Level 3 Advanced Technical Extended Diploma in Constructing the Built Environment (Construction) (1080) (6720-053)

Assessment Pack

Synoptic Assignment – Feb-May 2018

Version 2.0 – January 2018

Version and date	Change detail	Section
2.0 January 2018	• Irrelevant information and images removed from Assignment Brief following rewriting of tasks. • Tasks 1, 3 and 4 have been revised following a review. Amendment to wording in Task 2. • Resources, Task specific guidance and Time has been revised following review of tasks. • Amendment to examples and band descriptors. • Recording forms removed from document and new formatted forms uploaded as a separate document.	**Assignment Brief** **Tasks** **Task instructions for centres** **Marking grid**

General guidance for candidates

General guidance

This is a formal assessment that you will be marked and graded on. You will be marked on the quality and accuracy of your practical performance and the written work you produce. It is therefore important that you carry your work out to the highest standard you can. How well you know and understand the subject, and how you have used your knowledge and skills together to complete the tasks must be clear to the marker. This means you will have to explain your thinking and the reasons behind the way you have carried out the tasks and how/why you have made your decisions within your written work eg as part of your planning, reflections, or evaluations.

Plagiarism

This is an assessment of your abilities, so the work must be all your own work and carried out under the conditions stated. You will be asked to sign a declaration that you have not had any help with the assessment.

Your tutor is allowed to give you some help understanding the assignment instructions if necessary, but they will record any other guidance you need and this will be taken into account during marking.

Plagiarism is the failure to acknowledge sources properly and/or the submission of another person's work as if it were your own. Plagiarism is not allowed in this assignment.

Where research is allowed, your tutor must be able to identify which work you have done yourself, and what you have found from other sources. It is therefore important to make sure you acknowledge all sources and clearly reference any information taken from them.

Timings and planning

Where you have to plan your time, you should take care to make sure you have divided the time available between tasks appropriately. In some assignments, there are specified timings which cannot be changed and which need to be taken into account. You should check your plan is appropriate with your tutor.

If you have a good reason for needing more time, you will need to explain the reasons to your tutor and agree a new deadline date. Changes to dates will be at the discretion of the tutor, and they may not mark work that is handed in after the agreed deadlines.

Health and Safety

You must always work safely, in particular while you are carrying out practical tasks.

You must always follow any relevant Health and Safety regulations and codes of practice.

If your tutor sees you working in a way that is unsafe for yourself or others, they will ask you to stop immediately, and tell you why. Your tutor will not be able to continue the assessment until they are sure you are ready for assessment and can work safely.

Presentation of work

Presentation of work must be neat, legible and appropriate to the task.

You should make sure that each piece of evidence including any forms are clearly labelled with your name and the assignment reference.

All electronic files must be given a clear file name that allows your tutor to identify it as your work.

Written work eg reports may be word processed or hand written unless stated otherwise.

All sketches and drawings should be neat and tidy, to scale and annotated.

Calculations should be set out clearly, with all working shown, as well as any assumptions made. You should use appropriate units at all times, and answers must be expressed to a degree of accuracy, consistent with the requirements of the task.

Assignment Brief

This assignment project is to report on a proposed construction development as follows: an existing building demolition, a new build three-storey budget hotel, a new boiler house for heating and hot water services, car parking for 40 cars and external landscaping that includes existing tree protection, new tree planting and the building of low rise boundary walls using reclaimed brickwork from the building demolition.

Building project overview

You work for a construction design and build company that specialises in the hotel and leisure sector.

Your client has purchased an edge of town site that has an un-used local authority office building that is to be demolished. The building is around 50 years old, has smooth rendered brick external walls (1½ brick thick), single-glazed steel frame windows and a slate roof. The developer wants to reclaim as much of the existing building materials and features as possible and will emphasise this in the planning application. This reclamation work could include brickwork, slate, metals (e.g. copper, lead and cast iron pipework, lead flashings), timber (e.g. pine softwood and oak hardwood flooring, window shutters, doors), fireplaces, stained-glass windows, architectural door and window facings.

The development site area is approximately 1.5 hectare (15000 m^2) and the new hotel building plan area is to be 60 x 34.4 m (2064 m^2).

The new hotel will include the following:

- Reception area (ground floor)
- Bar / restaurant (ground floor)
- Kitchen and catering facilities (ground floor)
- Bedrooms (20 on each of the upper two floors)
- Lifts, stairwells and circulation areas
- Heating and hot water services provided by two boilers (one that uses gas and one that uses woodchip biomass)

The developer aims to market the new building project in the local community by emphasising its commitment to local employment and the wider economy as well as its significant experience in producing low energy, low carbon buildings for its property portfolio.

Project requirements

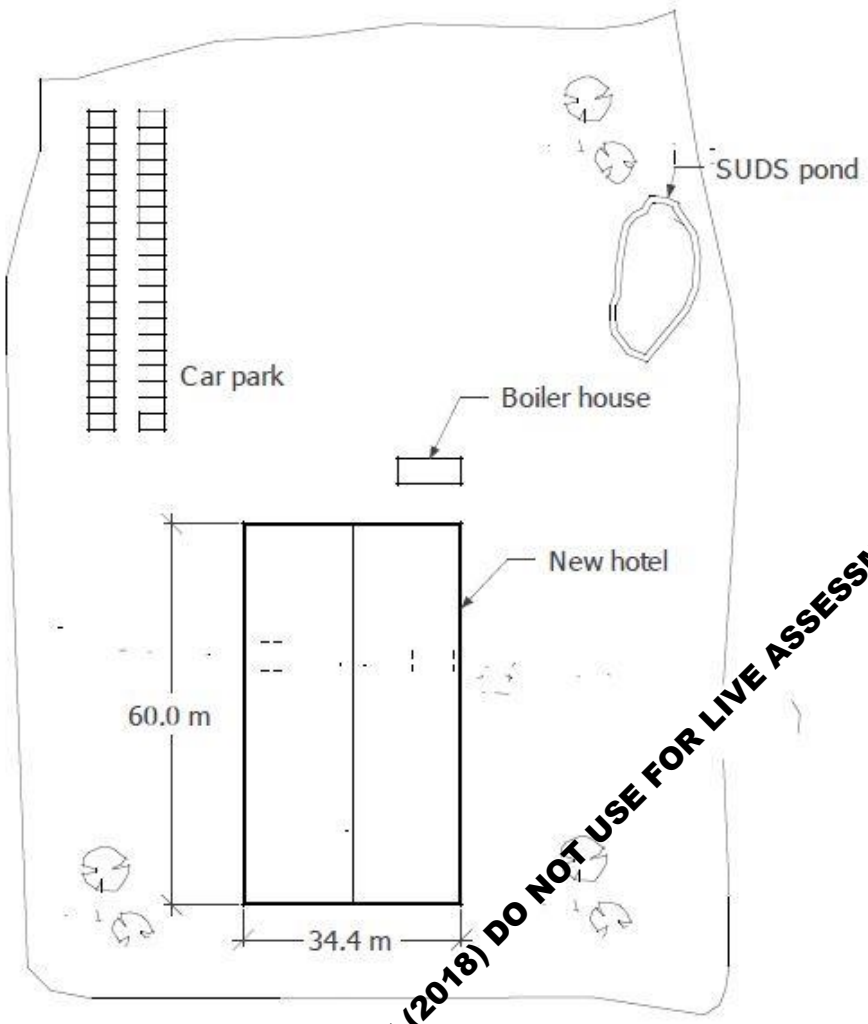
Demolition:

- Construction materials reclaimed from the demolition work to be re-used on site during construction
- The extent of materials re-use will be set by a survey of the site's main 50-year old existing building
- Examples of possible reclamation and re-use include
    - Re-using original building bricks to form an archway to the main entrance
    - Re-using the original building slate as far as possible in the new hotel roof design and construction
    - Softwood floorboards to have nails and other metal fixings removed, sanded and laid in the new hotel lobby area potentially for painting or varnishing

Design strategy (new hotel building):

- Building fabric to be super-insulated (low U-value) to achieve low winter heating load ($U\ A\ \Delta T$)
- Concrete foundations and structural ground floor specification: foundations and structural floor in-situ concrete to be 1: 3: 6 mix to achieve 25 – 30 MPa compressive strength. 18 mm chipboard flooring, on 150 × 50 mm timber joists at 400 mm centres, 2 layers of 70 mm thick rigid thermal insulation (e.g. PIR) between joists on 100 mm concrete on 1000 gauge DPM on 150 mm compacted hardcore
- New timber-frame external wall specification: smooth cement render on 100 mm concrete blockwork, 50 mm cavity, breathable membrane on 12 mm plywood, on 100 × 50 mm studs at 500 mm centres, 75 mm rigid thermal insulation (e.g. PIR) between studs, 47.5 mm insulated plasterboard internally
- Roof specification: slate on counter battens over breathable membrane, on roof trusses to be designed and certified by the structural engineer. Roof joists to accommodate 150 mm depth thermal insulation between and 200 mm depth thermal insulation across
- Structural engineering design for the new hotel, including a steel beam specification for a large span door opening from the hotel public area to a viewing terrace
- Renewable heat from a 200 kW woodchip biomass boiler
- The financial benefit to businesses of the renewable heat incentive
- Building services technology for low-rise buildings (hot and cold water supply, waste water drainage, gas supply and electricity supply)
- Car parking and soft landscaping
- SUDS pond surface water collection (flood risk mitigation)

Project images



Proposed site plan

Existing building to be demolished

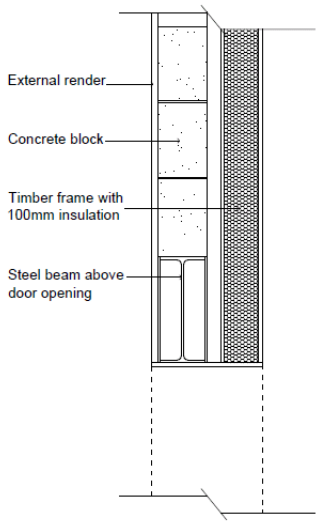
Building demolition activity

Examples of reclaimed brick from a demolition site

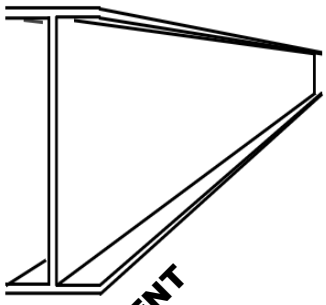
Examples of reclaimed slate from a demolition site

SUDS pond example

200 kW woodchip biomass boiler

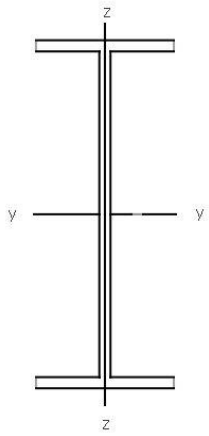


External wall section showing steel I-beam above door opening

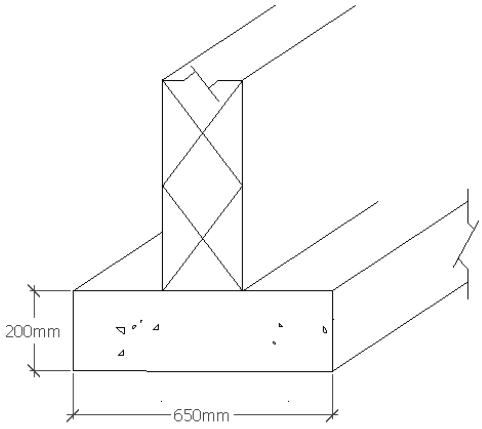


Steel I-beam isometric view

Structural steel tables extract UB sections



Beam size	Second moment of area (I)		Radius of gyration		Elastic modulus (Z)		Area of section (A)
	Axis y-y cm^4	Axis z-z cm^4	Axis y-y cm	Axis z-z cm	Axis y-y cm^3	Axis z-z cm^3	cm^2
127×76×13	473	55.7	5.35	1.84	74.6	14.7	16.5
152×89×16	834	89.8	6.41	2.10	109	20.2	20.3
178×102×19	1360	137	7.48	2.37	153	27.0	24.3
203×102×23	2100	164	8.46	2.36	207	32.2	29.4
254×102×28	4000	179	10.5	2.22	308	34.9	36.1
305×127×48	9570	461	12.5	2.74	616	73.6	61.2



Concrete foundation section example

Tasks

Task 1

a) Produce a pre-construction report for the planning authority that emphasises the sustainability aspects of the new hotel development project.

b) Prepare an explanatory statement for the planning authority explaining why the local authority building is to be demolished, and rebuilt as a hotel, rather than refurbished and converted into a hotel.

Conditions of assessment:
The report must be compiled independently under supervised conditions. Research may be done without supervision.

What you must produce for marking and submitted for moderation (if applicable):

- A written report.
- An explanatory statement of the reason for demolition and new build.

Additional evidence of your performance that must be captured for marking and submitted for moderation (if applicable):
None.

Task 2

a) Specify the size of a steel I-beam to support the concrete block work wall above the door to the external terrace and include the supporting structural calculation for the beam.

b) Produce a cross section CAD drawing of the specified beam cross section.

Conditions of assessment:
The report and drawing must be compiled independently under supervised conditions. Research may be done without supervision.

What you must produce for marking and submitted for moderation (if applicable):

- A written report of the structural analysis for a steel I-beam selection:
  - Shear force and bending moment diagram
  - Maximum bending moment
  - Section modulus
  - Second moment of area for the I-beam section.
- A CAD section view of the selected I-beam, showing the key dimensions.

Additional evidence of your performance that must be captured for marking and submitted for moderation (if applicable):
None.

Task 3

a) Specify the layout and materials to be used for a surface water drainage system to link the rain water gullies at the edge of the car park with the SUDS (Sustainable Urban Drainage System) pond.

b) Produce a scale section drawing of the drainage trench showing the longitudinal section and three cross-sections (at the start, the middle and the end), to include pipe, pipe bedding and backfill.

Conditions of assessment:

The specification and drawings must be compiled independently under supervised conditions. Research may be done without supervision.

What you must produce for marking and submitted for moderation (if applicable):

- Specification of surface water drain.
- Three annotated cross-section drawings, at an appropriate scale, of the surface water drainage pipe.

Additional evidence of your performance that must be captured for marking and submitted for moderation (if applicable):

None.

Task 4

a) Write a report that describes a specification for and a practical test procedure to verify the strength of, the structural concrete to be used in the floor in the hotel, as required by Approved Document A.

b) Prepare a building survey schedule of items that could be saved from the local authority building, scheduled for demolition, and re-used in the hotel.

c) Produce a short presentation for the client on the use of work measurement techniques to produce effective performance targets for the construction of the hotel.

Conditions of assessment:

The report, presentation and the building survey schedule must be compiled independently under supervised conditions. Research may be done without supervision.

What you must produce for marking and submitted for moderation (if applicable):

- A synopsis of Approved Document A (Structure) and why it applies here.
- A specification that will produce concrete of 25 – 30 MPa compressive strength.
- Details of the procedure for making and testing concrete cubes.
- A building survey of items that could be considered architectural salvage, in the form of a schedule.
- An electronic set of presentation slides, with one hard copy of the presentation (the presentation must be completed by the individual candidate).

Additional evidence of your performance that must be captured for marking and submitted for moderation (if applicable):

None.

Task instructions for centres

Resources

Candidates must have access to a suitable range of resources to carry out the tasks and, where appropriate, to have the opportunity to choose materials demonstrating the ability to select from a range of appropriate materials.

Where a drawing element is required for a task, either manual or using CAD software as detailed in the task specific guidance, the centre must supply the candidate with the following:

- Manual drawing equipment which typically includes a drawing board with a T-square, set squares (60/30 and 45), a scale ruler, appropriately sized drawing paper (e.g. A3 and A4) and a pencil.
- Access to a computer with any suitable CAD software, e.g. AutoCAD or SketchUp and access to a printer.

Candidates should also be given access to non-programmable calculators.

Task specific guidance

Task 1

The centre must supply the candidates with access to technical information on sustainable building design and construction. This could include relevant government policy documents, building regulations Approved Documents, magazine articles and manufacturer's information on renewables technologies (renewable heat and power generation) and on low energy building structure and fabric design.

A drawings element to task 1 is likely to enhance a candidate's answer and could be done manually or using CAD software, which would require access to a computer.

Task 2

The centre must give candidates access to structural steel design tables to allow a beam to be selected for the doorway span described in the details of the brief. Tutors must provide an example of a typical structural steel I-Beam calculation. The use of software packages to design the beam is not acceptable.

Other important resources needed for task 2 include a scientific calculator and paper for sketching and steel I-beam analysis, a computer and CAD software.

Task 3

Candidates may produce the drawings using either manual or CAD techniques. The appropriate resources will be required.

Task 4

The centre must supply the candidates with access to concrete specification information, e.g. British Standards on design mix ratios and corresponding expected compressive strength. Copies of Approved Document A are required by definition.

Candidates are expected to undertake their own research, e.g. architectural salvage firms.

The centre must supply the candidates with access to a computer and presentation software, e.g. PowerPoint.

Time

The following timings are provided to support centre planning.

Total – 12 hours.

Task 1 – 3 hours (recommended)

Task 2 – 3 hours (recommended)

Task 3 – 2 hours (recommended)

Task 4 – 4 hours (recommended)

Centre guidance

Guidance provided in this document supports the administration of this assignment. The following documents available on the City & Guilds website provide essential generic guidance for centres delivering Technical qualifications and **must** be referred to alongside this guidance:

- ***Technical qualifications – marking***
- ***Technical qualifications – moderation*** (updated annually)
- ***Technical qualifications – teaching, learning and assessment***

This synoptic assessment is designed to require the candidate to make use their knowledge, understanding and skills they have built up over the course of their learning to tackle problems/tasks/challenges.

This approach to assessment emphasises to candidates the importance and applicability of the full range of their learning to practice in their industry area, and supports them in learning to take responsibility for transferring their knowledge, understanding and skills to the practical situation, fostering independence, autonomy and confidence.

Candidates are provided with an assignment brief. They then have to draw on their knowledge and skills and independently select the correct processes, skills, materials, and approaches to take to provide the evidence specified by the brief.

During the learning programme, it is expected that tutors will have taken the opportunity to set shorter, formative tasks that allow candidates to be supported to independently use the learning they have so far covered, drawing this together in a similar way, so they are familiar with the format, conditions and expectations of the synoptic assessment.

Candidates should be made aware, during learning what the Assessment Objectives are and how they are implemented in marking the assignment, so they will understand the level of performance that will achieve them high marks.

Candidates should not be entered for the assessment until the end of the course of learning for the qualification so they are in a position to complete the assignment successfully.

Health and safety

Candidates should not be entered for assessment without being clear of the importance of working safely, and practice of doing so. The tutor must immediately stop an assessment if a candidate works unsafely. At the discretion of the tutor, depending on the severity of the incident, the candidate may be given a warning. If they continue to work unsafely however, their assessment must be ended and they must retake the assessment at a later date.

Compliance with timings

The timings provided are estimates to support centre planning. They refer to assessment time, not any additional setting up the centre needs to carry out to create the required to ensure an appropriate assessment environment.

It is the centre's responsibility to plan sufficient assessment sessions, under the appropriate conditions, within the assignment window, to allow candidates reasonable time to complete the assessment tasks.

Where candidates are required to plan their work they should have their plans confirmed for appropriateness in relation to the time allocated for each task.

Candidates should be allowed sufficient time to fully demonstrate the range of their skills, however this also needs to be reasonable and practicable. Candidates should be allowed to overrun their planned timings or professional service times (where they exist) in order for evidence of a range of their skills to be captured. If however, the time required exceeds reasonably set assessment periods, or the tolerance suggested for professional service times, the centre may stop the assessment and base the marking on the evidence up to that point, including the tutor's notes of how far over time the task has taken.

Observation evidence

Where the tutor is required to carry out observation of performance, detailed, descriptive notes must be recorded on the practical observation (PO) form provided. The centre has the flexibility to adapt the form, to suit local requirements (eg to use tablet, hand-written formats, or to ease local administration) as long as this does not change or restrict the type of evidence collected.

The number of candidates a tutor will be able to observe at one time will vary depending on:

- the complexity of evidence collection for the task
- local conditions eg layout of the assessment environment,
- amount of additional support available (eg to capture image/ video evidence), staggered starts etc,
- whether there are any peak times where there is a lot of evidence to collect that will need additional support or any that are quieter.

It is advisable to trial the planned arrangements where possible during formative assessment, reviewing the quality of evidence captured and manageability. It is expected that for straight forward observations, (and unless otherwise specified) no more than eight candidates will be observed by a single tutor at one time, and the number will usually be fewer than this maximum. The key factor to consider is the logistics of collecting sufficient evidence.

As far as possible, candidates should not be distracted, or their performance affected by the process of observation and evidence collection.

Observation notes form part of the candidate's evidence and must describe **how well** the activity has been carried out, rather than stating the steps/ actions the candidate has taken. The notes must be very descriptive and focus on the **quality** of the performance in such a way that comparisons between performances can be made. They must provide sufficient, appropriate evidence that can be used by the marker (and moderator) to mark the performance using the marking grid.

Identifying **what it is** about the performances that is **different** between candidates can clarify the qualities that are important to record. Each candidate is likely to carry out the same steps, so a checklist of this information would not help differentiate between them. However qualitative comments on **how well** they do it, and quantitative records of accuracy and tolerances would.

The tutor should refer to the marking grid to ensure appropriate aspects of performance are recorded. These notes will be used for marking and moderation purposes and so must be **detailed, accurate** and **differentiating**.

Tutors should ensure that any required additional supporting evidence including eg photographs or video can be easily matched to the correct candidate, are clear, well-lit and showing the **areas of particular interest** in **sufficient detail** and **clarity** for assessment (ie

taken at appropriate points in production, showing accuracy of measurements where appropriate).

If candidates are required to work as a team, each candidate's contribution must be noted separately. The tutor may intervene if any individual candidate's contribution is unclear or to ensure fair access (see below).

The ***Technical qualifications guides on marking and moderation*** are essential guidance documents and are available on the City & Guilds website. These provide further information on preparing for assessment, evidence gathering, standardisation, marking and moderation, and must be referred to when planning and carrying out assessment.

Minimum evidence requirements for marking and moderation

The sections in the assignment:

- ***What you must produce for marking***, and
- ***Additional evidence of your performance that must be captured for marking***

list the minimum requirements of evidence to be submitted for marking and the moderation sample.

Evidence produced during assessment above and beyond this may be submitted, as long as it provides useful information for marking and moderation and has been produced under appropriate conditions.

While technological methods which support the capturing or creating of evidence can be helpful, eg pinboard style websites for creating mood boards, the final evidence must be converted to a suitable format for marking and moderation which cannot be lost/ deleted or amended after the end of the assessment period (eg screen prints, pdf files). Considerations around tracking authenticity and potential loss of material hosted on such platforms during assessment is the centre's responsibility.

Where candidates have carried out some work as a group, the contribution of each candidate must be clear. It is not appropriate to submit identical information for each candidate without some way for the marker and moderator to mark the candidates individually.

Note: Combining candidates' individual pieces of evidence into single files or zip files may make evidence management during internal marking more efficient and will greatly simplify the uploading of the moderation sample.

Where the minimum requirements have **not been submitted** for the moderation sample by the final moderation deadline, or the **quality of evidence is insufficient** to make a judgement, the moderation, and therefore any subsequent adjustment, will be based on the evidence that *has* been submitted. **Where this is insufficient to provide a mark on moderation, a mark of zero may be given.**

Preparation of candidates

Candidates should be aware of which aspects of their performance (across the AOs) will give them good marks in assessment. This is best carried out through routinely pointing out good or poor performance during the learning period, and through formative assessment.

During the learning programme, direct tutor instruction in how to tackle practical tasks through modelling, support, guidance and feedback are critical. However gradual removal of this support is necessary in preparation for summative assessment. This, supported approach is **not** valid for summative assessment.

The purpose of summative assessment is to confirm the standard the candidate has reached as a result of participating in the learning process. Candidates should be encouraged to do the best they can and be made aware of the difference between these

summative assessments and any formative assessments they have been subject to. Candidates may not have access to the full marking grids, as these may be misinterpreted as pass, merit distinction descriptors. Refer to the ***Technical qualifications – teaching, learning and assessment*** centre guidance document, available on the City & Guilds website for further information on preparing candidates for Technical qualification assessment.

Guidance on assessment conditions

The assessment conditions that are in place for this synoptic assignment are to:

- ensure the rigour of the assessment process
- provide fairness for candidates
- give confidence in the outcome.

They can be thought of as the rules that ensure that all candidates who take an assessment are being treated fairly, equally and in a manner that ensures their result reflects their true ability.

The conditions outlined below relate to this summative synoptic assignment. These do not affect any formative assessment work that takes place, although it is advised that candidates are prepared for the conditions they will need to work under during summative assessment.

The evidence for the tasks that make up this synoptic assignment must be completed under the specified conditions. This is to ensure authenticity and prevent malpractice as well as to assess and record candidate performance for assessment in the practical tasks. Any aspect that may be undertaken in unsupervised conditions is specified. It is the centre's responsibility to ensure that local administration and oversight gives the tutor sufficient confidence to be able to confirm the authenticity of the candidate's work.

Security and authentication of candidate work

Candidate evidence must be kept secure to prevent unsupervised access by the candidate or others. Where evidence is produced over a number of sessions, the tutor must ensure learners and others cannot access the evidence without supervision. This might include storing written work or artefacts in locked cupboards and collecting memory sticks of evidence produced electronically at the end of each session.

Candidates are required to sign declarations of authenticity, as is the tutor. The relevant form is included in this assignment pack and must be signed after the production of all evidence.

Where the candidate or tutor is unable to, or does not confirm authenticity through signing the declaration form, the work will not be accepted at moderation and a mark of zero will be given. If any question of authenticity arises eg at moderation, the centre may be contacted for justification of authentication.

Accessibility and fairness

Where a candidate has special requirements, tutors should refer to the *Access arrangements and reasonable adjustments* section of the City & Guilds website.

Tutors can support access where necessary by providing clarification to **any** candidate on the requirements or timings of any aspect of this synoptic assignment. Tutors should **not** provide more guidance than the candidate needs as this may impact on the candidate's grade, see the guidance and feedback section below.

All candidates must be provided with an environment, time frame and resources that allows them reasonable access to the full range of marks available.

Where candidates have worked in groups to complete one or more tasks for this synoptic assessment, the tutor must ensure that no candidate is disadvantaged as a result of the performance of any other team member. If a team member is distracting or preventing another team member from fully demonstrating their skills or knowledge, the tutor must intervene.

Guidance and feedback

To support centre file management, tutors may specify a suitable file format and referencing format for evidence (unless otherwise specified eg if file naming is an assessment point for the assignment). Guidance must only support access to the assignment and must not provide feedback for improvement. The level and frequency of clarification & guidance must be

- recorded fully on the candidate record form (CRF),
- taken into account along with the candidate's final evidence during marking
- made available for moderation.

Tutors **must not** provide feedback on the quality of the performance or how the quality of evidence can be improved. This would be classed as malpractice.

Tutors **should** however provide general reminders to candidates throughout the assessment period to check their work thoroughly before submitting it, and to be sure that they are happy with their final evidence as it may not be worked on further after submission.

Candidates can rework any evidence that has been produced for this synoptic assignment during the time allowed. However, this must be as a result of their own review and identification of weaknesses and not as a result of tutor feedback. Once the evidence has been submitted for assessment, no further amendments to evidence can be made.

Tutors **should** check and be aware of the candidates' plans and designs to ensure management of time and resources is appropriate, and so any allowed intervention can take place at an appropriate time.

Tutors **should** ensure that candidates' plans for completion of the tasks distribute the time available appropriately and may guide candidates on where they should be up to at any point in a general way. Any excessive time taken for any task should be recorded and should be taken into account during marking if appropriate.

It is up to the marker to decide if the guidance the candidate has required suggests they are lacking in any AO, the severity of the issue, and how to award marks on the basis of this full range of evidence. The marker must record where and how guidance has had an impact on the marks given, so this is available should queries arise at moderation or appeal.

What is, and is not, an appropriate level of guidance

- A tutor **should intervene with caution** if a candidate has taken a course of action that will result in them not being able to submit the full range of evidence for assessment. However, this should **only** take place once the tutor has prompted the candidate to check that they have covered all the requirements. Where the tutor has to be explicit as to what the issue is, this is likely to demonstrate a lack of understanding on the part of the candidate rather than a simple error, and full details should be recorded on the CRF.
- The tutor **should not** provide guidance if the candidate is thought to be able to correct the issue without it, and a prompt would suffice. In other words, only the

minimum support the candidate actually needs should be given, since the more tutor guidance provided, the less of the candidate's own performance is being demonstrated and therefore the larger the impact on the marks awarded.

- A tutor **must not** provide guidance that the candidate's work is not at the required standard or how to improve their work. In this way, candidates are given the chance to identify and correct any errors on their own, providing valid evidence of knowledge and skills that will be credited during marking.
- The tutor **must not** produce any templates, pro-formas, work logs etc unless instructed to in the assignment guidance. Where instructed to do so, these materials must be produced as specified and contain no additional guidance. Templates provided as part of the assignment should be used as provided, and not adapted.

All specific prompts and details of the nature of any further guidance must be recorded on the relevant form and reviewed during marking and moderation.

Guidance on marking

Please refer to the ***Technical qualifications – marking,*** *and* ***- moderation*** centre guidance documents for further information on gathering evidence suitable for marking and moderation, and on using the marking grid and forms.

The candidate record form (CRF) is used to record:

- Details of any guidance or the level of prompting the candidate has received during the assessment period
- Rough notes bringing together relevant evidence from across tasks during marking.
- Summary justifications when holistically coming to an overall judgement of the mark.

The practical observation form (PO) is used to record:

- Descriptive information and evidence of candidate performance during an observation. Although descriptions of the quality of performance should support decisions against the AOs, the notes should follow the flow of the observation, rather than attempting to assign evidence against the AOs at this point.

Marking grid

For any category, 0 marks may be awarded where there is no evidence of achievement.

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
20	**AO1 Recall of knowledge relating to the qualification LOs** • Does the candidate seem to have the full breadth and depth of taught knowledge across the qualification to hand? • How accurate it their knowledge? Are there any gaps or misunderstandings evident? • How confident and secure does their knowledge seem?	**(1-4 marks)** **Recall shows some weaknesses in breadth and/or accuracy.** Hesitant, gaps, inaccuracy.	**(5-8 marks)** **Recall is generally accurate and shows reasonable breadth. Inaccuracy and misunderstandings are infrequent and usually minor.** Sound, minimal gaps.	**(9-12 marks)** **Consistently strong evidence of accurate and confident recall from the breadth of knowledge.** Accurate, confident, complete, fluent, slick.
		Examples of types of knowledge; identifying structural terms, structural formulae and appropriate units and describing the methods used to size beams, columns, frames and retaining walls; recognising methods used to construct excavations, control ground water and construct substructure, superstructure and external works and identifying associated health and safety issues; identifying the factors that influence the provision of electricity, hot and cold water, drainage and gas and describing the principles that underpin safe and effective distribution and installation of building services; identifying manual drawing equipment and CAD components and software and describing the uses and benefits of BIM (Building Information Modelling); recognising the factors that influence client requirements and describing constraints on design; recognising the characteristics of maintenance and conversion procedures and describing associated procedures; identifying the different types of building survey and describing building survey procedures; identifying modern business practices in construction and contract management and describing cost management and production control techniques; identifying building control procedures and describing the purpose of Approved Documents and planning documentation.		

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
		Bottom of band: The candidate has identified a limited number of methods, materials techniques, practices and documents used in construction, but there is little detail or coherence. Some relevant images, tables, graphs, formulae and calculations have been identified, but used poorly.	***Bottom of band:*** The candidate has described a wide range of methods, materials, techniques, practices and documents used in construction, and in good detail, with clear sketches and acceptable levels of coherence. Most relevant images, tables, graphs, formulae and calculations have been identified and used well, with some working shown but without units.	***Bottom of band:*** The candidate has described a comprehensive range of methods, materials, techniques, practices and documents used in construction, in very good detail, with clear and accurate sketches and generally high levels of coherence. All relevant images, tables, graphs, formulae and calculations have been identified and used well with most working and units shown correctly.
		Top of band: The candidate has identified a limited number of methods, materials techniques, practices and documents used in construction, but with some detail and some coherence. Some relevant images, tables, graphs, formulae and calculations have been identified and used appropriately.	***Top of band:*** The candidate has described a wide range of methods, materials, techniques, practices and documents used in construction, with good detail, clear and accurate sketches and good coherence. All relevant images, tables, graphs, formulae and calculations are identified and generally applied well with some working shown and some units.	***Top of band:*** The candidate has described a comprehensive range of methods, materials, techniques, practices and documents used in construction, in in-depth detail, with clear and accurate sketches and high levels of coherence. All relevant images, tables, graphs, formulae and calculations have been identified and used correctly with all working shown and with correct units.

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
35	**AO2 Understanding of concepts theories and processes relating to the LOs** • Does the candidate make connections and show causal links and explain why? • How well theories and concepts are applied to new situations/the assignment? • How well chosen are exemplars – how well do they illustrate the concept?	**(1-7 marks)** **Some evidence of being able to give explanations of concepts and theories. Explanations appear to be recalled, simplistic or incomplete.** Misunderstanding, illogical connections, guessing.	**(8-14 marks)** **Explanations are logical. Showing comprehension and generally free from misunderstanding, but may lack depth or connections are incompletely explored.** Logical, slightly disjointed, plausible.	**(15-21 marks)** **Consistently strong evidence of clear causal links in explanations generated by the candidate. Candidate uses concepts and theories confidently in explaining decisions taken and application to new situations.** Logical reasoning, thoughtful decisions, causal links, justified.
		Examples of understanding expected: selecting appropriate techniques to solve structural problems and explaining the principles involved; producing drawings using manual drawing equipment and/or CAD and explaining how, when and where BIM is used in the modern design and planning process; specifying and comparing the methods, operations and techniques used in civil engineering work, together with the plant and equipment required to complete the work, and assessing the risks involved in such work; specifying building services installations, explaining the reason for such specifications and producing and/or interpreting layouts of such systems; explaining the roles and responsibilities of the design team and the framework in which design and planning operate, producing final design solutions and planning documentation; explaining the processes used to maintain the built environment and comparing the methods used to convert property; planning building surveys and analysing the outcomes of such surveys; explaining how modern management techniques are used in construction and comparing contract management, cost management and production control techniques; explaining the purpose of building regulations and Approved Documents and producing complete building regulation application documentation.		

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
		Bottom of band: Some concepts are referred to, but explanations are typically weak. There is little evidence of the ability to show a chain of cause and effect or to explain the reasons for a specification.	***Bottom of band:*** The candidate has shown a good range of understanding across the qualification and explanations are straightforward but secure.	***Bottom of band:*** Explanations show some additional depth of thought and/or insight in places. Some understanding is being extrapolated to new contexts with some success and the understanding is clearly applied to the project in hand.
		Middle of band: The candidate has shown a somewhat limited range of understanding. Explanations are typically brief or simplistic and understanding is implied, rather than clearly evidenced.	***Middle of band:*** There is good understanding shown across the qualification. Explanations are clear and often show good links between cause and effect. The reasons for the methods and materials specified are made clear.	***Middle of band:*** Explanations are generally in-depth across the qualification. Application to new contexts is generally successful and relevant to the project in hand.
		Top of band: There is evidence of a range of understanding from across the qualification. Concepts are generally explained, in a limited way, with some areas being more secure than others.	***Top of band:*** Understanding across the qualification is consistently good, with reasoning consistently coherent and well-explained.	***Top of band:*** Concepts and understanding across the entire qualification are well-understood and can be applied consistently and effectively in new contexts. All the understanding demonstrated relates to the project in hand.

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
10	**AO3 Application of practical/ technical skills** • How practiced/fluid does hand eye coordination and dexterity seem? • How confidently does the candidate use the breadth of practical skills open to them? • How accurately/ successfully has the candidate been able to use skills/achieve practical outcomes?	**(1-2 marks)** **Some evidence of familiarity with practical skills. Some awkwardness in implementation, may show frustration out of inability rather than lack of care.** Unable to adapt, frustrated, flaws, out of tolerance, imperfect, clumsy.	**(3-4 marks)** **Generally successful application of skills, although areas of complexity may present a challenge. Skills are not yet second nature.** Somewhat successful, some inconsistencies, fairly adept/ capable.	**(5-6 marks)** **Consistently high levels of skill and/or dexterity, showing ability to successfully make adjustments to practice; able to deal successfully with complexity.** Dextrous, fluid, comes naturally, skilled, practiced.
		Examples of skills expected: producing sketches and construction drawings; working with project documentation and building regulation applications; producing and refining design solutions; determining quantities from drawings; preparing electronic presentations.		
		Processes can generally be carried out in an acceptable manner, up to a point, resulting in drawings and other practical outcomes that are basic and which may be somewhat inaccurate in places. All the tasks have been attempted and, even if not all are correct, they have been completed.	Familiar processes are carried out in a competent way resulting in consistently usable drawings, calculations and other practical tasks as appropriate. Complex situations are attempted well, and mostly effectively. All the tasks have been attempted and completed, and are substantially correct.	Drawings, calculations and other practical tasks are consistently produced to a high standard. Measurements are consistently accurate and within tolerance even in complex situations. All the tasks are attempted and completed, and are all correct. Where relevant, any working is shown and the correct units used throughout.

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
20	**AO4 Bringing it all together - coherence of the whole subject** • Does the candidate draw from the breadth of their knowledge and skills? • Does the candidate remember to reflect on theory when solving practical problems? • How well can the candidate work out solutions to new contexts/ problems on their own?	**(1-4 marks)** **Some evidence of consideration of theory when attempting tasks. Tends to attend to single aspects at a time without considering implication of contextual information.** Some random trial and error, new situations are challenging, expects guidance, narrow. Many need prompting.	**(5-8 marks)** **Shows good application of theory to practice and new context, some inconsistencies.** Remembers to apply theory, somewhat successful at achieving fitness for purpose. Some consolidation of theory and practice.	**(9-12 marks)** **Strong evidence of thorough consideration of the context and use of theory and skills to achieve fitness for purpose.** Purposeful experimentation, plausible ideas, guided by theory and experience, fit for purpose, integrated, uses whole toolkit of theory and skills.
		Examples of bringing it all together: applying knowledge and understanding to a particular scenario or problem; justifying decisions made and approaches taken (e.g. materials, techniques, adapting practice to meet contextual challenges, reflecting on risk assessments and their use.		
		The candidate has used knowledge and understanding together in a few straightforward areas.	The candidate typically brings together knowledge, understanding and skills well, when solving problems that arise within the given context, although they may deal with these separately.	The candidate has made excellent use of knowledge, understanding and skills from across the qualification to inform the context of the assignment. Choices and decisions have been well-informed and considered, showing that the candidate appreciates the significance of the different units of the qualification in relation to each other.

%	Assessment Objective	Band 1 descriptor Poor to limited	Band 2 descriptor Fair to good	Band 3 descriptor Strong to excellent
15	**AO5 Attending to detail/ perfecting** • Does the candidate routinely check on quality, finish etc and attend to imperfections/ omissions • How much is accuracy a result of persistent care and attention (eg measure twice cut once)? • Would you describe the candidate as a perfectionist and wholly engaged in the subject?	**(1-3 marks)** **Easily distracted or lack of checking. Insufficiently concerned by poor result; little attempt to improve. Gives up too early; focus may be on completion rather than quality of outcome.** Careless, imprecise, flawed, uncaring, unfocussed, unobservant, unmotivated.	**(4-6 marks)** **Aims for satisfactory result but may not persist beyond this. Uses feedback methods but perhaps not fully or consistently.** Variable/intermittent attention, reasonably conscientious, some imperfections, unremarkable.	**(7-9 marks)** **Alert, focussed on task. Attentive and persistently pursuing excellence. Using feedback to identify problems for correction.** Noticing, checking, persistent, perfecting, refining, accurate, focus on quality, precision, refinement, faultless, meticulous.
		Examples of attending to detail: accuracy and detail of drawings and checking of same; thinking about and attending to specific requirements of the client; completeness and attention to usability of all relevant documentation; checking drawings and any calculations.		
		The candidate shows superficial attention to detail. The drawings and other practical outcomes show some inaccuracies or gaps. The client's needs are interpreted in a generic, rather than a personal, manner, with basic attention to their aims and requirements.	The candidate shows adequate attention to detail and drawings and other practical outcomes are accurate. Client's needs are considered sufficiently to meet their needs in the most straightforward and/or conventional way.	The candidate has been highly focused on the task showing extreme care in the accuracy and usability of drawings and other practical outcomes. They have been very attentive to the implied values of the client and thoughtful in using this insight in achieving an outcome that is highly client-centred.