, internal/external mitres, developed **Enrichments** Egg and dart, leaf carving, bead and reel, ball flower

Learning outcome
The learner will: 3. be able to make templets and moulds for complex stonemasonry components.
Assessment criteria
The learner can: 3.1 produce a job card 3.2 produce method statements for making complex templets and moulds 3.3 produce risk assessments for making complex templets and moulds 3.4 select appropriate Personal Protective Equipment for making complex templets and moulds 3.5 select appropriate **templet materials** 3.6 select resources required for making templets 3.7 transfer **setting out details** to templet material 3.8 produce **templets** within industry tolerances 3.9 annotate templets with necessary information 3.10 store templets correctly 3.11 dispose of waste materials to comply with legislative requirements 3.12 protect work and surrounding areas during the templet and mould making process 3.13 follow current environmental and relevant health and safety legislation.

Range
Templet materials Plastic, card, zinc **Setting out details** Rebate, chamfer, quadrant, segment, parabolic, elliptical, astragal, bead, torus, scotia, corona, bowtell, keel, conge, developed sections (raking), continuous curves, ovolo, fillet, cavetto, cyma recta, cyma reversa, fixings (joggles, slots, dowel holes, cramps), curved on plan/elevation, straight, internal/external mitres, curved to straight mitre, developed face moulds

Templets
Section, bed, face, reverse

Unit 326 Working complex stonemasonry components

UAN:	L/506/4805
Level:	3
Credit value:	16
GLH:	148
Endorsement by a sector or regulatory body:	This unit is endorsed by ConstructionSkills.
Aim:	The aim of this unit is to provide learners with the underpinning knowledge and understanding for working complex stonemasonry components.

Learning outcome
The learner will: 4. understand how to work complex stonemasonry components.
Assessment criteria
The learner can: 4.1 describe the uses of **resources** applicable to working stone 4.2 explain the application and use of **complex stonemasonry components** 4.3 explain the process of working ramp and twist 4.4 explain the process of working the shaft 4.5 explain the process of working a pediment springer 4.6 explain the process of working tracery 4.7 explain the process of working an Ionic capital 4.8 explain the **processes** of working spheres 4.9 explain the process of working egg and dart.

Range
Resources Banker: pitchers, punches, claws, soft stone chisels/Bath chisels, drags (English & French), dummies, tungsten chisels, fire sharpened chisels, gouges, bullnoses Marking and accuracy: mitre board, shift stocks/sliding bevels, sinking square/double sinking square, box trammel, dividers, callipers Power tools (air/electric): spinners, grinders, skill saws, carborundum pads, diamond pads, routers Carving: fishtails, lettering chisels, carving chisels, rifflers, dummies, fire sharp chisels

Complex stonemasonry components

Pediments, columns, capitals and bases, parapet, ramp and twist, staircases, spherical work, tracery, arches, vaulting, domes, elements (triglyphs, metopes, modillion, dentil, console, guttae, mutule, volute, stylobate, annulet, echinus, abacus, tympanum, ball flower, niche, boss, crocket, impost, tas-de-charge, tierceron, cusp, dead eye, pierced eye)

Processes

Drafts and reverses, cylinder and chamfer

Learning outcome
The learner will: 5. be able to work complex stonemasonry components.
Assessment criteria
The learner can: 5.1 interpret **information sources** to work complex stonemasonry components 5.2 produce risk assessments for working complex stonemasonry components 5.3 produce method statements for working complex stonemasonry components 5.4 select appropriate Personal Protective Equipment for working complex stonemasonry components 5.5 select appropriate stone for complex stonemasonry components 5.6 select resources required for working complex stonemasonry components 5.7 check surfaces for true, out of twist, square and defects 5.8 work **complex stonemasonry components** to include **elements**, **mouldings** and **enrichments** 5.9 produce **surface finish** to given specification 5.10 prepare stones for **fixing** 5.11 dispose of waste materials in accordance with legislative requirements 5.12 protect work and surrounding areas when working complex stonemasonry components 5.13 follow current environmental and relevant health and safety legislation.

Range
Information sources Drawings, job card, specifications **Complex stone components** Tracery, ramp and twist, Ionic volute, spherical **Elements** Curved to straight, internal mitre, external mitre, arris, face of operation, top bed, bottom bed, sawn back, joints, glazing grooves, weathering, cusps, dead eyes, pierced eyes

Mouldings
Quadrant, segment, parabolic, elliptical, astragal, bead, torus, scotia, corona, bowtell, keel, conge, ovolo, fillet, cavetto, cyma recta, cyma reversa

Enrichments
Egg and dart, leaf carving, bead and reel, ball flower

Surface finish
Tooled, rubbed, dragged, batted

Fixing
Joggles, slots, dowel holes, cramps

Unit 327 Fixing complex stonemasonry components

UAN:	R/506/4806
Level:	3
Credit value:	5
GLH:	41
Endorsement by a sector or regulatory body:	This unit is endorsed by ConstructionSkills.
Aim	The aim of this unit is to provide learners with the underpinning knowledge and skills to prepare for, set out and fix complex stonemasonry components.

Learning outcome
The learner will: 1. understand how to plan and select resources required for fixing complex stonemasonry components.
Assessment criteria
The learner can: 1.1 describe the process of sourcing **documentation** required when planning for fixing stone on site 1.2 explain the **process** of fixing complex stonemasonry components on site 1.3 calculate the mass of **complex shaped stones** to determine lifting requirements and wastage 1.4 describe the uses of **resources** required for fixing complex stonemasonry components 1.5 describe the uses of **materials** required for fixing complex stonemasonry components 1.6 describe the application and use of **fixings** required for fixing complex stonemasonry components.

Range
Documentation Drawings, specifications, fixing schedules/work programmes, time sheets, COSHH datasheets, site diaries, delivery schedules, method statement, risk assessment, delivery notes, pallet schedules **Process** Documentation, order of activity, tools, materials, deliveries, space, handling, labour requirements, storage, waste

Complex shaped stones

Areas and volumes of: cones, pyramids, spheres, prisms, squares, triangles, polygons, parallelograms, trapeziums, circles, ellipses, cubes, cylinders

Resources

Small tools, gauging trowel, fixing trowel, pointing trowel, lifting trowel, bedding trowel, pointing irons, spirit level, plumb bob, line and pins, wedges, tingle plates, corner blocks, sponges, churn/stiff brush, mixers, punches, quirks, fixing spikes, hessian, polythene sheeting, plywood, torque wrench

Materials

Hydraulic lime, hydrated lime, lime putty, aggregates, pigmentation, plasticisers, accelerants, retarders, mastics, white cement, grey cement, chemical cement, clean water, insulation, backing materials (brick, block, concrete, timber frame, metal frame), DPC, cavity tray, weep holes, wheels/cavity insulation clips

Fixings

Expansion joints, compression beds, load bearing fixings, wire fixings, fixing arches, soffit stones, stainless steel dowels, cramps

Learning outcome

The learner will:

2. be able to plan and select resources required for fixing complex stonemasonry components.

Assessment criteria

The learner can:

2.1 interpret **documents** required for fixing complex stonemasonry components

2.2 produce risk assessments for fixing complex stonemasonry components

2.3 produce method statements for fixing complex stonemasonry components

2.4 produce **documents** for fixing complex stonemasonry components

2.5 select appropriate Personal Protective Equipment for fixing complex stonemasonry components

2.6 select appropriate equipment to protect work and surrounding areas when fixing complex stonemasonry components

2.7 select resources required for fixing **complex stonemasonry components**

2.8 follow current environmental and relevant health and safety legislation.

Range

Documents (2.1)

Drawings, specifications, COSHH datasheets, delivery schedules

Documents (2.4)
Time sheets, site diary

Complex stonemasonry components
Tracery, ramp and twist, Ionic volute, spherical

Learning outcome
The learner will: 3. Understand how to set out for fixing complex stonemasonry components
Assessment criteria
The learner can: 3.1 explain the process of setting out to fix arches 3.2 explain the process of setting out to fix staircases 3.3 explain the process of setting out to fix pediments 3.4 explain the process of setting out to fix tracery 3.5 explain the process of setting out to fix columns 3.6 explain the process of setting out to fix ramp and twist 3.7 explain the process of setting out to fix circular work.

Learning outcome
The learner will: 4. Be able to set out for fixing complex stonemasonry components
Assessment criteria
The learner can: 4.1 interpret information from drawings and specifications 4.2 select resources required for setting out to fix **complex stonemasonry components** 4.3 set out from a given gridline 4.4 set out to a correct datum level 4.5 check for dimensional accuracy 4.6 check for plumb and level 4.7 follow current environmental and relevant health and safety legislation.

Range
Complex stonemasonry components Tracery, ramp and twist, Ionic volute, spherical

Learning outcome
The learner will: 5. understand how to fix complex stonemasonry components.
Assessment criteria
The learner can: 5.1 explain the process of fixing arches

5.2 explain the process of fixing staircases 5.3 explain the process of fixing pediments 5.4 explain the process of fixing tracery 5.5 explain the process of fixing columns 5.6 explain the process of fixing ramp and twist 5.7 explain the process of fixing circular work 5.8 explain the process of fixing spherical work.

Learning outcome
The learner will: 6. be able to fix complex stonemasonry components.
Assessment criteria
The learner can: 6.1 interpret information from drawings and specifications 6.2 prepare mortar mixes for fixing complex stonemasonry components 6.3 fix **complex stonemasonry components** 6.4 apply **joint finishes** 6.5 dispose of waste materials in accordance with legislative requirements 6.6 protect work and surrounding areas when fixing stonemasonry components 6.7 follow current environmental and relevant health and safety legislation.

Range
Complex stonemasonry components Tracery, ramp and twist, Ionic volute, spherical **Joint finishes** Washed/sponged

Unit 328 Conservation and restoration techniques for architectural heritage

UAN:	Y/506/4807
Level:	3
Credit value:	5
GLH:	38
Endorsement by a sector or regulatory body:	This unit is endorsed by ConstructionSkills.
Aim:	The aim of this unit is to provide learners with the underpinning knowledge and skills to carry out conservation and restoration work for architectural heritage.

Learning outcome
The learner will: 1. understand how to prepare for conservation and restoration work.
Assessment criteria
The learner can: 1.1 describe uses of **surveying equipment** when preparing for conservation and restoration work 1.2 explain the defects commonly caused by **decay drivers** 1.3 state the **information** to be recorded on a survey report.

Range
Surveying equipment Photographic, laser, X-ray, callipers, profilers **Decay drivers** Moisture, mechanical, material, thermal movement/weather, poor standard of work, plant life **Information** Historical records, photographs, measurements, sketches, technical data, quinquennial reports

Learning outcome
The learner will: 2. be able to prepare for conservation and restoration work.
Assessment criteria
The learner can: 2.1 carry out a survey of required conservation and restoration work 2.2 record defects as required 2.3 record planned methods of repair.

Learning outcome
The learner will: 3. understand how to carry out conservation and restoration work.
Assessment criteria
The learner can: 3.1 describe the appropriate use of **materials** for conservation and restoration work 3.2 describe the process of gauging mortars 3.3 describe the process of **mixing mortars** 3.4 describe the process of **pointing** 3.5 describe the process of mortar repair 3.6 describe the process of **indent repair**.

Range
Materials Stone (matching existing), lime, cement, aggregates, clean water, pozzolan, chemicals, epoxy resin, fibre glass replacements, non-ferrous materials, grout, shelter coat, latex/clay masks, lime washing **Mixing mortars** mechanical, by hand, premixed **Pointing** Ashlar (washed, weathered/struck, flush, recessed), rubble (brushed, stippled/knocked back, snail creep, galletting, ribbon) **Indent repair** Ashlar, moulded detail

Learning outcome
The learner will: 4. be able to carry out conservation and restoration work.
Assessment criteria
The learner can: 4.1 produce method statements for conservation and restoration work

4.2	produce risk assessments for conservation and restoration work
4.3	select appropriate Personal Protective Equipment for conservation and restoration work
4.4	select appropriate materials for conservation and restoration work
4.5	gauge and mix mortar
4.6	carry out pointing
4.7	carry out mortar repair
4.8	carry out full stone replacement
4.9	carry out indent repair
4.10	protect and tend work
4.11	protect surrounding areas during conservation and restoration work
4.12	follow current environmental and relevant health and safety legislation.

Appendix 1 Sources of general information

The following documents contain essential information for centres delivering City & Guilds qualifications. They should be referred to in conjunction with this handbook. To download the documents and to find other useful documents, go to the **Centres and Training Providers homepage** on **www.cityandguilds.com**.

Centre Manual - Supporting Customer Excellence contains detailed information about the processes which must be followed and requirements which must be met for a centre to achieve 'approved centre' status, or to offer a particular qualification, as well as updates and good practice exemplars for City & Guilds assessment and policy issues. Specifically, the document includes sections on:

- The centre and qualification approval process
- Assessment, internal quality assurance and examination roles at the centre
- Registration and certification of candidates
- Non-compliance
- Complaints and appeals
- Equal opportunities
- Data protection
- Management systems
- Maintaining records
- Assessment
- Internal quality assurance
- External quality assurance.

Our Quality Assurance Requirements encompasses all of the relevant requirements of key regulatory documents such as:

- Regulatory Arrangements for the Qualifications and Credit Framework (2008)
- SQA Awarding Body Criteria (2007)
- NVQ Code of Practice (2006)

and sets out the criteria that centres should adhere to pre and post centre and qualification approval.

Access to Assessment & Qualifications provides full details of the arrangements that may be made to facilitate access to assessments and qualifications for candidates who are eligible for adjustments in assessment.

The **centre homepage** section of the City & Guilds website also contains useful information on such things as:

- **Walled Garden:** how to register and certificate candidates online
- **Events**: dates and information on the latest Centre events
- **Online assessment**: how to register for e-assessments.

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Useful contacts

UK learners General qualification information	T: +44 (0)844 543 0033 **E: learnersupport@cityandguilds.com**
International learners General qualification information	T: +44 (0)844 543 0033 F: +44 (0)20 7294 2413 E: **intcg@cityandguilds.com**
Centres Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **centresupport@cityandguilds.com**
Single subject qualifications Exam entries, Results, Certification, Missing or late exam materials, Incorrect exam papers, Forms request (BB, results entry), Exam date and time change	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 F: +44 (0)20 7294 2404 (BB forms) E: **singlesubjects@cityandguilds.com**
International awards Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **intops@cityandguilds.com**
Walled Garden Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413 E: **walledgarden@cityandguilds.com**
Employer Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	T: +44 (0)121 503 8993 E: **business@cityandguilds.com**
Publications Logbooks, Centre documents, Forms, Free literature	T: +44 (0)844 543 0000 F: +44 (0)20 7294 2413

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