



Level 3 Advanced Technical Diploma in Bricklaying (450) (7905-30)

Version 1.5 (May 2019)

Qualification Handbook Technicals

Qualification at a glance

Industry area	Construction
City & Guilds qualification number	7905-30
Age group	16-19 (Key Stage 5), 19+
Entry requirements	Centres must ensure that any prerequisites stated in the <i>What is this qualification about?</i> section are met.
Assessment	To gain this qualification, candidates must successfully achieve the following assessments: <ul style="list-style-type: none"> • one externally set, externally moderated assignment • one externally set, externally marked exam, sat under examination conditions.
Additional requirements to gain this qualification	Employer involvement in the delivery and/or assessment of this qualification is essential for all candidates and will be externally quality assured.
Grading	This qualification is graded Pass/Merit/Distinction/Distinction* For more information on grading, please see Section 7: Grading.
Approvals	These qualifications require full centre and qualification approval.
Support materials	Sample assessments Guidance for delivery Guidance on use of marking grids
Registration and certification	Registration and certification of this qualification is through the Walled Garden, and is subject to end dates.
External quality assurance	This qualification is externally quality assured by City & Guilds, and its internally marked assignments are subject to external moderation. There is no direct claim status available for this qualification.

Title and level	GLH	TQT	City & Guilds qualification number	Ofqual accreditation number
Level 3 Advanced Technical Diploma in Bricklaying (450)	450	720	7905-30	601/7236/8

Version and date	Change detail	Section	
May 2016 V1.1	Small typographical errors	Throughout	
	TQT added for qualifications	1. Introduction	
	Assessment component titles amended		
	Employer involvement guidance updated throughout	4. Employer involvement	
	Summary of assessment methods and conditions	5. Assessment	
	Moderation and standardisation of assessment updated throughout	6. Moderation and standardisation of assessment	
	Awarding individual assessments Awarding grades and reporting results	7. Grading	
June 2017 V1.2	Enquiries about results	8. Administration	
	Re-sits and shelf-life of assessment results		
	Malpractice		
	Access arrangements and special consideration		
	Addition of the examination paper based module number		1. Introduction – Assessment requirements and employer involvement
			5. Assessment
			5. Assessment – exam Specification
	7. Grading – Awarding grades and reporting results		
	5. Assessment – Assessment Objectives		
	7. Grading		
	5. Assessment – Exam Specification		
	Throughout		
March 2018 V1.3	Exam duration updated	5. Assessment – Exam Specification	

May 2019 V1.4	Wording changed regarding retakes	5. Wording changed regarding retakes 8. Administration – Re-sits and shelf-life of assessment result
May 2019 V1.5	Weightings changed within the assignment	5. Assessment – Assessment Objectives

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1 Introduction

What is this qualification about?

The following purpose is for the **Level 3 Advanced Technical Diploma in Bricklaying (450) (601/7236/8)**

Area	Description
OVERVIEW	
Who is this qualification for?	<p>This qualification is aimed at you if you are looking to work in the construction industry specifically as an advanced craftsperson in bricklaying. It will provide you with a range of specialist technical practical skills and knowledge, which will equip you to seek employment or further training in bricklaying.</p> <p>While there are no formal entry requirements, a Level 2 Diploma in Bricklaying, or equivalent industry experience is recommended.</p> <p>This qualification is suitable for anyone over the age of 16 years.</p>
What does this qualification cover?	<p>This one year full time qualification will help you to gain a wide range of brickwork knowledge and skills, including some specialist areas so you can work as an advanced craft bricklayer within the construction industry.</p> <p>You will take five compulsory units in:</p> <ul style="list-style-type: none">• Organising, planning and pricing construction work• Repairing and maintaining masonry structures• Constructing radial and battered brickwork• Constructing decorative and re-enforced brickwork• Constructing fireplaces and chimneys. <p>The units are designed so that you learn the underlying principles and practical skills involved, as well as getting an overview of how a construction site is run including the rules and regulations. Building regulations and other rules and regulations on building sites are very strictly controlled, so it's important that you learn about these as well as the practical skills.</p> <p>Centres and providers where you do your training, work with local employers who will contribute to the knowledge and delivery of this training. Employers will provide demonstrations and talks on the industry and where possible work placements will also be provided by the employers.</p>

WHAT COULD THIS QUALIFICATION LEAD TO?

Will the qualification lead to employment, and if so, in which job role and at what level?

This qualification prepares you with the knowledge and practical skills required to become an advanced craftsperson in bricklaying. This means you will be able to complete specialist, complex tasks and also work in a supervisory capacity in your chosen trade.

If you complete this qualification you will have an advantage over those who have not done it when seeking employment, either on a construction site or commercial or domestic premises. You may also become self-employed working as an advanced craft bricklayer on new build, domestic repair and refurbishment projects.

Why choose this qualification over similar qualifications?

This particular qualification is intended and designed specifically for you if you are not currently employed in the construction industry, but wish to embark on a career as an advanced craft bricklayer.

Will the qualification lead to further learning?

It can lead to a construction apprenticeship programme or a Level 3 NVQ Diploma in Trowel Occupations (Construction). On completion of the apprenticeship you will be competent as an advanced craft bricklayer.

If you wish to progress to become a supervisor working on site, you may wish to study any of the following qualifications:

- Level 4 NVQ Diploma in Construction Site Supervision (Construction)
- Level 6 NVQ Diploma in Construction Site Management (Construction)

WHO SUPPORTS THIS QUALIFICATION?

Employer/Higher Education Institutions

This qualification is supported by the Federation of Master Builders.

Qualification structure

For the **Level 3 Advanced Technical Diploma in Bricklaying (450)** the teaching programme must cover the content detailed in the structure below:

Level 3 Advanced Technical Diploma in Bricklaying (450)		
Unit number	Unit title	GLH
Mandatory		
301	Principles of organising, planning and pricing construction work	90
302	Repair and maintain masonry structures	30
303	Constructing radial and battered brickwork	120
304	Constructing decorative and reinforced brickwork	120
305	Constructing fireplaces and chimneys	90

Total qualification time (TQT)

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 Advanced Technical Diploma in Bricklaying	450	720

Assessment requirements and employer involvement

To achieve the **Level 3 Advanced Technical Diploma in Bricklaying (450)** candidates must successfully complete **all** the mandatory assessment components.

Level 3 Advanced Technical Diploma in Bricklaying (450)

Component number	Title
Mandatory	
001/501	Level 3 Bricklaying - Theory exam (1)*
002	Level 3 Bricklaying - Synoptic assignment (1)*

In addition, candidates **must** achieve the mandatory employer involvement requirement for this qualification **before** they can be awarded a qualification grade. For more information, please see guidance in *Section 4: Employer involvement*.

Employer involvement

Component number	Title
Mandatory	
830	Employer involvement

**Number of mandatory assessments per assessment type*

2 Centre requirements

Approval

New centres will need to gain centre approval. Existing centres who wish to offer this qualification must go through City & Guilds' **full** Qualification Approval Process. There is no fast track approval for this qualification. Please refer to the City & Guilds website for further information on the approval process: www.cityandguilds.com

Resource requirements

Centre staff should familiarise themselves with the structure, content and assessment requirements of the qualification before designing a course programme.

Centre staffing

Staff delivering these qualifications must be able to demonstrate that they meet the following requirements:

- be technically competent in the areas in which they are delivering
- be able to deliver across the breadth and depth of the content of the qualification being taught
- have recent relevant teaching and assessment experience in the specific area they will be teaching, or be working towards this
- demonstrate continuing CPD.

Physical resources

Centres must be able to demonstrate that they have access to the equipment and technical resources required to deliver this qualification and its assessment. 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 bricklaying workshop (cubicles or project areas) allowing candidates to practise the requirements of the units and carry out the Practical Assignments.

Internal Quality Assurance

Internal quality assurance is key to ensuring accuracy and consistency of tutors and markers. Internal Quality Assurers (IQAs) monitor the work of all tutors involved with a qualification to ensure they are applying standards consistently throughout assessment activities. IQAs must have, and maintain, an appropriate level of technical competence and be qualified to make both marking and quality assurance decisions through a teaching qualification or recent, relevant experience.

Learner entry requirements

Centres must ensure that all learners have the opportunity to gain the qualification through appropriate study and training, and that any prerequisites stated in the *What is this qualification about?* section are met when registering on this qualification.

Age restrictions

This qualification is approved for learners aged 16 – 19, 19+.

3 Delivering technical qualifications

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 learning or training needs,
- support and guidance they may need when working towards their qualification,
- the appropriate type and level of qualification.

We recommend that centres provide an introduction so that learners fully understand 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.

Employer involvement

Employer involvement is essential to maximise the value of each learner's experience. Centres are required to involve employers in the delivery of technical qualifications at Key Stage 5 and/or their assessment, for every learner. This must be in place or planned before delivery programmes begin in order to gain qualification approval. See *Section 4: Employer involvement* for more detail.

Support materials

The following resources are available for this qualification:

Description	How to access
Sample assessments	
Guidance for delivery	Available on the qualification pages on the City & Guilds
Guidance on use of marking grids	Website: www.cityandguilds.com

4 Employer involvement

Employer involvement is a formal component of Key Stage 5 Technical qualifications. It does not contribute to the overall qualification grading, but is a mandatory requirement that all learners must meet. As such it is subject to external quality assurance by City & Guilds.

Department for Education (DfE) requirements state:

Employer involvement in the delivery and/or assessment of technical qualifications provides a clear 'line of sight' to work, enriches learning, raises the credibility of the qualification in the eyes of employers, parents and students and furthers collaboration between the learning and skills sector and industry.

[Technical qualifications] must:

- *require all students to undertake meaningful activity involving employers during their study; and*
- *be governed by quality assurance procedures run by the awarding organisation to confirm that education providers have secured employer involvement for every student.*

Extract from: **Vocational qualifications for 16 to 19 year olds, 2017 and 2018 performance tables: technical guidance for awarding organisations, paragraphs 89-90**

City & Guilds will provide support guidance and quality assurance of employer involvement.

Qualification approval

To be approved to offer City & Guilds Technicals, centres must provide an Employer Involvement planner and tracker showing how every learner will be able to experience meaningful employer involvement, and from where sufficient and suitable employer representatives are expected to be sourced.

Centres must include in their planner a sufficient range of activities throughout the learning programme that provide a range of employer interactions for learners. Centres must also plan contingencies for learners who may be absent for employer involvement activities, so that they are not disadvantaged.

As part of the approval process, City & Guilds will review this planner and tracker. Centres which cannot show sufficient commitment from employers and/or a credible planner and tracker will be given an action for improvement with a realistic timescale for completion. **Approval will not be given** if employer involvement cannot be assured either at the start of the qualification, or through an appropriate plan of action to address this requirement before the learner is certificated.

Monitoring and reporting learner engagement

Employer involvement is a formal component of this qualification and is subject to quality assurance monitoring. Centres must record evidence that demonstrates that each learner has been involved in meaningful employer based activities against the mandatory content before claiming the employer involvement component for learners.

Centres must record the range and type of employer involvement each learner has experienced and submit confirmation that all learners have met the requirements to City & Guilds. If a centre cannot provide evidence that learners have met the requirements to achieve the component, then the learner will not be able to achieve the overall Technical Qualification.

Types of involvement

Centres should note that to be eligible, employer involvement activities **must** relate to one or more elements of the mandatory content of this qualification.

As the aim of employer involvement is to enrich learning and to give learners a taste of the expectations of employers in the industry area they are studying, centres are encouraged to work creatively with local employers.

Employers can identify the areas of skills and knowledge in their particular industry that they would wish to see emphasised for learners who may apply to work with them in the future. Centres and employers can then establish the type of input, and which employer representative might be able to best support these aims.

To be of most benefit this must add to, rather than replace the centre's programme of learning. Some examples of meaningful employer involvement are listed below. Employer involvement not related to the mandatory element of the qualification, although valuable in other ways, does not count towards this element of the qualification.

The DfE has provided the following examples of what does and does not count as meaningful employer involvement, as follows^{1,2}:

The following activities meet the requirement for meaningful employer involvement:

- *students undertake structured work-experience or work-placements that develop skills and knowledge relevant to the qualification³;*
- *students undertake project(s), exercises(s) and/or assessments/examination(s) set with input from industry practitioner(s);*
- *students take one or more units delivered or co-delivered by an industry practitioner(s). This could take the form of master classes or guest lectures;*
- *industry practitioners operate as 'expert witnesses' that contribute to the assessment of a student's work or practice, operating within a specified assessment framework. This may be a specific project(s), exercise(s) or examination(s), or all assessments for a qualification.*

In all cases participating industry practitioners and employers must be relevant to the industry sector or occupation/occupational group to which the qualification relates.

The following activities, whilst valuable, do not meet the requirement for meaningful employer involvement:

- *employers' or industry practitioners' input to the initial design and content of a qualification;*
- *employers hosting visits, providing premises, facilities or equipment;*
- *employers or industry practitioners providing talks or contributing to delivery on employability, general careers advice, CV writing, interview training etc;*
- *student attendance at career fairs, events or other networking opportunities;*
- *simulated or provider-based working environments eg hairdressing salons, florists, restaurants, travel agents, small manufacturing units, car servicing facilities;*
- *employers providing students with job references.*

Types of evidence

For each employer involvement activity, centres are required to provide evidence of which learners undertook it, e.g. a candidate attendance register. The types of additional evidence required to

¹ As extracted from: Vocational qualifications for 16 to 19 year olds
2017 and 2018 performance tables: technical guidance for awarding organisations

²This list has been informed by a call for examples of good practice in employer involvement in the delivery and assessment of technical qualifications - **Employer involvement in the delivery and assessment of vocational qualifications**

³ **DfE work experience guidance**

support a claim for this component will vary depending on the nature of the involvement. E.g. for a guest lecture it is expected that a synopsis of the lecture and register would be taken which each learner and the guest speaker will have signed; expert witnesses will be identified and will have signed the relevant assessment paperwork for each learner they have been involved in assessing; evidence of contribution from employers to the development of locally set or adapted assignments.

Quality assurance process

As the employer involvement component is a requirement for achieving the KS5 Technical qualifications, it is subject to external quality assurance by City & Guilds at the approval stage and when centres wish to claim certification for learners.

Evidence will be validated by City & Guilds before learners can achieve the employer involvement component. Where employer involvement is not judged to be sufficient, certificates cannot be claimed for learners.

Sufficiency of involvement for each learner

It is expected that the centre will plan a range of activities that provide sufficient opportunities for each learner to interact directly with a range of individuals employed in the related industry. Centres must also provide contingencies for learners who may be absent for part of their teaching, so they are not disadvantaged. Any absence that results in a learner missing arranged activities must be documented. Where learners are unable to undertake all employer involvement activities due to temporary illness, temporary injury or other indisposition, centres should contact City & Guilds for further guidance.

Live involvement

Learners will gain most benefit from direct interaction with employers and/or their staff; however the use of technology (e.g. the use of live webinars) is encouraged to maximise the range of interactions. Where learners are able to interact in real time with employers, including through the use of technology, this will be classed as 'live involvement'.

It is considered good practice to record learning activities, where possible, to allow learners to revisit their experience and to provide a contingency for absent learners. This is not classed as live involvement however, and any involvement of this type for a learner must be identified as contingency.

Timing

A learner who has not met the minimum requirements cannot be awarded the component, and will therefore not achieve the qualification. It is therefore important that centres give consideration to scheduling employer involvement activities, and that enough time is allotted throughout delivery and assessment of the qualification to ensure that requirements are fully met.

5 Assessment

Summary of assessment methods and conditions

Component numbers	Assessment method	Description and conditions
001/501	Externally marked exam	<p>The exam is externally set and externally marked, and will be taken online through City & Guilds' computer-based testing platform (001) or as a paper based test (501).</p> <p>The exam is designed to assess the candidate's depth and breadth of understanding across content in the qualification at the end of the period of learning, using a range of question types and will be sat under invigilated examination conditions. See JCQ requirements for details: http://www.jcq.org.uk/exams-office/ice---instructions-for-conducting-examinations</p> <p>The exam specification shows the coverage of the exam across the qualification content.</p> <p>Candidates who fail the exam at the first sitting will have a maximum of two opportunities to retake.</p> <p>If the candidate fails the exam three times then they will fail the qualification. (Note: the third and final retake opportunity applies to Level 3 only.) For exam dates, please refer to the Assessment and Examination timetable..</p>
002	Synoptic assignment	<p>The synoptic assignment is externally set, internally marked and externally moderated. The assignment requires candidates to identify and use effectively in an integrated way an appropriate selection of skills, techniques, concepts, theories, and knowledge from across the content area. Candidates will be judged against the assessment objectives.</p> <p>Assignments will be released to centres as per dates indicated in the Assessment and Examination timetable published on our website.</p> <p>Centres will be required to maintain the security of all live assessment materials. Assignments will be password protected and released to centres through a secure method.</p> <p>There will be one opportunity within each academic year to sit the assignment. Candidates who fail the assignment will have one re-sit opportunity. The re-sit opportunity will be in the next academic year, and will be the assignment set for that academic year once released to centres. If the re-sit is failed, the candidate will fail the qualification.</p> <p>Please note that for externally set assignments City & Guilds provides guidance and support to centres on the marking and moderation process.</p>

What is synoptic assessment?

Technical qualifications are based around the development of a toolkit of knowledge, understanding and skills that an individual needs in order to have the capability to work in a particular industry or occupational area. Individuals in all technical areas are expected to be able to apply their knowledge, understanding and skills in decision making to solve problems and achieve given outcomes independently and confidently.

City & Guilds technical qualifications require candidates to draw together their learning from across the qualification to solve problems or achieve specific outcomes by explicitly assessing this through the synoptic assignment component.

In this externally set, internally marked and externally moderated assessment, the focus is on bringing together, selecting and applying learning from across the qualification rather than demonstrating achievement against units or subsets of the qualification content. The candidate will be given an appropriately levelled, substantial, occupationally relevant problem to solve or outcome to achieve. For example this might be in the form of a briefing from a client, leaving the candidate with the scope to select and carry out the processes required to achieve the client's wishes, as they would in the workplace.

Candidates will be marked against assessment objectives (AOs) such as their breadth and accuracy of knowledge, understanding of concepts, and the quality of their technical skills as well as their ability to use what they have learned in an integrated way to achieve a considered and high quality outcome.

How the assignment is synoptic for this qualification

The typical assignment brief could be to survey a boundary wall for a garden and build a decorative wall. The candidate will need to analyse the garden and build a number of arches and decorative panels in relation to the brief and the client's specification. This will draw upon the candidates' ability to interpret diagrams and client specifications. The candidate will need to incorporate their knowledge of geometry, demonstrate accurate hand skills when working in workshops, i.e. cutting skills, setting out skills and skills for building battered brickwork. Candidates will demonstrate they are following Health and Safety regulations at all times which will draw upon their knowledge of legislation and regulations.

External exam for stretch, challenge and integration

The external assessment will draw from across the mandatory content of the qualification, using a range of shorter questions to confirm breadth of knowledge and understanding. Extended response questions are included, giving candidates the opportunity to demonstrate higher level understanding and integration through discussion, analysis and evaluation, and ensuring the assessment can differentiate between 'just able' and higher achieving candidates.

Assessment objectives

The assessments for this qualification are set against a set of assessment objectives (AOs) which are used across all City & Guilds Technicals to promote consistency among qualifications of a similar purpose. They are designed to allow judgement of the candidate to be made across a number of different categories of performance.

Each assessment for the qualification has been allocated a set number of marks against these AOs based on weightings recommended by stakeholders of the qualification. This mark allocation remains the same for all versions of the assessments, ensuring consistency across assessment versions and over time.

The following table explains all AOs in detail, including weightings for the synoptic assignments. In some cases, due to the nature of a qualification's content, it is not appropriate to award marks for some AOs. Where this is the case these have been marked as N/A. Weightings for exams (AOs 1, 2 and 4 only) can be found with the exam specification.

Assessment objective	Level 3 Advanced Technical Diploma in Bricklaying (450) Typical expected evidence of knowledge, understanding and skills	Approximate weighting (Assignment)
A01 Recalls knowledge from across the breadth of the qualification.	Arch terminology, geometrical setting out, types of arches, range of decorative features and application. Relevant legislation, setting out angles and bricklaying techniques.	10%
A02 Demonstrates understanding of concepts, theories and processes from across the breadth of the qualification.	Understanding the geometrical and setting out process.	20%
A03 Demonstrates technical skills from across the breadth of the qualification.	Practical techniques applied, measuring and setting out skills. Working safely, levelling and plumbing skills applied. Correct use of tools and equipment. Creating and interpreting information. Positioning and fixing.	40%
A04 Applies knowledge, understanding and skills from across the breadth of the qualification in an integrated and holistic way to achieve specified purposes.	Applying knowledge and understand to the task/scenario, problem solving techniques applied. Materials and resources used appropriately. Safe and clean working practices demonstrated.	20%
A05 Demonstrates perseverance in achieving high standards and attention to detail while showing an understanding of wider impact of their actions.	Accuracy of measuring, drawing, setting out, plumb, gauge, level, cutting, finishing/pointing. Systematic approach to work and cleanliness.	10%

Exam specification

Assessment Objective weightings per exam.

Assessment Objective	Theory exam 001/501 weighting (approx. %)
AO1 Recalls knowledge from across the breadth of the qualification.	40
AO2 Demonstrates understanding of concepts, theories and processes from across the breadth of the qualification.	43
AO4 Applies knowledge, understanding and skills from across the breadth of the qualification in an integrated and holistic way to achieve specified purposes.	17

The way the exam covers the content of the qualification is laid out in the table below:

Assessment type: Examiner marked, written exam, usually delivered online*

Assessment conditions: Invigilated examination conditions

Grading: X/P/M/D

Theory exam 001/501		Duration: 2 hours, 30 minutes	
Unit number	Unit title	Number of marks	%
301	Principles of organising, planning and pricing construction work	32	45
302	Repair and maintain masonry structures	13	19
305	Constructing fireplaces and chimneys	13	19
Applied knowledge and understanding		12	17
Total		70	100

*These exams are sat under invigilated examination conditions, as defined by the JCQ:

<http://www.jcq.org.uk/exams-office/ice---instructions-for-conducting-examinations>.

Entry for exams can be made through the City & Guilds Walled Garden.

6 Moderation and standardisation of assessment

City & Guilds' externally set assignments for technical qualifications are designed to draw from across the qualifications' content, and to contribute a significant proportion towards the learner's final qualification grade. They are subject to a rigorous external quality assurance process known as external moderation. This process is outlined below. For more detailed information, please refer to 'Marking and moderation - Technicals centre guidance' available to download on the City & Guilds website.

It is vital that centres familiarise themselves with this process, and how it impacts on their delivery plan within the academic year.

Supervision and authentication of internally assessed work

The Head of Centre is responsible for ensuring that internally assessed work is conducted in accordance with City & Guilds' requirements.

City & Guilds requires both tutors and candidates to sign declarations of authenticity. If the tutor is unable to sign the authentication statement for a particular candidate, then the candidate's work cannot be accepted for assessment.

Internal standardisation

For internally marked work⁴ the centre is required to conduct internal standardisation to ensure that all work at the centre has been marked to the same standard. It is the Internal Quality Assurer's (IQA's) responsibility to ensure that standardisation has taken place, and that the training includes the use of reference and archive materials such as work from previous years as appropriate.

Provision for reworking evidence after submission for marking by the tutor

It is expected that in many cases a candidate who is struggling with a specific piece of work may themselves choose to restart and rectify the situation during their normal allocated time, and before it gets to the stage of it being handed in for final marking by the tutor.

In exceptional circumstances however, where a candidate has completed the assignment in the required timescales, and has handed it in for marking by the tutor but is judged to have significantly underperformed, they may be allowed to rework or supplement their original evidence for remarking prior to submission for moderation. For this to be allowed, the centre must be confident that the candidate will be able to improve their performance without additional feedback from their tutor and within the required timescales ie the candidate has shown they can perform sufficiently better previously in formative assessments.

The reworked and/or supplemented original evidence must be remarked by the tutor in advance of the original moderation deadline and the moderator informed of any candidates who have been allowed to resubmit evidence.

The process must be managed through the IQA. The justification for allowing a resubmission should be recorded and made available on request. The use of this provision will be monitored by City & Guilds.

⁴ For any internally assessed optional unit assignments, the same process must be followed where assessors must standardise their interpretation of the assessment and grading criteria.

Internal appeal

Centres must have an internal process in place for candidates to appeal the marking of internally marked components, ie the synoptic assignment and any optional unit assignments. This must take place before the submission of marks for moderation. The internal process must include candidates being informed of the marks (or grades) the centre has given for internally assessed components, as they will need these to make the decision about whether or not to appeal.

Centres cannot appeal the outcome of moderation for individual candidates, only the moderation process itself. A request for a review of the moderation process should be made to **appeals@cityandguilds.com**.

Moderation

Moderation is the process where external markers are standardised to a national standard in order to review centre marking of internally marked assessments. These markers are referred to as 'moderators'. Moderators will mark a representative sample of candidates' work from every centre. Their marks act as a benchmark to inform City & Guilds whether centre marking is in line with City & Guilds' standard.

Where moderation shows that the centre is applying the marking criteria correctly, centre marks for the whole cohort will be accepted.

Where moderation shows that the centre is either consistently too lenient or consistently too harsh in comparison to the national standard, an appropriate adjustment will be made to the marks of the whole cohort, retaining the centre's rank ordering.

Where centre application of the marking criteria is inconsistent, an appropriate adjustment for the whole cohort may not be possible on the basis of the sample of candidate work. In these instances a complete remark of the candidate work may be necessary. This may be carried out by the centre based on feedback provided by the moderator, or carried out by the moderator directly.

Moderation applies to all internally marked assignments. Following standardisation and marking, the centre submits all marks and candidate work to City & Guilds via the moderation platform. The deadline for submission of evidence will be available on Walled Garden. See the *Marking and moderation - Technicals Centre Guidance* document for full details of the requirements and process.

In most cases candidate work will be submitted directly to the moderator for moderation. This includes written work, photographic and pictorial evidence, or video and audio evidence. For some qualifications there will be a requirement for moderators to visit centres to observe practical assessments being undertaken. This will be for qualifications where the assessment of essential learner skills can only be demonstrated through live observation. The purpose of these visits is to ensure that the centre is assessing the practical skills to the required standards, and to provide the moderators with additional evidence to be used during moderation. These visits will be planned in advance with the centre for all relevant qualifications.

Post-moderation procedures

Once the moderation process has been completed, the confirmed marks for the cohort are provided to the centre along with feedback from the moderator on the standard of marking at the centre, highlighting areas of good practice, and potential areas for improvement. This will inform future marking and internal standardisation activities.

City & Guilds will then carry out awarding, the process by which grade boundaries are set with reference to the candidate evidence available on the platform.

Centres retaining evidence

Centres must retain assessment records for each candidate for a minimum of three years. To help prevent plagiarism or unfair advantage in future versions, candidate work may not be returned to candidates. Samples may however be retained by the centre as examples for future standardisation of marking.

7 Grading

Awarding individual assessments

Individual assessments will be graded, by City & Guilds, as pass/merit/distinction where relevant. The grade boundaries for pass and distinction for each assessment will be set through a process of professional judgement by technical experts. Merit will usually be set at the midpoint between pass and distinction. The grade descriptors for pass and distinction, and other relevant information (eg archived samples of candidate work and statistical evidence) will be used to determine the mark at which candidate performance in the assessment best aligns with the grade descriptor in the context of the qualification's purpose. Boundaries will be set for each version of each assessment to take into account relative difficulty.

Please note that as the Merit grade will usually be set at the arithmetical midpoint between pass and distinction, there are no descriptors for the Merit grade for the qualification overall.

Grade descriptors

To achieve a pass, a candidate will be able to

- Demonstrate the knowledge and understanding required to work in the occupational area, its principles, practices and legislation.
- Describe some of the main factors impacting on the occupation to show good understanding of how work tasks are shaped by the broader social, environmental and business environment it operates within.
- Use the technical industry specific terminology used in the industry accurately.
- Demonstrate the application of relevant theory and understanding to solve non-routine problems.
- Interpret a brief for complex work related tasks, identifying the key aspects, and showing a secure understanding of the application of concepts to specific work related tasks.
- Carry out planning which shows an ability to identify and analyse the relevant information in the brief and use knowledge and understanding from across the qualification (including complex technical information) to interpret what a fit for purpose outcome would be and develop a plausible plan to achieve it.
- Achieve an outcome which successfully meets the key requirements of the brief.
- Identify and reflect on the most obvious measures of success for the task and evaluate how successful they have been in meeting the intentions of the plan.
- Work safely throughout, independently carrying out tasks and procedures, and having some confidence in attempting the more complex tasks.

To achieve a distinction, a candidate will be able to

- Demonstrate the excellent knowledge and understanding required to work to a high level in the occupational area, its principles, practices and legislation.
- Analyse the impact of different factors on the occupation to show deep understanding of how work tasks are shaped by the broader social, environmental, and business environment it operates within.
- Demonstrate the application of relevant theory and understanding to provide efficient and effective solutions to complex and non-routine problems.
- Analyse the brief in detail, showing confident understanding of concepts and themes from across the qualification content, bringing these together to develop a clear and stretching plan, that would credibly achieve an outcome that is highly fit for purpose.
- Achieve an outcome which shows an attention to detail in its planning, development and completion, so that it completely meets or exceeds the expectations of the brief to a high standard.

- Carry out an evaluation in a systematic way, focussing on relevant quality points, identifying areas of development/ improvement as well as assessing the fitness for purpose of the outcome.

Awarding grades and reporting results

The overall qualification grade will be calculated based on aggregation of the candidate's achievement in each of the assessments for the mandatory units, taking into account the assessments' weighting. The **Level 3 Advanced Technical Diploma in Bricklaying (450)** will be reported on a four grade scale: Pass, Merit, Distinction, Distinction*.

All assessments **must** be achieved at a minimum of Pass for the qualification to be awarded. Candidates who fail to reach the minimum standard for grade Pass for an assessment(s) will not have a qualification grade awarded and will not receive a qualification certificate.

The approximate pass grade boundary(ies) for the synoptic assignment(s) in this qualification are:

Synoptic Assignment	Pass Mark (%)
004	43

Please note that each synoptic assignment is subject to an awarding process before final grade boundaries are confirmed.

The contribution of assessments towards the overall qualification grade is as follows:

Assessment method	Grade scale	% contribution
Theory exam (001/501)	X/P/M/D	40%
Synoptic Assignment (002)	X/P/M/D	60%

Both synoptic assignments and exams are awarded (see 'Awarding individual assessments', at the start of Section 7, above), and candidates' grades converted to points. The minimum points available for each assessment grade is listed in the table below. A range of points between the Pass, Merit and Distinction boundaries will be accessible to candidates. For example a candidate that achieves a middle to high Pass in an assessment will receive between 8 and 10 points, a candidate that achieves a low to middle Merit in an assessment will receive between 12 and 14 points. The points above the minimum for the grade for each assessment are calculated based on the candidate's score in that assessment.

	Pass	Merit	Distinction
Theory exam: 40%	6	12	18
Synoptic assignment: 60%	6	12	18

The candidate's points for each assessment are multiplied by the % contribution of the assessment and then aggregated. The minimum points required for each qualification grade are as follows:

Qualification Grade	Points
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Distinction*	20.5
Distinction	17
Merit	11
Pass	6

Candidates achieving Distinction* will be the highest achieving of the Distinction candidates

8 Administration

Approved centres must have effective quality assurance systems to ensure valid and reliable delivery and assessment of qualifications. Quality assurance includes initial centre registration by City & Guilds and the centre's own internal procedures for monitoring quality assurance procedures.

Consistent quality assurance requires City & Guilds and its associated centres to work together closely; our Quality Assurance Model encompasses both internal quality assurance (activities and processes undertaken within centres) and external quality assurance (activities and processes undertaken by City & Guilds).

For this qualification, standards and rigorous quality assurance are maintained by the use of:

- internal quality assurance
- City & Guilds external moderation.

In order to carry out the quality assurance role, Internal Quality Assurers (IQAs) must have and maintain an appropriate level of technical competence and have recent relevant assessment experience. For more information on the requirements, refer to *Section 2: Centre requirements* in this handbook.

To meet the quality assurance criteria for this qualification, the centre must ensure that the following procedures are followed:

- suitable training of staff involved in the assessment of the qualification to ensure they understand the process of marking and standardisation
- completion by the person responsible for internal standardisation of the Centre Declaration Sheet to confirm that internal standardisation has taken place
- the completion by candidates and supervisors/tutors of the record form for each candidate's work.

External quality assurance

City & Guilds will undertake external moderation activities to ensure that the quality assurance criteria for this qualification are being met. Centres must ensure that they co-operate with City & Guilds staff and representatives when undertaking these activities.

City & Guilds requires the Head of Centre to

- facilitate any inspection of the centre which is undertaken on behalf of City & Guilds
- make arrangements to receive, check and keep assessment material secure at all times,
- maintain the security of City & Guilds confidential material from receipt to the time when it is no longer confidential and
- keep completed assignment work and examination scripts secure from the time they are collected from the candidates to their dispatch to City & Guilds.

Enquiries about results

The services available for enquiries about results include a review of marking for exam results and review of moderation for internally marked assessments.

For further details on enquiries and appeals process and for copies of the application forms, please visit the **appeals page** of the City & Guilds website at **www.cityandguilds.com**.

Re-sits and shelf-life of assessment results

Candidates who have failed an exam or wish to re-take it in an attempt to improve their grade, can do so **twice**. The best result will count towards the final qualification. See guidance on individual assessment types in Section 5.

Factors affecting individual learners

If work is lost, City & Guilds should be notified immediately of the date of the loss, how it occurred, and who was responsible for the loss. Centres should use the JCQ form, JCQ/LCW, to inform City & Guilds Customer Services of the circumstances.

Learners who move from one centre to another during the course may require individual attention. Possible courses of action depend on the stage at which the move takes place. Centres should contact City & Guilds at the earliest possible stage for advice about appropriate arrangements in individual cases.

Malpractice

Please refer to the City & Guilds guidance notes *Managing cases of suspected malpractice in examinations and assessments*. This document sets out the procedures to be followed in identifying and reporting malpractice by candidates and/or centre staff and the actions which City & Guilds may subsequently take. The document includes examples of candidate and centre malpractice and explains the responsibilities of centre staff to report actual or suspected malpractice. Centres can access this document on the City & Guilds website.

Examples of candidate malpractice are detailed below (please note that this is not an exhaustive list):

- falsification of assessment evidence or results documentation
- plagiarism of any nature
- collusion with others
- copying from another candidate (including the use of ICT to aid copying), or allowing work to be copied
- deliberate destruction of another's work
- false declaration of authenticity in relation to assessments
- impersonation.

These actions constitute malpractice, for which a penalty (eg disqualification from the assessment) will be applied.

Where suspected malpractice is identified by a centre after the candidate has signed the declaration of authentication, the Head of Centre must submit full details of the case to City & Guilds at the earliest opportunity. Please refer to the form in the document *Managing cases of suspected malpractice in examinations and assessments*.

Access arrangements and special consideration

Access arrangements are adjustments that allow candidates with disabilities, special educational needs and temporary injuries to access the assessment and demonstrate their skills and knowledge without changing the demands of the assessment. These arrangements must be made before assessment takes place.

It is the responsibility of the centre to ensure at the start of a programme of learning that candidates will be able to access the requirements of the qualification.

Please refer to the *JCQ access arrangements and reasonable adjustments* and *Access arrangements - when and how applications need to be made to City & Guilds* for more information.

Both are available on the City & Guilds website: <http://www.cityandguilds.com/delivering-our-qualifications/centre-development/centre-document-library/policies-and-procedures/access-arrangements-reasonable-adjustments>

Special consideration

We can give special consideration to candidates who have had a temporary illness, injury or indisposition at the time of the examination. Where we do this, it is given after the examination.

Applications for either access arrangements or special consideration should be submitted to City & Guilds by the Examinations Officer at the centre. For more information please consult the current version of the JCQ document, *A guide to the special consideration process*. This document is available on the City & Guilds website: <http://www.cityandguilds.com/delivering-our-qualifications/centre-development/centre-document-library/policies-and-procedures/access-arrangements-reasonable-adjustments>

Unit 301 Principles of organising, planning and pricing construction work

UAN:	J/507/3230
Level:	3
GLH:	90

What is this unit about?

The purpose of this unit is to introduce the learner to the wider construction industry, to give a broader context to the trade they are studying. The construction industry is a vital part of the economy and plays an important role in all our lives. It affects where we live, where we study, where we work, how we travel and how we spend our leisure time. This unit provides learners with an understanding of the way the building process is managed.

Development of a safe, secure and sustainable built environment is essential. Nowadays, this development must take place without harming the natural environment. Care for the environment and the use of sustainable technology is implicit in the content of this unit. The unit will enable learners to gain an overview of the way a construction site is run, completed and occupied efficiently, safely and with a minimal impact to the environment. This is tightly controlled by regulations and a team of inspectors who ensure these regulations are carried out. Additionally, any construction project will have its own management structure to ensure the construction project runs smoothly. This involves communicating efficiently, and there are many ways of ensuring information is passed from person to person using traditional and modern electronic means.

No prior knowledge of the built environment sector is required but learners should possess basic numeracy and literacy skills in order to understand the content properly.

Learning outcomes

In this unit, learners will

1. understand the way the construction industry is regulated
2. understand energy efficiency and sustainable materials for construction
3. understand how to estimate quantities and price work for construction
4. understand how to plan work activities for construction
5. understand how to communicate effectively in the workplace
6. understand and use drawings and associated software.

Scope of content

This section gives details of the scope of content to be covered in the teaching of the unit to ensure that all the learning outcomes can be achieved.

Learning outcome 1: Understand the way the construction industry is regulated

Topic 1.1: Health and safety regulations

Topic 1.2: Planning permission and building control

Topic 1.1

Learners must be aware of the different health and safety regulations that apply to the construction industry. The focus of this topic **isn't** about the practical application of carrying out health and safety but how these regulations affect all aspects of risk management from the initial design phase through to its eventual demolition.

Regulations

- 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)

Topic 1.2

Learners must be aware that construction is tightly controlled by Building and Planning Regulations and how these affect the building process. The learner will have an overview of the building regulations and the area they refer to. An in-depth knowledge of the content of the building regulations is **not** a requirement at this stage.

The learner will be aware of the planning process and how this affects the construction industry. An in-depth knowledge of planning is **not** required, but they should be aware of permitted development, outline and detailed planning permission, and listed building consent.

Learning outcome 2: Understand energy efficiency and sustainable materials for construction

Topic 2.1: Sustainable development

Topic 2.2: Thermally insulated materials

Topic 2.3: Construction methods for insulation

Topic 2.4: Energy saving measures

Topic 2.1

Learners will need to have a basic understanding of current guidance on sustainable building.

- Code for sustainable homes – Building Research Establishment Environmental Assessment Methodology (BREEAM)
- Voluntary standards eg Passive house
- Building regulations

Topic 2.2

Learners must develop an understanding of the properties of thermally insulating materials and be able to compare them in relation to cost, environmental impact and performance (eg U-values).

Materials such as Polyisocyanurate (PIR), expanded polystyrene (EP) fibre glass, sheep wool, mineral wool, double/triple/secondary glazed units, multi-foil insulation, phenolic insulation board

Topic 2.3

Learners must develop an understanding on the uses of insulation, where they are placed and how buildings are designed to incorporate insulation (within new and existing buildings).

- Correct selection of insulating materials
- Positioning of insulation

Topic 2.4

Learners will need to have a basic understanding of methods for reducing energy use and the environmental impact of a building.

- Renewable energy sources (eg solar, photovoltaic, ground or air source, wind turbines)
- Design features such as air tightness, lighting, water harvesting
- Local and sustainable materials
- Energy Performance Certificates (EPCs)

Learning outcome 3: Understand how to estimate quantities and price work for construction

Topic 3.1: Tendering process

Topic 3.2: Calculate quantities of building materials

Topic 3.3: Prepare a quote

Topic 3.1

Learners must understand the process of tendering for work. The learner should be able to explain the difference between quoting and estimating. Learners should also understand the types of tenders

- open
- closed.

As part of the tendering process, learners should have an understanding of penalty clauses and retention payments.

Topic 3.2

Learners must understand the process of calculating quantities of materials for building work. The processes should include

- specifications/drawings
- preparing a material list using a schedule
- bill of quantities
- calculations (percentages for waste, linear, area and volume)
- selection of suppliers (preferred, nominated, locally sourced).

Topic 3.3

Learners will be able to prepare a quote for a given building project including

- labour
- materials
- overheads
- plant and equipment
- profits
- VAT.

Learning outcome 4: Understand how to plan work activities for construction

Topic 4.1: Planning construction works

Topic 4.2: Statutory safety documentation

Topic 4.1

Learners must develop an understanding of the reasons and methods for planning construction work activities. The learner must understand why the planning of work activities is vital to efficient use of materials, cost and completing within the contracted time.

- Planning methods to include: bar charts (Gantt chart) and critical path analysis
- Timing of labour, plant and material requirements

Learners must understand how to produce a programme of works in relation to planning a small building project.

Topic 4.2

Learners must understand the reasons for completing a risk assessment and a method statement and be able to apply them to a work activity. At this level they should be able to guide others through the completion of a risk assessment.

Learners must understand the purpose of a permit to work.

Learning outcome 5: Understand how to communicate effectively in the workplace

Topic 5.1: Written and oral communication

Topic 5.1

Learners must develop an understanding of the different methods used to convey information between members of the building team. These may be verbal, on paper or electronic. The nature of communication is rapidly changing and an emphasis must be placed upon keeping up to date with such developments. Learners will be able to

- produce a written communication for a client
- prepare a toolbox talk
- coordinate a work activity
- prepare an agenda for a meeting.

Learning outcome 6: Understand and use drawings and associated software

Topic 6.1: Manual drafting

Topic 6.2: Computer Aided Design (CAD)

Topic 6.3: Building Information Modelling (BIM)

Topic 6.1

Learners must develop a range of the skills required to produce appropriate construction drawings. This will include drawing practice to develop specific skills and the application of these skills to produce a range of drawings in accordance with British Standards and other standard conventions.

Learners will have an awareness of the use of orthographic and isometric projections. Learners will be able to produce a drawing to scale using appropriate symbols and hatchings and elevations and plans.

Topic 6.2

Learners should be aware of the range of computer drawing software packages available, and the hardware required to run them. They do not need an in-depth working knowledge of each system, but they do need to know that there is a range of options, and that these vary considerable in complexity and cost.

Learners will be able to compare advantages and disadvantages of Computer Aided Design (CAD) programs to traditional drawing methods.

It would be an advantage for learners to develop CAD software skills however this will not be assessed.

Topic 6.3

Learners need to be aware of Building Information Modelling (BIM) and how it is used in the built environment today. BIM is not a software package, a computer-generated 3D model of a building, or even a method of simulation, communication or sharing data. It is a collaborative integrated approach to building design, construction and management through the whole lifecycle. Learners should know the advantages of BIM and how it is used on projects. This should consider

- 3D Modelling
- change management
- building simulation
- data management
- building operation.

Learners should be aware of requirements for the integration of BIM being driven by the government. They also need to be aware of the different software packages used and how these integrate with each other and the different stages of the process.

Guidance for delivery

This unit should be one of the first units delivered in this qualification because it informs much of the content of the other units. Tutors delivering this unit have opportunities to use a wide range of techniques. Lectures, discussions, seminar presentations, site visits, research using the internet and/or library resources and the use of personal and/or industrial experience will all be valuable. Delivery should stimulate, motivate and educate the learner. Structured site visits will prove enjoyable and useful, as would guest speakers drawn from local employers, trade unions and professional associations. Such guest speakers will bring up-to-date experience of working in today's built environment sector.

The unit has a broad content, covering how the construction industry is regulated in both safety, quality and environmental areas, how work is tendered for, estimated and priced, how work is planned and how communications take place.

Teaching and learning strategies must help learners to develop a clear and simple understanding of how the construction industry functions. This can be done by examining the industry from a variety of perspectives, breaking the knowledge down into bite-sized pieces and then asking the learners to work out how they fit together to form a united whole. This should be based on real-life case studies.

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all activities and risk assessments must be undertaken prior to any visits to sites, or any other places of interest.

Employer engagement

Employer engagement is an excellent way to maximise the learners' experience. A partnership approach should be adopted wherever possible, using employers with whom the centre has links to provide work experience placements. Employers could also contribute to learners' progress by acting as guest speakers.

Useful support for links with industry is given below:

- National Education and Business Partnership Network – **www.nebpn.org**
- Work Experience/Workplace Learning Frameworks – Centre for Education and Industry (CEI University of Warwick) - **www.warwick.ac.uk/wie/ce**
- Construction Industry Joint Council - Working rule agreement for the construction Industry UK **www.builders.org.uk/resources/nfb/000/322/301/May_2013_WRA_Final_Version.pdf**
- Born to build - **www.borntobuild.org.uk**
- The UK Contractors Group - **www.ukcg.org.uk/representing-industry/open-doors-weekend**

Suggested learning resources

Books

Construction Technology Published by: Heinemann, 2011 ISBN: 0-435-04682-9	Greeno R, Chudley R, Topliss S, Hurst M
Sustainable Practices in the Built Environment Published by: Butterworth-Heinemann, 2001 ISBN: 0-750-65153-9	Langston C A
Introduction to Building Published by: Pearson, 1997 ISBN: 0-582-30200-5	Osbourn D, Greeno R
Construction and the Built Environment: Level 2 Higher Diploma Published by: Heinemann, 2008 ISBN: 0-435-49991-2	Manley S, Charters M, Francis C, Topliss S, Doyle M
Level 3 Diploma in Bricklaying Published by: City and Guilds ISBN-13: 978-0851933030	Beattie, J; Tucker, T; Burdfield, M & Fearn, C
Level 3 Diploma in Site Carpentry & Bench Joinery Published by: City and Guilds ISBN: 978-0-85193-304-7	Burdfield, M; Redfern, S. Fearn, C

Journals

- Building Construction News
- Architects' Journal - AJ
- Building Design
- Housebuilder
- Property Week
- New Civil Engineer
- CIBSE Journal

Websites

Construction Industry Training Board	www.citb.co.uk
Construction Industry Research and Information Association	www.ciria.co.uk
The Health and Safety Executive	www.hse.gov.uk
National House Building Council	www.nhbc.co.uk
Chartered Institute of Building	www.ciob.org.uk
Green Building	www.greenbuilding.co.uk
BREEAM	www.breeam.org
Building Research Establishment Group	www.bre.co.uk
Passivhaus (Passive House)	www.passivhaus.org.uk

Unit 302 Repair and maintain masonry structures

UAN:	F/507/3243
Level:	3
GLH:	30

What is this unit about?

The purpose of this unit is to provide learners with the knowledge and understanding necessary to carry out repairs and maintenance on masonry structures. By gaining an understanding of the techniques used, learners will know how to select materials and remove, repair and replace masonry.

The unit will cover the various common materials used in bricklaying, relationships between the materials, as well as analysing typical defects associated with them. Learners will also be able to identify hazards associated with working on masonry maintenance, whilst maintaining safe systems of work. Learners must recognise that maintenance of buildings can be responsive or preventative and falls into three categories: repair, replace and rebuild.

Learning outcomes

In this unit, learners will

1. understand materials and defects of masonry structures
2. repair and renew masonry structures.

Scope of content

This section gives details of the scope of content to be covered in the teaching of the unit to ensure that all the learning outcomes can be achieved.

Learning outcome 1 Understand materials and defects of masonry structures

Topic 1.1: Common materials

Topic 1.2: Defects in masonry structures

Topic 1.1

Learners must understand the characteristics and uses of the following common materials relating to masonry structures. This must include the considerations of how different materials interact.

Common materials

Bricks, mortars, blocks, stone, concrete, steel reinforcement, timber, copings, pier caps, specials, flashings, DPC, cavity trays, insulation, wall ties, render, lintels, tiles

Topic 1.2

Learners must understand a range of common defects found in masonry structures and the actions that should be taken eg repair, replace or rebuild.

Common defects

Bulging, damp, staining, stone erosion, metal corrosion, spalling, cracking, mortar failure, efflorescence, lime leaching, sulphate attack, dry rot, wet rot, infestation

Learners must also understand the causes of the various types of defects.

Causes

Movement (expansion, contraction, subsidence, settlement), strength, water damage, condensation, poor workmanship, frost attack

Learning outcome 2: Repair and renew masonry structures

Topic 2.1: Safety checks for tools and equipment

Topic 2.2: Temporary support

Topic 2.3: Removing and replacing existing materials and components

Topic 2.1

Learners must understand the safety checks for the following tools and equipment.

Hand tools

Chisels, hammers

Power tools

Disc cutter, table saw, hammer drill, cartridge gun, tile cutters, grinder, pneumatic breaker

Access equipment

Ladders, trestles, independent scaffolding, cradle/stack scaffolding, towers, hop ups, mobile elevated working platform (MEWP)

Topic 2.2

Learners must understand the different types of support, when they should be used and how to assemble and brace them correctly.

Supports

Dead shores, needles, adjustable steel props, strongboys

Topic 2.3

Learners must be able to remove and replace existing materials and components using hand and power tools in superstructures and substructures.

Superstructure

Wall tie replacement, replacing lintels, repairing chimneys, structural movement, replacing trays, replacing window and door frames, re pointing

Substructure

Underpinning, replacing defective brickwork, preventing rising damp

Learners must understand the original structure and materials and have the knowledge to select the appropriate materials, techniques, protection to ensure the correct finish.

Techniques

Mortars, concrete, adhesives, resins, grouts

Protection coverings

Plastic, hessian, timber, insulation

When repairing masonry structures it is important that learners are aware of the considerations such as appearance, size (imperial/metric/modular), thermal values, strength and durability. It is not necessary for learners to be able to calculate thermal values but an understanding of the reasons for using particular material/insulation types is required.

Learners must also be aware of potential hazards.

Potential Hazards

Harmful substances, falling objects, manual handling, adverse weather, inhalation of particles, dust, services (gas, electricity, water), fire, slips, trips and falls, plant and vehicle movement, excavations, misuses of tools and equipment, working at heights, access equipment (ladders, scaffolding, MEWPS)

To ensure health and safety, learners must understand the correct use of signs, notices, barriers, lighting, site security.

It is recommended that learners be given the opportunity to apply the knowledge of this topic in a practical setting to support the learning.

Guidance for delivery

Tutors delivering this unit will have opportunities to use a wide range of techniques. Lectures, discussions, research, visits to exhibitions and workshop visits. Delivery should stimulate, motivate and educate the learner.

Learners must develop a thorough understanding of the reasons why masonry structures will require maintenance and repair during the course of their life. It is often said that masonry can start to deteriorate as soon as it is built. The depth and speed of the deterioration depends on many considerations such as quality of design/workmanship/materials, protection provided, wrong materials/mortar mix/application, weather, poor/insufficient maintenance, and many other reasons. These should all be considered prior to carrying out maintenance and repairs, to ensure the new work matches the existing, but is completed in a way which will not cause the same problem.

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all activities and risk assessments must be undertaken prior to any activities taking place. All maintenance tasks have risks which must be addressed to ensure safe systems of work are set up and maintained.

Learners should be given the opportunity to practice the new techniques covered in the knowledge of this unit as this would provide opportunities for the learner to apply the skills gained in other units.

Employer engagement

Employer engagement is an excellent way to maximise the learners' experience. A partnership approach should be adopted wherever possible, using employers with whom the centre has links to provide work experience placements. Employers could also contribute to learners' progress by acting as guest speakers. Involving local employers who have experience of working with building maintenance or Facilities management will provide the learners of clear examples of where this type of work is applied in Industry.

Useful support for links with industry is given below:

- National Education and Business Partnership Network – www.nebpn.org
- Work Experience/Workplace Learning Frameworks – Centre for Education and Industry (CEI University of Warwick) – www.warwick.ac.uk/wie/ce
- National working rule agreement UK - http://www.builders.org.uk/resources/nfb/000/322/301/May_2013_WRA_Final_Version.pdf
- Born to build - www.borntobuild.org.uk/
- The UK Contractors Group www.ukcg.org.uk/representing-industry/open-doors-weekend/
- BCIS – RICS – www.rics.org/uk/knowledge/bcis/

Suggested learning resources

Books

Level 3 Diploma in Bricklaying
Published by City and Guilds
ISBN-13: 978-0851933030

Beattie, J; Tucker, T; Burdfield, M and Fearn, C

Design and Construction
Published by: Butterworth-Heinemann, 2002
ISBN: 0-750-65149-0

Best, A; de Valence, B; & Langstone, C

Websites

The Brick Development Association

www.brick.org.uk

The Guild of Bricklayers

www.guildofbricklayers.org.uk

Unit 303 Constructing radial and battered brickwork

UAN:	J/507/3244
Level:	3
GLH:	120

What is this unit about?

The purpose of this unit is for learners to understand how to set out and build arches of various geometrical shapes, brickwork curved on plan and battered brickwork.

The unit will provide the learner with an understanding of the knowledge and skills that are required to set out and build radial and battered brickwork. Radial brickwork has rounded features and can be found in arches over windows and doors or in walls that are curved on plan. Battered brickwork leans inwards from its base and is sometimes used to provide extra support to solid walling.

The unit will provide an understanding of the methods used to set out a variety of arches and walls that are curved on plan, and provide the methods used to construct battered walls.

Learning outcomes

In this unit, learners will

1. set out and construct arches
2. set out and build brickwork curved on plan
3. construct battered brickwork.

Scope of content

This section gives details of the scope of content to be covered in the teaching of the unit to ensure that all the learning outcomes can be achieved.

Learning outcome 1: Set out and construct arches

Topic 1.1: Arch terminology

Topic 1.2: Complete geometrical setting out

Topic 1.3: Provide supports and construct arches

Topic 1.1

Learners must understand the terminology used in the design and construction of a range of different arches.

- Rough ring, axed, skewback, voussoirs, key brick, intrados, extrados, haunches, abutments, span, rise, springing point, striking point, soffit, arches bonded on face
- Turning pieces, centres, props, folding wedges, proprietary formers, arch lintels, easing and striking

Topic 1.2

Learners must understand and use the methods to set out a range of arches and must understand how to apply geometrical principles to set out a range of arch shapes.

- Span, rise, bisect, radius, chord, striking point, springing line, bisecting line, springing point
- Segmental, semi-circular, gothic, lancet, bullseye or wheel arch, semi elliptical

Topic 1.3

Learners must understand how to provide support (temporary and permanent) for arches and be able to position the supports so that they can be eased and struck on completion of the work.

Learners must also be able to construct a variety of different types of arches including semi-circular, gothic, lancet, bullseye or wheel arch, semi elliptical. Learners may not have the opportunity to demonstrate practical skills on all of these, but must understand what is required and have the basic skills which can be applied to construct any arch.

Learning outcome 2: Set out and build brickwork curved on plan

Topic 2.1: Setting out

Topic 2.2: Build brickwork curved on plan

Topic 2.1

The learner will understand terminology and apply the principles to set out and build brickwork that is curved on plan.

Terminology

Serpentine walling, radial brickwork, special bricks, templates, trammels, circumference, radius, diameter, convex, concave

Topic 2.2

The learner will be able to perform the task of constructing brickwork that is curved on plan maintaining plumb, level, gauge and radius.

- Templates, trammels, plumb points

Learning outcome 3: Construct battered brickwork

Topic 3.1: Setting out

Topic 3.2: Construct battered brickwork

Topic 3.1

The learner will understand and use methods to set out and build battered brickwork.

- Tapered plumb rules, protractors, template, battered profiles, tumbling in, gauge gun, line

Topic 3.2

The learner will understand and be able to perform the task of building brickwork whilst maintaining the correct angle of batter, gauge and plumb of the work.

- Setting out, measurement, maintain line, plumb, gauge, level, angle of batter

It is important that learners have awareness and apply specific health and safety considerations eg when cutting bricks.

Guidance for delivery

Tutors delivering this unit will have opportunities to use a wide range of techniques, for example lectures, discussions, research, visits to exhibitions and workshop visits. Delivery should stimulate, motivate and educate the learner.

This unit should be delivered as knowledge supported by practical application, the understanding of how to use geometry to set out the various arch shapes and how to establish the shape of the voussoirs are important factors. The practical application of cutting individual arch bricks should be taught but it is not necessary for learners to cut a complete arch as a practical task.

Learners should be taught how to set out and construct a battered wall by using a range of different methods and also be taught to identify various applications where battered walls would be used, such as retaining walls and feature walls.

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all activities and risk assessments must be undertaken prior to any activities taking place.

Employer engagement

Employer engagement is an excellent way to maximise the learners' experience. A partnership approach should be adopted wherever possible, using employers with whom the centre has links to provide work experience placements. Employers could also contribute to learners' progress by acting as guest speakers. Involving employers who have experience of working on brickwork that is Radial and Battered will provide learners with good examples of where this type of work is applied in the construction industry.

Useful support for links with industry is given below:

- National Education and Business Partnership Network – **www.nebpn.org**
- Work Experience/Workplace Learning Frameworks – Centre for Education and Industry (CEI University of Warwick) - **www.warwick.ac.uk/wie/ce**
- Construction Industry Joint Council - Working rule agreement for the construction Industry UK **www.builders.org.uk/resources/nfb/000/322/301/May_2013_WRA_Final_Version.pdf**
- Born to build - **www.borntobuild.org.uk**
- The UK Contractors Group - **www.ukcg.org.uk/representing-industry/open-doors-weekend**
- BCIS – RICS – **www.rics.org/uk/knowledge/bcis/**
- The Brick Development Association - **<http://www.brick.org.uk/category/publications/brickwork-design-detailing/>**

Suggested learning resources

Books

Level 3 Diploma in Bricklaying
Published by City and Guilds
ISBN-13 978-0851933030

Beattie, J; Tucker, T; Burdfield, M & Fearn, C

Journals and magazines

The Brick Development Association - The Design of Curved Brickwork

The Brick Development Association - Brickwork Design and Detailing – The use of Bricks in Special Shapes.

Websites

The Brick Development Association

www.brick.org.uk

The Guild of Bricklayers

www.guildofbricklayers.org.uk

Unit 304 Constructing decorative and reinforced brickwork

UAN:	L/507/3245
Level:	3
GLH:	120

What is this unit about?

The purpose of this unit is to provide the learner with an understanding of how to set out and build decorative brickwork features, obtuse and acute angle quoins and reinforced brickwork. Many buildings contain decorative features in their design and various shapes that help to make buildings more pleasing to look at. Understanding the methods of producing decorative panels, forming acute and obtuse angles and being aware of how brickwork can be reinforced are essential.

Learning outcomes

In this unit, learners will

1. set out and build decorative brickwork features and panels
2. set out and build obtuse and acute angle quoins
3. set out and build reinforced brickwork.

Scope of content

This section gives details of the scope of content to be covered in the teaching of the unit to ensure that all the learning outcomes can be achieved.

Learning outcome 1: Set out and build decorative brickwork features and panels

Topic 1.1: Set out and build decorative features

Topic 1.2: Set out and build decorative panels

Topic 1.1

Learners must be able to identify a range of decorative features used in construction and be able to apply them to various situations.

- Oversailing courses, dog-toothing, dentil courses, ramped work (circular and straight), plinth courses, cant bricks, bull nosed bricks, string courses

Topic 1.2

Learners must be able to set up and build decorative panels and understand the construction methods used to build them.

- Horizontal panels (basket weave, herringbone bonds and interlacing), diagonal panels (basket weave, herringbone bonds and interlacing), panel surrounds

Learners must also be able to construct a variety of different decorative features and panels. Learners may not have the opportunity to demonstrate practical skills on all of these, but must understand what is required and have the basic skills which can be applied to construct any feature or panel.

Learning outcome 2: Set out and build obtuse and acute angle quoins

Topic 2.1: Setting out obtuse and acute angled quoins

Topic 2.2: Building obtuse and acute angled quoins

Topic 2.1

Learners must understand and be able to set out obtuse and acute angled quoins.

- Measuring (including geometry), bonding, templates

Topic 2.2

Learners must be able to build a quoin. They must understand the different types of brick available and be able to select the most suitable type for the quoin.

- Squint bricks, dogleg bricks, bonding arrangements, cutting

Learning outcome 3: Set out and build reinforced brickwork

Topic 3.1: Methods used to reinforce brickwork

Topic 3.2: Provide reinforcement for brickwork

Topic 3.1

Learners will need to understand various methods used to reinforce brickwork and the materials used to provide reinforcement and the properties of that material.

- Vertical and horizontal reinforcement

Materials

Steel, expanded metal lath, proprietary ties, concrete, expansion sleeve

Topic 3.2

Learners must understand and be able to provide suitable reinforcement to brickwork horizontally and vertically. This must include reinforcement using a variety of methods eg Quetta bond, Expanded Metal Lath (EML).

Guidance for delivery

Tutors delivering this unit will have opportunities to use a wide range of techniques. Lectures, discussions, research, visits to exhibitions and workshop visits. Delivery should stimulate, motivate and educate the learner.

The learners will need to gain an understanding of the various applications that decorative brickwork can be used to enhance the appearance of structures. It is important that learners are able to set out panels accurately so that a pleasing appearance to finished panels is achieved. Understanding the various ways that brickwork can be reinforced by introducing steel mesh and reinforcement should be included in knowledge and applied to basic jobs. Practical work may be linked to other units such as arch construction where decorative panels can be used to infill areas.

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all activities and risk assessments must be undertaken prior to any activities taking place.

Employer engagement

Employer engagement is an excellent way to maximise the learners' experience. A partnership approach should be adopted wherever possible, using employers with whom the centre has links to provide work experience placements. Employers could also contribute to learners' progress by acting as guest speakers. Involving employers who have experience of working on projects where decorative and reinforced brickwork has been used will provide learners with good examples of where this type of work is applied in the construction industry.

Useful support for links with industry is given below:

- National Education and Business Partnership Network – www.nebpn.org
- Work Experience/Workplace Learning Frameworks – Centre for Education and Industry (CEI University of Warwick) - www.warwick.ac.uk/wie/ce
- Construction Industry Joint Council - Working rule agreement for the construction Industry UK www.builders.org.uk/resources/nfb/000/322/301/May_2013_WRA_Final_Version.pdf
- Born to build - www.borntobuild.org.uk
- The UK Contractors Group - www.ukcg.org.uk/representing-industry/open-doors-weekend
- BCIS – RICS – www.rics.org/uk/knowledge/bcis/
- Reinforced Brickwork Architecture design and planning – faculty.arch.usyd.edu.au/pcbw/walls/reinforced/index.html

Suggested learning resources

Books

Level 3 Diploma in Bricklaying
Published by City and Guilds
ISBN-13: 978-0851933030

Beattie, J; Tucker, T; Burdfield, M & Fearn, C

Designing in Reinforced Brickwork
Published by The Brick Development Association
ASIN: B0007B0CAU

Curtin, WG et al

Journals and magazines

The Brick Development Association – Brickwork design and detailing

The Brick Development Association – Structural Brickwork

Reinforced Brickwork CW Hamann and LW Burrige, The Structural Engineer, April 1939

Websites

The Brick Development Association

www.brick.org.uk

The Guild of Bricklayers

www.guildofbricklayers.org.uk

Unit 305 Constructing fireplaces and chimneys

UAN:	R/507/3246
Level:	3
GLH:	90

What is this unit about?

The purpose of this unit is for learners to understand how to set out and build various types of fireplaces, chimneys and chimney stacks. Learners must demonstrate an understanding of the wide range of materials used, their properties and application.

The unit will provide the learner with an overview of the evolution of fireplaces and flues. It will highlight the changes in the development of heating systems and fuels which have affected their design and use.

The learners must also understand the importance of the Building Regulations and relevant codes of practice.

Learning outcomes

In this unit, learners will

1. understand resources for fireplace and chimney construction
2. understand how to set out and build fireplaces and chimney stacks.

Scope of content

This section gives details of the scope of content to be covered in the teaching of the unit to ensure that all the learning outcomes can be achieved.

Learning outcome 1: Understand resources for fireplace and chimney construction

Topic 1.1: Information and regulations

Topic 1.2: Resources used in fireplace and chimney construction

Topic 1.1

Learners must be able to identify the sources of information and their application relating to fireplaces and chimneys.

Sources of information

Building Regulations, codes of practice, manufacturer's instructions, drawings, British Standard European Norm (BSEN), Heating Equipment Testing and Approval Scheme (HETAS) regulations.

Topic 1.2

Learners must be able to identify suitable resources to be used in the construction of fireplaces and flues. Consideration must also be given to health and safety issues.

Resources

Throat unit/lintel, flue liners (metal, clay, concrete specials), fire back, chimney pot, cowl, DPC, flashings, aprons, back gutter, bricks, blocks, mortar, fire cement, adhesives, reducers, back-boiler, ventilation, expansion, structural hearth, superimposed hearth, pipe ducts

Learners must also understand the terminology related to the use of resources.

Terminology

Chimney breast, jambs, stack, mid-feathers, withes, flaunching systems, oversailing courses, gather, necking course, parging

Learners must also understand the characteristics of resources eg quality, strength, durability, sustainability, fire/sulphate/weather resistant.

Learning outcome 2: Understand how to set out and build fireplaces and chimney stacks

Topic 2.1: Process to set out for fireplaces and chimneys

Topic 2.2: Process to build fireplaces and chimneys

Topic 2.1

Learners must have the understanding of how to apply the regulations when setting out and constructing fireplaces and chimneys relating to the following

- sizes of hearths, chimney heights/positions, size of jambs, position of throat units, position of flue linings, position of chimney pots, trays, soakers, back gutter, aprons, flashings, oversailing, flaunching.

Topic 2.2

Learners must understand the process and methods required to build fireplaces and chimneys that conform to all relevant regulations.

Processes

Setting out jambs and breast, position throat unit, install flue liners, reducing the breast at first floor level, installing lead trays, construct chimney stack, weathering the chimney stack, positioning pots and cowl (if necessary), hearth, superimposed hearth, fire backs, surrounds

This must include all health, safety and environmental considerations.

- Working at heights, transporting materials, fumes, air supply

Guidance for delivery

Tutors delivering this unit will have opportunities to use a wide range of techniques. Lectures, discussions, research, visits to exhibitions and workshop visits. Delivery should stimulate, motivate and educate the learner.

Learners must develop a thorough understanding of constructing fireplaces and chimneys. Research online and text books will be helpful to ensure the learners have a broad and varied understanding of the topics. It is suggested that modern environmentally friendly heating systems be compared to the more traditional methods.

Learners should be given the opportunity to practice the new techniques covered in the knowledge of this unit as this would provide opportunities for the learner to apply the skills gained in other units.

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all activities and risk assessments must be undertaken prior to any activities taking place.

Employer engagement

Employer engagement is an excellent way to maximise the learners' experience. A partnership approach should be adopted wherever possible, using employers with whom the centre has links to provide work experience placements. Employers could also contribute to learners' progress by acting as guest speakers. Involving employers who have experience of working on projects where chimneys and flues are being built or maintained will provide learners with good examples of where this type of work is applied in the construction industry.

Useful support for links with industry is given below:

- National Education and Business Partnership Network – www.nebpn.org
- Work Experience/Workplace Learning Frameworks – Centre for Education and Industry (CEI University of Warwick) - www.warwick.ac.uk/wie/ce
- Construction Industry Joint Council - Working rule agreement for the construction Industry UK www.builders.org.uk/resources/nfb/000/322/301/May_2013_WRA_Final_Version.pdf
- Born to build - www.borntobuild.org.uk
- The UK Contractors Group - www.ukcgroup.org.uk/representing-industry/open-doors-weekend
- BCIS – RICS – www.rics.org/uk/knowledge/bcis/

Suggested learning resources

Books

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Beattie, J; Tucker, T; Burdfield, M & Fearn, C

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.

City & Guilds Centre Manual

This document provides guidance for organisations wishing to become City & Guilds approved centres, as well as information for approved centres delivering City & Guilds qualifications. It covers the centre and qualification approval process as well as providing guidance on delivery, assessment and quality assurance for approved centres.

It also details the City & Guilds requirements for ongoing centre and qualification approval, and provides examples of best practice for centres. 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 and malpractice
- complaints and appeals
- equal opportunities
- data protection
- management systems
- maintaining records
- internal quality assurance
- external quality assurance.

Our Quality Assurance Requirements

This document explains the requirements for the delivery, assessment and awarding of our qualifications. All centres working with City & Guilds must adopt and implement these requirements across all of their qualification provision. Specifically, this document:

- specifies the quality assurance and control requirements that apply to all centres
- sets out the basis for securing high standards, for all our qualifications and/or assessments
- details the impact on centres of non-compliance

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

Walled Garden: how to register and certificate candidates on line

Events: dates and information on the latest Centre events

Online assessment: how to register for e-assessments.

Useful contacts

UK learners General qualification information	E: learnersupport@cityandguilds.com
International learners General qualification information	E: intcg@cityandguilds.com
Centres Exam entries, Certificates, Registrations/enrolment, Invoices, Missing or late exam materials, Nominal roll reports, Results	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	E: singlesubjects@cityandguilds.com
International awards Results, Entries, Enrolments, Invoices, Missing or late exam materials, Nominal roll reports	E: intops@cityandguilds.com
Walled Garden Re-issue of password or username, Technical problems, Entries, Results, e-assessment, Navigation, User/menu option, Problems	E: walledgarden@cityandguilds.com
Employer Employer solutions, Mapping, Accreditation, Development Skills, Consultancy	E: business@cityandguilds.com

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The City & Guilds Group is a leader in global skills development. Our purpose is to help people and organisations to develop their skills for personal and economic growth. Made up of City & Guilds, City & Guilds Kineo, The Oxford Group and ILM, we work with education providers, businesses and governments in over 100 countries.

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