Edexcel Diplomas

Units

Level 1 Principal Learning in Construction

Draft accredited units

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Unit 1: Design the Built Environment: Design Influences

Principal Learning Unit

Level 1

30 Guided learning hours

(20 hours learning time with approx. 10 hours for assessment) Internally assessed

About this Unit	When considering building or structural developments, methods for protecting the natural environment, communities, existing , structures and transport systems must be included. Good design should be sustainable, and in being so needs to match the demand and needs of the local community. In this unit you will be introduced to the key social, economic and infrastructure factors influencing design, and you will learn how planning of the built environment impacts on design. You will come to understand the need for sustainability and environmental protection, and learn about the properties and uses of a range of construction materials and their impact on the design of the built environment. You will develop an understanding of the role of planning in the design process and find alternative design solutions for different functions. In doing so, you will explore the basic properties of materials used in construction and carry out an investigation into the properties of commonly used construction materials.

Learning outcomes

On completion of this unit a learner should:

1.1 Know how designs are influenced by human and physical factors

1.2 Understand the basic need for planning

1.3 Understand the basic need for sustainability and environmental protection

1.4 Be able to describe the properties and uses of typical construction materials.

What you need to cover

1.1 Know how designs are influenced by human and physical factors:

In this unit you will explore the basic human and physical factors that influence the design process. You will learn how community consultations are used in order to recognise the needs and concerns of local communities, and how the public and organisations can influence environmental policy. You will discover how the design of a building or structure is affected by the size and make up of the community, existing infrastructure and travel arrangements, its intended use and cost of labour, land and materials.

You will consider the social effects of construction projects on the local economy, including the means of funding and proposed life span of the building or structure. You will gain an insight into learn about the importance of sustainability, and its influence on design decisions. You will gain an understanding of the effects that the designer can have upon the environment, and of the many examples of good practice that can minimise the environmental effects of a building or structure

1.2 Understand the basic need for planning:

You will consider how the current and planned infrastructure affects current and future development/design decisions. You will learn why it is important to check the ability of the infrastructure to cope with the development, and the effects that the development will have on the community and properties in the locality.

You will fid out about the stages of planning process and how it takes into account the local environment and public opinion. You will explore the basic reasons for legislation (local and national) that influences both the development and design process including building regulations, the town and country planning act and the construction (design management) regulations (CDM). You will explore the different stages of planning in terms of design, build, maintenance, function, and demolition. You will learn about the concept of green belt and planning policy guidance (PPG) in terms of how they contribute to the overall decision making process. You will learn how land can be used for different purposes

1.3 Understand the basic need for sustainability and environmental protection:

Sustainability has a major influence on design decisions. You will gain an understanding of environmental protection and the methods used to protect and sustain our natural environment in terms of considering flora and fauna, in the design process. You will explore the use of recycled materials and process of obtaining raw materials from sustainable sources and the need for preservation of natural resources,

You will give careful thought to issues relating to energy consumption, construction plant and machinery, noise, dust, fumes, pollution and waste disposal and their effect on the environment. You will learn about good sustainable design practice in terms of design and planning. Sustainability is an essential consideration on all projects, during the actual construction process, and afterwards during maintenance and repair

1.4 Be able to describe the properties and uses of typical construction materials.

You will find out about the different materials used in the built environment and how these materials affect the design process, and how they are used to create modern buildings or structures.

You will be able to describe the basic properties of a range of materials, how they are processed and their effect on the design of the built environment. You will explore the uses of the materials used in construction such as; aggregates, bricks, blocks, cement, concrete, copper, limestone, paint, plaster, plastics, roof tiles, sand, steel, timber and present their suitability for given applications in terms of availability, properties, Health & Safety, Fire resistance, strength, sound insulation, durability, cost, deterioration, thermal insulation, sustainability, environmental friendliness, suitability for function and appearance

QCF unit summary

Outcome Number	Learning Outcome The learner will:	Assessment The learner can:
1.1	Know how designs are influenced by human and physical factors	▪ Identify key local human and physical major factors that influence the design process and final design. ▪ Identify the impacts of these factors.
1.2	Understand the basic need for planning	▪ Identify the key stages of the planning process for a simple building or structural project. ▪ Demonstrates understanding of the purposes of these stages .
1.3	Understand the basic need for sustainability and environmental protection	▪ Identify key influences surrounding sustainability and environmental protection. ▪ Identify the major impacts of these influences on the design of the built environment.
1.4	Be able to describe to the properties and uses of typical construction materials	▪ Identify the properties of typical materials commonly used in building and structural projects. ▪ Relate the uses of such materials to their properties.

References in parenthesis indicate any PLTS elements that are naturally embedded within the unit assessment requirements. See page [19] of this specification. Opportunities for developing and enhancing learner PLTS are suggested in a later section of this unit.

How you will be assessed

This unit is suited to activity based assessment and therefore you will be assessed by your tutor. You are expected to present your evidence within an e-portfolio, and this must be constructed so that its contents can be assessed using 5th generation, or equivalent, web browsers.

Your tutor will supply you with the details of a simple project in the area including a brief description of the proposals, plans and elevations and a site layout drawing, showing the positions of the mains utilities and the required service entry points.

You will act in the role of an advisor working for a local planning consultancy and have been asked to produce a set of notes and use these to talk with your tutor about the project. Your notes should look at the following areas:

1 the history behind the use of the land and the surrounding area.

2 the effects that the development will have on the local community, and on other properties in the area.

3 the considerations that will affect the design process and planning decisions.

4 the relevant sustainability and environmental protection issues.

5 the uses of the chosen materials, including their suitability.

Your sketches should be no larger than A3 and should be included in your portfolio with each page numbered.

Your notes must be clearly readable, and preferably word-processed. Should you need to provide any drawings or sketches then they should be no larger than A3, and should be included in your portfolio. Each page of your portfolio should be numbered and include the following information; candidate name, candidate number, centre name and centre number.

Assessment

The evidence requirements are shown in the assessment grid, and each Assessment Focus relates directly to one of the Learning outcomes of this unit. **You should concentrate your efforts on these requirements in order to help maximise your final marks for this unit.**

The maximum marks available for each Assessment Focus represent its relative significance within the unit. The assessment grid will be used by your tutor when marking your completed work. Your tutor will decide which mark band should be applied to your work for each area of assessment focus. This will be on the principle of best fit, for example, work may be classified as band mark 2 despite aspects of the work falling into band 1 and other areas of work falling into band mark 3.

To improve your marks and move across the mark bands from band 1 to band 3 your work will have to generally increase in depth, breadth and attention to detail and quality, with some clear description as you move across the mark bands.

Assessment Grid

Assessment Focus	Band 1	Band 2	Band 3	Mark awarded
1.1 Know how designs are influenced by human and physical factors	Identifies local human and physical major factors that influence the design process and final design, and states the impacts of these. **(0-8)**	Briefly describes most of the local human and physical major factors that influence the design process and final design, including the impacts of most these. **(9-15)**	Describes all of the local human and physical major factors that influence the design process and final design, including the impacts of all of these. **(16-20)**	**20**
1.2 Understand the basic need for planning	Identifies major stages of the planning process for a simple building or structural project. Demonstrates a basic understanding of the purposes of these. **(0-5)**	Briefly describes most of the major stages of the planning process for a simple building or structural project. Demonstrates a good understanding of the purposes of most of these. **(6-10)**	Describes all of the major stages of the planning process for a simple building or structural project. Demonstrates a good understanding of the purposes of all of these. **(10-12)**	**12**

1.3 Understand the basic need for sustainability and environmental protection	Identifies major influences surrounding sustainability and environmental protection, and states the major impacts of these on the design of the built environment. **(0-5)**	Briefly describes most of the major influences surrounding sustainability and environmental protection; briefly describes the impacts of most of these on the design of the built environment. **(6-8)**	Describes all of the major influences surrounding sustainability and environmental protection; describes the impacts of all of these on the design of the built environment. **(9-13)**	**13**
1.4 Be able to describe the properties and uses of typical construction materials	Identifies the properties and uses of typical materials commonly used in building and structural projects **(0-5)**	Briefly describes the properties and uses of a range of typical materials commonly used in building and structural projects. **(6-10)**	Describes the properties and uses of a broad range of typical materials commonly used in building and structural projects, including their use for specific applications. **(11-15)**	**15**
			Total marks	**60**

Approaches to Assessment

Evidence for this unit will be contained in a word processed technical report. The report should address assessment foci 1 to 4 within the report. Photographic evidence and/or drawings where appropriate should be included in the report itself.

There are a number of assessment tasks detailed above and it should be noted that there is no requirement for candidates to undertake any design work. It is the centres responsibility to provide appropriate drawings and details that allow the candidate to complete the report.

The technical report is the vehicle for assessment for the whole unit and should address each of the assessment foci. Where group activities are used, e.g. conducting research by visiting sites and interviewing people from industry or the local planning department, tutors will need to ensure that individual learners are provided with equal experiential and assessment opportunities.

Applying Marks in the Assessment Grid

The evidence requirements are shown in the assessment grid. The following table provides guidance on the expectations within the Assessment Grid in respect of the use of specific words. **Further guidance on this, together with guidance to assessors on the 'benchmark' standards of learner work expected for each mark band, is available in the Edexcel C&BE Principal Learning Tutor Support Materials.**

Word	Meaning
(example)s	at least two significant elements are addressed
some	More than two significant elements, but less than a majority, are addressed.
most	a majority of significant elements are addressed
all	all of the significant elements are addressed
a range	embraces representative, significant, elements partly across the breadth of the topic
a wide range	embracing representative, significant, elements fully across the breadth of the topic.
states	provides a simple statement of fact, without further elaboration
identifies	provides a simple naming, eg in the form of a list.
briefly describes	provides a description that just captures most of the key aspects, but includes minimal elaboration
describes	provides a description that just captures all of the key aspects and includes some elaboration
describes clearly	provides a rounded and well-structured description that fully captures and includes elaboration on all of the key aspects
examine	performs an inspection or logical questioning of relevant aspects

explain	provides an account of underlying reasons or aspects
compare	performs a comparison between two (or more) items or aspects
evaluate	performs an in-context appraisal against relevant criteria
analyse	performs a detailed examination of a topic
justify	demonstrates the validity or appropriateness of a topic

In allocating marks, the general principle is to decide which mark is to be applied to the work for each area of assessment focus.

- This will be on the principle of best fit and, for example, work may be classified as mark band 2 despite aspects of the work falling into mark band 1 and other areas of the work falling into mark band 3.
- Assessment of work does NOT follow a 'hurdle' approach, whereby the Assessor cannot award marks from the next band if one item for an assessment focus from a lower band has been omitted, regardless of the quality of the rest of the work for that assessment focus
- If the learner does all that is required in a band for an assessment focus then he/ she normally will be awarded the full available marks for that band.
- If a candidate does more on one aspect of work for an assessment focus than required by a band then he/she may be able to be awarded marks from the bottom of the higher band.
- Likewise if he/she has done less than is required in any aspect of work for an assessment focus, or indeed omitted an aspect, then the mark may move down within the band.
- Judgements are made on the principle of compensation and are completely separate for the individual assessment focus. Low marks in one focus area will be offset by higher marks in other areas as the awarding of grades is based on an overall aggregate marks obtained across all focus areas. It may therefore be possible, depending on the weighting of the assessment focus, for a learner to pass a unit even if zero marks are awarded for one focus area within the unit.

In general, progression across the assessment grid is achieved by: simple identification or statement for at least two elements, and simple use, at mark band 1; and clear description for a wide range of elements, and consistent use, at band 3. Learner additional support and guidance at band 1 may be significant, but at band 3 should be minimal.

Marks should take into consideration the quality of work produced by a student. For example, a learner may be required to 'describe clearly a range of … and explain the impact they have on …' If their response covers an appropriate range and this is accompanied by a clear description of each item in the range, the assessor should be considering a mark in the upper half of the relevant band. If there is also appropriate explanation of the impacts then full marks for that band should be awarded. If, on the other hand, the explanation is thin then marks are likely to be held near the middle of the band. If the student covers an appropriate range but the description is a bit thin, then the assessor should be considering a mark at the lower end of the band. Good explanation of the impacts will pull it up towards the middle.

For each assessment focus, assessors should clearly indicate in their marking the extent to which the learner's marks have been adjusted to reflect a level of learner guidance, supervision or autonomy that is considered to be outside of that which might reasonably be expected at the level.

Learner guidance, supervision and autonomy

Tutors must ensure that all learners are provided with equitable and appropriate levels of initial guidance, feedback and supervision for the assessment tasks. However, the levels of ongoing support and guidance needed and the degree of autonomy demonstrated by individual learners should be borne in mind when applying marks in the assessment grid, together with the final quality of the learner work. Where group work is used, tutors must ensure that the marks allocated to individual learners accurately represents their personal level of participation and achievement.

Guidance for teaching this unit

General

Tutors delivering this unit have opportunities to use a wide range of techniques. Lectures discussions, seminar presentations, independent learning, research, site visits, supervised investigations, use of the internet or library resources and the use of personal and/or industrial experience are all suitable. Delivery should stimulate, motivate, educate and enthuse the learner. Visiting speakers could add to the relevance of the subject. Throughout the delivery learners must have the opportunity to engage in applied sector relevant learning and assessment activities.

Planning and reviewing are critical to experiential learning. It is essential that learners are engaged in the iterative and formative process of planning, doing and reviewing and, most importantly, doing again, to enable them to experience first hand how iteration can improve outcomes. Reviewing must be a formative and developmental process. Learners must be encouraged and provided with opportunities to plan and reflect on their experience, draw out and articulate lessons learned and apply their learning to new activities or situations.

Classroom Activities

Most students will not have visited a construction site before starting this course and during introductory lessons would benefit from the use of construction drawings linked to photographs of the actual construction carried out on site. These should ideally be ICT based on CD or DVD ROM so as to allow their use in a variety of appropriate ways.

The investigations detailed in the 'Site/Office Visits' section (see below) will form the focus of many classroom activities.

Sample materials should be available and where possible, on permanent display within the classroom to enable pupils to become readily familiar with their identification, use and application.

Wall displays featuring architects' drawings and photographs of construction work will help to promote an effective learning environment and will focus students on construction and the vocational approach of the course.

The use of visiting speakers and role models from industry will help to promote and facilitate many classroom activities within a vocational context. This support could provide the introduction to a task or investigation, act as an ongoing resource or in an evaluative role at the end of the activity.

Where group work is used, tutors must ensure that individual learners are provided with equal experiential and assessment opportunities.

Industry Links

The use of industry is essential to the establishment of an applied vocational context within the delivery of the course content. In the current industrial climate most medium to large construction companies are actively seeking links with schools, especially with a view to the recruitment of trainees and future graduates. Centres should actively seek links with such companies and establish what help they will be able to provide. Links or assistance could include:

- The use of visiting speakers to promote recruitment onto the diploma programme.
- Possible sponsorship of the centre's construction programme.
- Provision of materials or samples.
- Loan of or assistance with specialist equipment.
- Access to specifications, construction drawings, quality control documentation and health & safety documentation.
- Assistance with the development of links with other sources of help including, material suppliers, architects, clerk of works consultancies, trade associations, consultants etc.
- The provision of focussed site visits.
- Access to visiting speakers who will put students' learning into industrial context. Specific content level and expected outcomes will have to be discussed in advance.

Site/Office Visits

Whilst site visits will aid the students' general awareness and perceptions of on site construction activities, it is nevertheless essential that all site visits have a specific focus. Preparation and follow up activities should be prepared and discussed with the company well in advance of the visit. It will probably be necessary to have copies of drawings or other documentation in advance of the visit. Activities could include:

- An investigation of quality control procedures in use on site.
- An investigation into the different types of materials intended for use on the project and their incorporation within the main elements of substructure, superstructure, external works and drainage.
- The intended use of materials, for example brickwork or timber based products, as a feature or aesthetic element within construction.
- An investigation of on site wastage including procedures adopted to minimise waste and the segregation of waste and its disposal including the impact of decisions made at the design stage.
- An investigation into how suitable specifications can minimise waste on site.
- An investigation into the architectural detailing of installed construction components.
- How stakeholders and the wider community are supported and informed throughout the construction process.
- Observation of sustainable design practice and use of sustainable materials.
- An investigation into the provision and incorporation of utilities within the design phase of construction projects.
- Observation and use of product libraries and databases.

- An investigation or research into the planning process and the impact of legislation on the design team.
- Interviews with members of the design team to consider their approach to sustainability within design practice.
- Research into construction details and specifications that are considered robust within a local context.
- An investigation into the local Planning processes.

It is essential that school and LEA guidelines and procedures are strictly adhered to for all visits and that teachers visit the site in advance to carry out risk assessments and agree specific health and safety requirements with the company's health and safety officer. Pupils, in small groups, should be supervised and accompanied at all times during a site visit.

Sustainability

Tutors should use every opportunity to develop a learners' understanding and appreciation of sustainability and its wide ranging impact upon modern construction. These impacts can be identified in many areas, including site and management practice, built structure design and characteristics and natural and environmental issues. Sustainability is a very important issue in the modern world of construction, and tutors/learners should utilise site visits and visiting speakers to reinforce and further their knowledge and understanding of current practice.

Learning Scenarios

In line with the vocational requirements of this course, all learning scenarios should, wherever possible, be placed in a realistic industrial context. Examples of this requirement are detailed in the above sections.

ConstructionSkills

ConstructionSkills is a resource to be used within schools, employing trained schools liaison officers in all regions. They publish a list of activities and organise competitions and events to stimulate and encourage students to become interested and involved in construction.

Exhibition Visits

Visits to exhibitions such as the Building Exhibition (Interbuild) will benefit all students and will allow them to view modern construction practices and become aware of new products and systems as they become available.

Health and Safety

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all workshops and activity areas, and risk assessments must be undertaken prior to practical activities. Centres are advised to read the delivery and approach section on page [15] and Annexe C (PUWER) of these specifications.

Opportunities for developing and confirming Personal Learning and Thinking Skills

Tutors should note that the development and ongoing enhancement in learners of Personal Learning and Thinking skills (PLTS) underpins the Diploma concept. This Principal Learning unit should be treated as a vehicle through which these important generic skills can be delivered and reinforced, and in a context that is relevant both to the sector and to learner level. Although certain PLTS are identified elsewhere within this unit as an inherent part of the assessment criteria, there are further opportunities to develop and enhance a range of PLTS through various approaches to teaching and learning, and some examples of these are provided below. The use of formative assessment techniques and mentoring to aid learner development in these important personal skill areas is strongly encouraged. Where appropriate, group work may be used to provide further opportunities for developing and providing formative assessment on Team Working and Effective Participation.

Skill	**Where learners are…**
Independent enquirers	Exploring social impact of construction projects Planning and carrying out research into legislation Analysing and evaluating construction materials
Creative thinker	Asking questions during research on environmental influences
Reflective learners	Reviewing own development, and evaluation own performance in the short talk
Team workers	
Self managers	Planning and organising own work, including research analysis
Effective participators	

Functional skills

The Principal Learning unit should also be treated as a vehicle through which Functional Skills can be reinforced and developed in a context that is relevant both to the sector and to the learner. There may be many opportunities within this unit to do so, and some examples of these are provided below. It is a requirement of the Level 1 Diploma that learners are separately assessed for the Functional Skills at Level 1. The use of formative assessment techniques and mentoring aid learner development in these important skill areas is strongly encouraged.

Functional Skills – Level 1

Skills	When learners are…
ICT – Use ICT Systems	
Interact with and use ICT systems independently to meet needs	Conducting research and preparing notes. Assembling and managing their e-portfolio
Evaluate their use of ICT systems	Reflecting on their learning
Manage information storage	Conducting research and managing notes. Assembling and managing their e-portfolio
Follow and understand the need for safety and security practices	Conducting research and managing notes. Assembling and managing their e-portfolio
ICT – Find and select information	
Select and use a variety of sources of information independently to meet needs	Conducting research into a planning project for their assignment task
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	Conducting research into a planning project for their assignment task
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose, including:	Assembling and managing their notes. Assembling and managing their e-portfolio
Text and tables	
Images	
Numbers	
Records	
Bring together information to suit content and purpose	Assembling and managing their research. Assembling and managing their e-portfolio
Present information in ways that are fit for purpose and audience	Producing and managing written work. Producing and managing their e-portfolio
Evaluate the selection and use of ICT tools and facilities used to present information	Producing and managing written work. Assembling and managing their e-portfolio
Select and use ICT to communicate and exchange information safely, independently, responsibly and effectively	Assembling and managing their e-portfolio, and when exchanging information with their tutor, peers and others

Skills	When learners are…
Maths	
Understand practical problems in familiar and unfamiliar contexts and situations, some of which are non routine	
Identify and obtain necessary information to tackle the problem	
Select and apply skills in an organised way to find solutions to practical problems for different purposes	
Use appropriate checking procedures at each stage	
Interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations	
English – Speaking and listening	
Take full part in formal and informal discussions/exchanges	Taking part in discussions with their tutor and peers, in a range of different learning situations
English - Reading	
Read and understand a range of texts	Understanding their assignment brief, and conducting and assimilating research information from various sources
English - Writing	
Write documents to communicate information, ideas and opinions using formats and styles suitable for their purpose and audience	Preparing and revising their notes and learning assignments, and in written communications with their tutor. Preparing and revising a set of notes for inclusion in their e-portfolio

Wider curriculum mapping

The Edexcel Principal Learning for the Diploma in Construction and the Built Environment provides opportunities for the learner to develop an understanding of spiritual, moral, ethical, social and cultural issues as well as an awareness of environmental issues, European developments, health and safety considerations and equal opportunities issues. Further information on these opportunities is provided in Annexe B of these specifications.

Work experience

All learners undertaking the Diploma are required to undergo a period of work experience that has relevance to the Construction and the Built Environment sector. To enable learners to achieve maximum benefit from their work experience, before and/or after this takes place, tutors should identify opportunities to reflect and incorporate relevant materials and activities into the delivery and assessment of this unit.

Specialist Resources

This unit will can be taught within a traditional classroom environment. Access to construction documentation including exemplar drawings and specifications will be required linked to sites visited and investigations carried out.

Reference materials

Peter Brett - A Building Craft Foundation – Nelson Thornes 2002 – ISBN 07487 6531 X

George Foster – Construction Site Studies Production, Administration and Personnel – Longman 2000 – ISBN 0 582 019710

Des Millward – Construction and the Built Environment – Longman 2003 – ISBN 0582 41883 6

Roy Chudley – Advanced Construction Technology – Longman 2000 – ISBN 0 582 31617 0

CITB – Safety at Work – CITB 2002 – ISBN 1 85751 018 6
Building Regulations

Various Web-sites

Unit 2: Design the Built Environment: Applying Design Principles

Principal Learning Unit

Level 1

30 Guided learning hours

(20 hours learning time with approx. 10 hours for assessment) Internally assessed

About this Unit	The design of the built environment impacts on communities and society in many ways. The role of the designer and the design team are vital to the success of a project. In this Unit you will gain knowledge and understanding of the reasons why a range of structures are designed in the way they are, and will apply this understanding to the design of a simple structure. In doing so, you will investigate the range of job roles and career opportunities available to those involved in the design of the built environment

Learning outcomes

On completion of this unit a learner should:

2.1 Know why structures are designed as they are

2.2 Be able to sketch and model a simple structure from a brief and describe it to a client

2.3 Understand the job roles, career opportunities and progression routes, and the importance of teamwork, within the construction design sector

What you need to cover

2.1 Know why structures are designed as they are

All construction work is based on 'graphical communication', usually in the form of working drawings. These are produced by architects, civil and structural engineers and design technicians, they provide the information required to construct the building or structure. Models are often used to describe the proposed design to a client, or to members of the public.

You will find out about the factors that influence design needs. You will take into account: topography, ground conditions and movement and weather conditions. You will learn how the availability of land, and the types and density of people living within the area, influence design solutions.

You will think about the benefits and drawbacks of the different structural forms and how they impact on design outcomes.

2.2 Be able to sketch and model a simple structure from a brief and describe it to a client

You will explore the processes involved in the development of a design for a construction project and working out the skills required to build the design. This will involve looking at the function of the construction project and finding different design solutions, materials, and buildability, and confirming the skills of the workforce needed to erect the building or structure.

You will use your knowledge of the design process, materials and structures to make a model of a design solution. You will be given a brief for a construction project and will explore different design solutions. You will be introduced to the common scales used for construction drawings (1:100, 1:50 & 1:20 for setting out and 1:5 and 1:10 for detail), and to the use of scale models for communicating a design to a client. You will think about the buildability of your design and decide on the component parts, materials and skills required to build the design. You will learn about presenting and discussing your design with a client to help agree a final approach.

2.3 Understand the job roles, career opportunities and progression routes, and the importance of teamwork, within the construction design sector

You will find out about the job role of a design technician working within the design team, and explore the progression opportunities and qualification requirements. In doing so, you will realise that the construction designer continues to play a very important role through the construction period, and is not just involved with the design stages that take place before work commences on site.

You will learn about the jobs, responsibilities and working relationships of craft operatives, technical staff, and supervisory and management personnel working within the construction industry, including how they work closely with each other and the construction designer as a team. You will find out about the progression opportunities and qualifications available to a member of the design team.

QCF unit summary

Outcome Number	Learning Outcome The learner will:	Assessment The learner can:
2.1	Know why structures are designed as they are	▪ Outline a design for a specified simple building or other structure. (IE 1, CT 1) ▪ Identify appropriate reasons for their design choices. (IE 6)
2.2	Be able to sketch and model a simple structure from a brief and describe it to a client	▪ Extract relevant information from the client brief (IE4), produce a design solution (CT1), and complete simple sketches and a scale model for a specified simple building or other structure. (CT 1, CT 5) ▪ DIdentify and describe iscuss the major principles of their design outline to with a client (RL 4, T.W 3, EP 1).
2.3	Understand the job roles, career opportunities and progression routes, and the importance of teamwork, within the construction design sector	▪ Identify the major job roles, including teamwork aspects, within the construction sector (IE 2, TW 4) ▪ Identify career opportunities and the corresponding progression routes for these roles (IE 12). ▪ Identify relevant professional bodies (IE 2).

The references in parenthesis indicate the PLTS elements that are naturally embedded within the unit assessment requirements. See page [19] of this specification. Opportunities for developing and enhancing learner PLTS are suggested in a later section of this unit.

How you will be assessed

This unit is suited to activity based assessment and therefore you will be assessed by your tutor. You are expected to present your evidence within an e-portfolio, and this must be constructed so that its contents can be assessed usung 5th generation, or equivalent, web browsers.

You will complete two assessed tasks.

Task One

Your tutor will provide you with a brief for the design of a proposed simple two storey construction project, including a site layout.

You will act in the role of a design technician working for a local design practice. Using your knowledge of construction you will:

Activity A. make some notes and simple sketch designs for the external appearance of the structure; and then,

Activity B. make a 3D scale model of your design for presentation to your client.

Your notes must be clearly readable, and preferably word-processed and your sketches should be no larger than A3, and should be included in your portfolio. Each page of your portfolio should be numbered and include the following information; candidate name, candidate number, centre name and centre number. You should include in your portfolio copies of any relevant observation records or witness statements.

The model must be in a presentable form,and you should provide in your portfolio adequate photographic evidence of the completed model, accompanied by authentication sheets signed by your tutor to confirm that the work is your own.

Task Two

After completing your sketches and modelyou will take part in a simple role play in which you will continue in the your role of the design technician, and your tutor or a peer will take the part of your client. You will begin the role play by introducing yourself, and statingdescribing the role that you are about to play. You will explain describewhat your job role and responsibilities are, your role within the design team, your qualifications and your development/career path, and will name and describe relevant professional bodies. To help you with this, you may make use of previously prepared notes, using a pro-forma provided by your tutor.

You will then mdecribe your design to the ‘client’.eet and discuss the design principles of your design with a colleague, who will take the role of the client.

The main purpose of your description iscussion with the client should be to explain:

A how your the design meets their needs.

B the buildability of your design, including identifying the skills required to complete the project.

Assessment

The evidence requirements are shown in the assessment grid, and each Assessment Focus relates directly to one of the Learning outcomes of this unit. **You should concentrate your efforts on these requirements in order to help maximise your final marks for this unit.**

The maximum marks available for each Assessment Focus represent its relative significance within the unit. The assessment grid will be used by your tutor when marking your completed work. Your tutor will decide which mark band should be applied to your work for each area of assessment focus. This will be on the principle of best fit, for example, work may be classified as band mark 2 despite aspects of the work falling into band 1 and other areas of work falling into band mark 3.

To improve your marks and move across the mark bands from band 1 to band 3 your work will have to generally increase in depth, breadth and attention to detail and quality, with some clear description as you move across the mark bands.

Assessment Grid

Assessment Focus	Band 1	Band 2	Band 3	Mark awarded
2.1 Know why structures are designed as they are	Extracts some key information from the client brief and states appropriate reasons behind their design for a specified simple building or other structure. **(0-8)**	Extracts most of the key information from the client brief and briefly describes most of the appropriate reasons behind their design for a specified simple building or other structure. **(9-15)**	Extracts all of the key information from the client brief and describes clearly all of the appropriate reasons behind their design for a specified simple building or other structure **(16-20)**	**20**
2.2 Be able to sketch and model a simple structure from a brief and describe it to a client	Completes simple sketches and a scale model for a specified simple building or other structure, to an acceptable standard. In a simple role play, identifies and discusses major principles of their design. **(0-8)**	Completes simple sketches and a scale model for a specified simple building or other structure, to a good standard. In a simple role play, briefly describes and discusses most of the major principles of their design with the client. **(9-15)**	Completes simple sketches and a scale model for a specified simple building or other structure, to a high standard. In a simple role play, describes clearly and discusses all of the major principles of their design with the client. **(16-20)**	**20**
2.3 Understand the job roles, career opportunities and progression routes, and the importance of teamwork within the construction design sector	States Identifies major elements of the job role including teamwork aspects, and identifies career opportunities and the corresponding progression routes for these. Names relevant professional bodies	Briefly describes the major elements of the job role including teamwork aspects, and briefly describes the career opportunities and the corresponding progression routes for these. Briefly describes the roles of relevant professional bodies.	Describes clearly the main elements of the job role including teamwork aspects, and describes clearly the career opportunities and the corresponding progression routes for these. Describes clearly the roles of relevant professional bodies.	

	(0-8)	**(9-15)**	**(16-20)**	**20**
			Total marks	**60**

Assessment Guidance

Approaches to Assessment

Evidence for this unit will be contained within the completion of sketches and a scale model of a built structure design, and a role play in which the learner will discuss the job role, career opportunities and identify the progression routes for those working within the construction design sector. Where work is 'hidden' or not evident in the completed outcome, for example use of drawing facilities, then photographs showing the work at that preliminary stage should be provided. Centres are required to ensure that sufficient high resolution photographs are provided to confirm the quality of a candidate's work.

It is the centre's responsibility to provide the details of the proposed two storey project in a suitable form that allows the candidate to complete a focused practical task.

Some assessment elements, such as the production of the scale model and checks, or adoption of safe working practices, can be assessed directly by the tutor during practical activities. If this approach is used suitable evidence would be observation records or witness statements. Guidance on the use of these is provided on the Edexcel website.

The assessment in this unit is covered by two activities.

The first activity addresses Assessment foci one and two, and requires the production of sketches and a scale model of the external envelope or façade of a building or structure. For this activity the learner will need to be able to apply skills for producing and communicating design, using simple design sketches, and for constructing a simple scale model. The tutor must ensure that adequate evidence is provided, eg in the form of photographs and witness statements, to demonstrate that the work is the learner's own. The models themselves should not be sent to Edexcel as evidence.

The second assessment activity addresses assessment foci one and three, and will be a role play in which the learner will take the role of design technician, and discuss the suitability of their design with a colleague who will take the role of client. The discussion should include factors which influence the design needs of the project, the buildability of the learner's design and identification of the skills required to complete the project. The role play will begin with the learner describing their role as a design professional working within the design team, together with their responsibilities, career opportunities, progression routes , the qualifications required and the relevant professional bodies. The role play, including the content of the learner's presentation and discussion, will be assessed via a copy of any accompanying narrative, together with witness statements to verify the organisation, content, quality, timing and delivery of the spoken element of this activity.

Applying Marks in the Assessment Grid

The evidence requirements are shown in the assessment grid. The following table provides guidance on the expectations within the Assessment Grid in respect of the use of specific words. **Further guidance on this, together with guidance to assessors on the 'benchmark' standards of learner work expected for each mark band, is available in the Edexcel C&BE Principal Learning Tutor Support Materials.**

Word	Meaning
(example)s	at least two significant elements are addressed
some	More than two significant elements, but less than a majority, are addressed.

most	a majority of significant elements are addressed
all	all of the significant elements are addressed
a range	embraces representative, significant, elements partly across the breadth of the topic
a wide range	embracing representative, significant, elements fully across the breadth of the topic.
states	provides a simple statement of fact, without further elaboration
identifies	provides a simple naming, eg in the form of a list.
briefly describes	provides a description that just captures most of the key aspects, but includes minimal elaboration
describes	provides a description that just captures all of the key aspects and includes some elaboration
describes clearly	provides a rounded and well-structured description that fully captures and includes elaboration on all of the key aspects
examine	performs an inspection or logical questioning of relevant aspects
explain	provides an account of underlying reasons or aspects
compare	performs a comparison between two (or more) items or aspects
evaluate	performs an in-context appraisal against relevant criteria
analyse	performs a detailed examination of a topic
justify	demonstrates the validity or appropriateness of a topic

In allocating marks, the general principle is to decide which mark is to be applied to the work for each area of assessment focus.

- This will be on the principle of best fit and, for example, work may be classified as mark band 2 despite aspects of the work falling into mark band 1 and other areas of the work falling into mark band 3.
- Assessment of work does NOT follow a 'hurdle' approach, whereby the Assessor cannot award marks from the next band if one item for an assessment focus from a lower band has been omitted, regardless of the quality of the rest of the work for that assessment focus
- If the learner does all that is required in a band for an assessment focus then he/ she normally will be awarded the full available marks for that band.
- If a candidate does more on one aspect of work for an assessment focus than required by a band then he/she may be able to be awarded marks from the bottom of the higher band.
- Likewise if he/she has done less than is required in any aspect of work for an assessment focus, or indeed omitted an aspect, then the mark may move down within the band.
- Judgements are made on the principle of compensation and are completely separate for the individual assessment focus. Low marks in one focus area will be offset by higher marks in other areas as the awarding of grades is based on an overall aggregate

marks obtained across all focus areas. It may therefore be possible, depending on the weighting of the assessment focus, for a learner to pass a unit even if zero marks are awarded for one focus area within the unit.

In general, progression across the assessment grid is achieved by: simple identification or statement for at least two elements, and simple use, at mark band 1; and clear description for a wide range of elements, and consistent use, at band 3. Learner additional support and guidance at band 1 may be significant, but at band 3 should be minimal.

Marks should take into consideration the quality of work produced by a student. For example, a learner may be required to 'describe clearly a range of … and explain the impact they have on …' If their response covers an appropriate range and this is accompanied by a clear description of each item in the range, the assessor should be considering a mark in the upper half of the relevant band. If there is also appropriate explanation of the impacts then full marks for that band should be awarded. If, on the other hand, the explanation is thin then marks are likely to be held near the middle of the band. If the student covers an appropriate range but the description is a bit thin, then the assessor should be considering a mark at the lower end of the band. Good explanation of the impacts will pull it up towards the middle.

For each assessment focus, assessors should clearly indicate in their marking the extent to which the learner's marks have been adjusted to reflect a level of learner guidance, supervision or autonomy that is considered to be outside of that which might reasonably be expected at the level.

Learner guidance, supervision and autonomy

Tutors must ensure that all learners are provided with equitable and appropriate levels of initial guidance, feedback and supervision for the assessment tasks. However, the levels of ongoing support and guidance needed and the degree of autonomy demonstrated by individual learners should be borne in mind when applying marks in the assessment grid, together with the final quality of the learner work. Where group work is used, tutors must ensure that the marks allocated to individual learners accurately represents their personal level of participation and achievement.

Guidance for teaching this unit

General

Tutors delivering on this unit have opportunities to use a wide range of techniques. Lectures discussions, seminar presentations, independent learning, research, site visits, supervised investigations, use of the internet or library resources and the use of personal and / or industrial experience are all suitable. Delivery should stimulate, motivate, educate and enthuse the learner. Visiting speakers could add to the relevance of the subject. Throughout the delivery learners must have the opportunity to engage in applied sector relevant learning and assessment activities.

Planning and reviewing are critical to experiential learning. It is essential that learners are engaged in the iterative and formative process of planning, doing and reviewing and, most importantly, doing again, to enable them to experience first hand how iteration can improve outcomes. Reviewing must be a formative and developmental process. Learners must be encouraged and provided with opportunities to plan and reflect on their experience, draw out and articulate lessons learned and apply their learning to new activities or situations.

Classroom Activities

Most students will not have visited a construction site before starting this course and during introductory lessons would benefit from the use of construction drawings linked to photographs of the actual construction carried out on site. These should ideally be ICT based on CD or DVD ROM so as to allow their use in a variety of appropriate ways.

The investigations detailed in the 'Site/Office Visits' section (see below) will form the focus of many classroom activities.

Sample materials should be available and where possible, on permanent display within the classroom to enable pupils to become readily familiar with their identification, use and application.

Wall displays featuring architects' drawings and photographs of construction work will help to promote an effective learning environment and will focus students on construction and the vocational approach of the course.

The use of visiting speakers and role models from industry will help to promote and facilitate many classroom activities within a vocational context. This support could provide the introduction to a task or investigation, act as an ongoing resource or in an evaluative role at the end of the activity.

Where group work is used, tutors must ensure that individual learners are provided with equal experiential and assessment opportunities.

Industry Links

The use of industry is essential to the establishment of an applied vocational context within the delivery of the course content. In the current industrial climate most medium to large construction companies are actively seeking links with schools, especially with a view to the recruitment of trainees and future graduates. Centres should actively seek links with such companies and establish what help they will be able to provide. Links or assistance could include:

- The use of visiting speakers to promote recruitment onto the diploma programme.
- Possible sponsorship of the centre's construction programme.
- Provision of materials or samples.
- Loan of or assistance with specialist equipment.
- Access to specifications, construction drawings, quality control documentation and health & safety documentation.
- Assistance with the development of links with other sources of help including, material suppliers, architects, clerk of works consultancies, trade associations, consultants etc.
- Sponsorship of individual students and direct recruitment onto modern apprenticeships and training schemes.
- The provision of focussed site visits.
- Access to visiting speakers who will put students' learning into industrial context. Specific content level and expected outcomes will have to be discussed in advance.

Site/Office Visits

Whilst site visits will aid the students' general awareness and perceptions of on site construction activities, it is nevertheless essential that all site visits have a specific focus. Preparation and follow up activities should be prepared and discussed with the company well in advance of the visit. It will probably be necessary to have copies of drawings or other documentation in advance of the visit. Activities could include:

- An investigation of quality control procedures in use on site.
- An investigation into the different types of materials intended for use on the project and their incorporation within the main elements of substructure, superstructure, external works and drainage.
- The intended use of materials, for example brickwork or timber based products, as a feature or aesthetic element within construction.
- An investigation of on site wastage including procedures adopted to minimise waste and the segregation of waste and its disposal, including the impact of decisions made at the design stage.
- An investigation into how suitable specifications can minimise waste on site.
- An investigation into the architectural detailing of installed construction components.
- How stakeholders and the wider community are supported and informed throughout the construction process.
- Observation of sustainable design practice and use of sustainable materials.
- An investigation into the provision and incorporation of utilities within the design phase of construction projects.
- Observation and use of product libraries and databases.
- An investigation or research into the planning process and the impact of legislation on the design team.
- Interviews with members of the design team to consider their approach to sustainability within design practice.
- Research into construction details and specifications that are considered robust within a local context.
- An investigation into the local Planning processes.

It may be that within one site visit different groups will investigate different 'on site' elements or operations.

It is essential that school and LEA guidelines and procedures are strictly adhered to for all visits and that teachers visit the site in advance to carry out risk assessments and agree specific health and safety requirements with the company's health and safety officer. Pupils, in small groups, should be supervised and accompanied at all times during a site visit.

Sustainability

Tutors should use every opportunity to develop a learners' understanding and appreciation of sustainability and its wide ranging impact upon modern construction. These impacts can be identified in many areas, including site and management practice, built structure design and characteristics and natural and environmental issues. Sustainability is a very important issue in the modern world of construction, and tutors/learners should utilise site visits and visiting speakers to reinforce and further their knowledge and understanding of current practice.

Learning Scenarios

In line with the vocational requirements of this course, all learning scenarios should, wherever possible, be placed in a realistic industrial context. Examples of this requirement are detailed in the above sections.

ConstructionSkills

ConstructionSkills is a resource to be used within schools, employing trained schools liaison officers in all regions. They publish a list of activities and organise competitions and events to stimulate and encourage students to become interested and involved in construction.

Exhibition Visits

Visits to exhibitions such as the Building Exhibition (Interbuild) will benefit all students and will allow them to view modern construction practices and become aware of new products and systems as they become available. (This is held annually at the National Exhibition Centre during the autumn term).

Health and Safety

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all workshops and activity areas, and risk assessments must be undertaken prior to practical activities. Centres are advised to read the delivery and approach section on page [15] and annexe C (PUWER) of the specification.

Opportunities for developing and confirming Personal Learning and Thinking Skills

Tutors should note that the development and ongoing enhancement in learners of Personal Learning and Thinking skills (PLTS) underpins the Diploma concept. This Principal Learning unit should be treated as a vehicle through which these important generic skills can be delivered and reinforced, and in a context that is relevant both to the sector and to learner level. Although certain PLTS are identified elsewhere within this unit as an inherent part of the assessment criteria, there are further opportunities to develop and enhance a range of PLTS through various approaches to teaching and learning, and some examples of these are provided below. The use of formative assessment techniques and mentoring to aid learner development in these important personal skill areas is strongly encouraged. Where appropriate, group work may be used to provide further opportunities for developing and providing formative assessment on Team Working and Effective Participation.

Skill	Where learners are…
Independent enquirers	exploring the factors affecting the design of structures (AF 2.1)
Creative thinkers	Sketching and modelling a simple structure (AF 2.2)
Reflective learners	Sketching and modelling a simple structure (AF 2.2)
	Reviewing own development (AF 2.1, 2.2, 2.3)
Team workers	Discussing a design proposal with a client (AF2.2)
	Describing job roles and their interactions (AF 2.3)
Self - managers	Planning and organising own work, including research analysis (AF 2.1, 2.2, 2.3)AF)
	Planning and organising own work, including research analysis (AF 2.1, 2.2, 2.3)
Effective participators	Taking part in a simple role play (AF 2.3)

Functional skills

The Principal Learning unit should also be treated as a vehicle through which Functional Skills can be reinforced and developed in a context that is relevant both to the sector and to the learner. There may be many opportunities within this unit to do so, and some examples of these are provided below. It is a requirement of the Level 1 Diploma that learners are separately assessed for the Functional Skills at Level 1. The use of formative assessment techniques and mentoring aid learner development in these important skill areas is strongly encouraged.

Functional Skills – Level 1

Skills	When learners are…
ICT – Use ICT Systems	
Interact with and use ICT systems independently to meet needs	Conducting research and preparing notes. Assembling and managing their e-portfolio
Evaluate their use of ICT systems	Reflecting on their learning
Manage information storage	Conducting research and managing notes. Assembling and managing their e-portfolio
Follow and understand the need for safety and security practices	Conducting research and managing notes. Assembling and managing their e-portfolio
ICT – Find and select information	
Select and use a variety of sources of information independently to meet needs	Conducting research into the external design of a structure, for their assignment task
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	Conducting research into the external design of a structure, for their assignment task
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose, including:	Assembling and managing their notes. Assembling and managing their e-portfolio
Text and tables	
Images	
Numbers	
Records	

Bring together information to suit content and purpose	Assembling and managing their research. Assembling and managing their e-portfolio
Present information in ways that are fit for purpose and audience	Producing and managing written work. Producing and managing their e-portfolio
Evaluate the selection and use of ICT tools and facilities used to present information	Producing and managing written work. Assembling and managing their e-portfolio
Select and use ICT to communicate and exchange information safely, independently, responsibly and effectively	Assembling and managing their e-portfolio, and when exchanging information with their tutor, peers and others
Skills	When learners are…
Maths	
Understand practical problems in familiar and unfamiliar contexts and situations, some of which are non routine	
Identify and obtain necessary information to tackle the problem	Sketching, dimensioning and producing a model of a structure.
Select and apply skills in an organised way to find solutions to practical problems for different purposes	
Use appropriate checking procedures at each stage	Sketching and producing a model of a structure, including use of scale.
Interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations	
English – Speaking and listening	
Take full part in formal and informal discussions/exchanges	In role play, taking part in discussions with a client. Taking part in relevant discussions with their tutor and peers, in a range of different learning situations Taking part in discussions with their tutor and peers, in a range of different learning situations
English - Reading	
Read and understand a range of texts	Understanding their assignment brief, and conducting and assimilating research information from various sources

English - Writing

Write documents to communicate information, ideas and opinions using formats and styles suitable for their purpose and audience	Preparing and revising their notes and learning assignments, and in written communications with their tutor. Preparing and revising a set of notes for inclusion in their e-portfolio

Wider curriculum mapping

The Edexcel Principal Learning for the Diploma in Construction and the Built Environment provides opportunities for the learner to develop an understanding of spiritual, moral, ethical, social and cultural issues as well as an awareness of environmental issues, European developments, health and safety considerations and equal opportunities issues. Further information on these opportunities is provided in Annexe B of these specifications.

Work experience

All learners undertaking the Diploma are required to undergo a period of work experience that has relevance to the Construction and the Built Environment sector. To enable learners to achieve maximum benefit from their work experience, before and/or after this takes place, tutors should identify opportunities to reflect and incorporate relevant materials and activities into the delivery and assessment of this unit.

Specialist Resources

This unit will can be taught within a traditional classroom environment. Access to drawing equipment and construction documentation including exemplar drawings and specifications will be required linked to sites visited and investigations carried out.

Reference materials

Peter Brett - A Building Craft Foundation – Nelson Thornes 2002 – ISBN 07487 6531 X

George Foster – Construction Site Studies Production, Administration and Personnel – Longman 2000 – ISBN 0 582 019710

Des Millward – Construction and the Built Environment – Longman 2003 – ISBN 0582 41883 6

Roy Chudley – Advanced Construction Technology – Longman 2000 – ISBN 0 582 31617 0

CITB – Safety at Work – CITB 2002 – ISBN 1 85751 018 6

Building Regulations

Various Web-sites

Unit 3: Create the Built Environment: Using Tools

Principal Learning Unit

Level 1

30 Guided learning hours

(20 hours learning time with approx. 10 hours for assessment) Internally assessed

About this Unit

Traditional construction trades like bricklaying, joinery, painting and decorating, plastering and plumbing are as much in demand as ever, while modern technology is providing an ever widening range of opportunities for young people to develop their technical and practical skills and train for professional careers. Whatever type of work is undertaken; the quality of the finished product depends upon the skill of the crafts person in choosing the correct tools, materials and equipment for the job.

In this unit you will gain a basic knowledge and understanding of a range of written and technical information, tools and skills used at craft level. You will develop an understanding of the major requirements for Health and Safety and environmental protection, and will select appropriate personal protective equipment, apply safe working techniques and use a range of tools, materials and equipment to carry out simple practical activities in a selected craft area.

You will complete an assessed practical activity in a craft area selected from the task/activity detailed within this unit. In addition you will participate in a presentation covering the major requirements for health and safety and environmental protection in construction craft areas.

Learning outcomes

On completion of this unit a learner should:

3.1 Know about and be able to discuss and describe the basic requirements for health and safety and environmental protection

3.2 Know about, use and be able to improve own use of safe working practices to undertake basic operations Know about using and extending safe working practices to undertake basic operations

3.3 Understand and apply a range of basic technical information

3.4 Be able to safely use a basic range of hand tools to produce a simple product.

What you need to cover

3.1 Know about and be able to discuss and describe the basic requirements for health and safety and environmental protection

You will develop a basic understanding of the Health and Safety at Work Act and laws known as Regulations designed to control hazards and risks in the workplace. You will learn about your responsibilities on environmental issues, which place statutory duties on employers and are related to health and safety at work – such as air pollution, water pollution, waste disposal and recycling materials etc.

You must follow the requirements of your centre's risk assessment and identify any practical hazards that could occur while you are doing your practical tasks. You will decide on appropriate precautions to minimise the risk and ensure safe working practices are maintained. You will make sure that others are not affected by any hazards that you are creating, such as dust, fume, noise etc.

All work must be done in accordance with manufacturer's specifications and associated schedules.

You will learn how to select and use the appropriate correct personal protective equipment (PPE) which may include; a hard hat, safety boots, hand protection, ear defenders, gloves, eye protection, barrier cream, dust masks, a high visibility jacket or other task specific PPE. It will also be your responsibility to look after your equipment and report any problems to your tutor.

You will be made aware of the Control of Substances Hazardous to Health (COSHH) regulations and be able to identify the particular requirements for the materials that you will be using for your practical activities. You will also become aware of the need for sufficient ventilation or extraction of fumes or dust appropriate to your practical task. You will make sure ensure that waste is separated out, recycled or disposed of correctly.

3.2 Know about, use and be able to improve own use of safe working practices to undertake basic operations

You will work with a range of materials in your chosen craft area such as: bricks, mortar, timber, copper pipe and fittings, paint and electrical wire and components.

You will follow and learn how to continually extend your knowledge of safe working practices when lifting and manually handling construction materials and will stack materials safely ready for use in practical activities. In doing so you will keep a clean and tidy work area at all times, and you will clean your work area upon completion. You must always take responsibility for your own health and safety, and must not do anything to endanger others.

You will follow and learn how to continually extend your safe working practice in terms of housekeeping, and consider how effective lighting, temperature control and welfare facilities all contribute to ensuring good methods of working.

It will also be your responsibility to think about the health and safety issues for your practical task that would be encountered in a site environment, including; working in confined spaces, below ground level, at height and using equipment for which there are legal regulations.

3.3 Understand and apply a range of basic technical information

You will explore construction specifications, and by doing so will come to realise the importance of British Standards (BS1192) and BS Codes of Practice in the producing a quality product. In carrying out practical activities you will learn to read and use a variety of construction drawings including plans, sections, elevation and detail. You will become familiar with the common scales used for construction drawings (1:100, 1:50 & 1:20 for setting out and 1:5 & 1:10 for detail)

You will also identify the different materials and components within your work by reference to standard drawing conventions, specifications, schedules, manufacturers information and construction notes. In undertaking practical activities you will learn to read and use a variety of simple construction drawings including plans, sections, elevation and detail. You will learn how to identify the different materials and components within your work, by making use of standard drawing conventions, specifications, and schedules.

3.4 Be able to safely use a basic range of hand tools to produce a simple product.

You will come to appreciate that the quality of a finished product depends upon the skill of the crafts person in choosing the correct tools, equipment and materials for the job. You will use a range of tools to carry out a simple practical activity in one of the following five areas: brickwork, carpentry and joinery, electrical installation, painting and decorating or plumbing. When completing practical activities you will:

- Choose and use the right tools and equipment for the practical activities that you undertake.
- Measure, mark and set out your work accurately.
- Show that you can safely use the right tools for the practical activity
- Learn the importance of always trying to improve the quality of your work, as you gain experience and skill.
- Handle tools with appropriate care, and clean them properly after use.
- Learn why tools need to be sharpened and maintained.
- Keep a tidy working area by applying good housekeeping, and follow the codes of your centre
- Pay close attention to security issues, and ensure that all tools are securely locked away at the end of your practical activities.

You will minimise the amount of wastage produced by your practical work, by calculating the quantity of materials needed before you actually start work.

You will find out about the correct disposal methods for the different types of waste that builds up as a result of construction related activities.

QCF unit summary

Outcome Number	Learning Outcome The learner will:	Assessment The learner can:
3.1	Know about and be able to discuss and describe the basic requirements for health and safety and environmental protection	▪ Collaborate with others (TW 1) to describe and discuss (EP 1, TW 5) the Identify basic aspects of health and safety and environmental protection for a specified craft area. (IE 2) ▪ Identify relevant COSHH issues and people at risk. (IE 4)
3.2	Know about, use and be able to improve own using and extending use of safe working practices to undertake basic operations	▪ Identify and employ safe working practices when using basic tools, equipment and materials (IE 4) ▪ Evaluate own experience (RL5) to self-manage improvements (SM2) in own use ofUses and extends safe working procedures and PPE to undertake basic operations safely. (RL 5)
3.3	Understand and apply a range of basic technical information	▪ Extract information (IE 4) and apply skills to transfer basic measurements and details from a specification for marking out (IE 4) ▪ Achieve appropriate tolerances specified for the task. (RL 3)
3.4	Be able to safely use a basic range of hand tools to produce a simple product	▪ Demonstrate the use of simple skills and safe working practice, to produce a practical outcome. ▪ Demonstrate an appropriate level of attention to detail. (SM 2)

The references in parenthesis indicate the PLTS elements that are naturally embedded within the unit assessment requirements. See page [19] of this specification. Opportunities for developing and enhancing learner PLTS are suggested in a later section of this unit.

How you will be assessed

This unit is suited to activity based assessment and therefore you will be assessed by your tutor.

You are expected to present your evidence within an e-portfolio, and this must be constructed so that its contents can be assessed usung 5th generation, or equivalent, web browsers.

Task 1

You will complete one of the following assessment activities from your chosen material area; brickwork, carpentry and joinery, building services or painting and decorating. You will also take part in a presentation covering the major requirements for health and safety and environmental protection, for construction and the built environment.

Brickwork
Working in a workshop environment you will build a simple half brick wall in stretcher bond with a tooled 'bucket handle' joint to one side. The wall must be seven bricks long and seven bricks high and built to the tolerances given by your tuor.

Carpentry and Joinery
Working in a workshop, you will make a simple wooden gate from prepared softwood timber 500mm in height and 500mm in length. The gate should be constructed to the tolerances given by your tutor. The surface of the gate should be prepared and a surface finish applied.

Painting and Decorating
Working in a workshop situation you will complete the decoration of an area or bay, of minimum 6m^2 area, that provides for the following:

Wall surfaces to be properly prepared and painted with emulsion paint, including cutting into ceilings, skirting boards, electrical switches and sockets and a window or door frame.

Skirting boards and architraves should be properly prepared and painted, in the correct sequence, to a gloss finish.

Building Services

Electrical – 13 Amp Wired Ring Main with Switched Sockets.
Working in a workshop situation you will complete a basic electrical wiring installation, using information taken by you from a scaled drawing.

AND

Plumbing
Working in a workshop situation you will produce a simple 15mm copper - pipe bending and pointing installation exercise using capillary (soldered) fittings, using information taken by you from a scaled drawing.

You should include in your portfolio copies of any relevant observation records or witness statements.

Task 2

Group activity Presentation on Health and Safety and Environmental Protection

In addition to the above, you will take part in prepare ing for and take part in and delivering a short talk/ talk/ group discussion with the other members of your group or team, covering the mainmajor requirements for health and safety and environmental protection, in a chosen craft area. You should work closely with the other members of your group or team, firstly to discuss and agree the craft area that you will cover, and then during the following talk/discussion. Your tutor will observe you and the other members of your group when you do this. specified by your tutor.
You must will tell your group about the requirements for health and safety and environmental protection in your chosen craft area, and include in the talk an explanation this a description of how you have used ongoing personal reflection to self-manage improvements in improve yoyour knowledge and use of and develop good practice on Health and Safety good practice.issues.

You should include in your portfolio a copy of your prepared talk materials, together with copies of any relevant observation records or witness statements.

Assessment

The evidence requirements are shown in the assessment grid, and each Assessment Focus relates directly to one of the Learning outcomes of this unit. **You should concentrate your efforts on these requirements in order to help maximise your final marks for this unit.** The maximum marks available for each Assessment Focus represent its relative significance within the unit. The assessment grid will be used by your tutor when marking your completed work. Your tutor will decide which mark band should be applied to your work for each area of assessment focus. This will be on the principle of best fit, for example, work may be classified as band mark 2 despite aspects of the work falling into band 1 and other areas of work falling into band mark 3.

To improve your marks and move across the mark bands from band 1 to band 3 your work will have to generally increase in depth, breadth and attention to detail and quality, with some clear description as you move across the mark bands.

Within the practical element of this unit you will move across the mark bands by paying greater attention to detail and accuracy and demonstrating increased levels of skill in manipulating tools to produce a practical outcome.

Assessment Grid

Assessment Focus	Band 1	Band 2	Band 3	Mark awarded
3.1 Know about and be able to discuss and describe the basic requirements for health and safety and environmental protection	Taking part in a group discussion activity on health and safety for a selected craft area, identifies basic aspects of health and safety and environmental protection (including COSHH); identifies people at risk. **(0-5)**	Taking part in a group discussion activity on health and safety for a selected craft area, briefly describes most of the basic requirements for health and safety and environmental protection (including COSHH); briefly describes most of the people at risk. **(6-9)**	Taking part in a group discussion activity on health and safety for a selected craft area, describes all of the basic requirements for health and safety and environmental protection (including COSHH); describes all of the people at risk. **(11-13)**	**13**
3.2 Know about, use and be able to improve own use of safe working practices to undertake basic operations	Identifies appropriate safe working practices when using basic tools, equipment and materials; uses safe working procedures and PPE to undertake basic operations safely. States how ongoing experience and reflection is used to self-manage improvements in their knowledge and skills in this area. **(0-5)**	Identifies most of the appropriate safe working practices when using basic tools, equipment and materials; consistently uses safe working procedures and PPE to undertake basic operations safely. Briefly describes how ongoing experience and reflection is used to self manage improvements in their knowledge and skills in this area. **(6-9)**	Identifies all of the appropriate safe working practices when using basic tools, equipment and materials; consistently and autonomously uses safe working procedures and PPE to undertake basic operations safely. Describes how ongoing experience and reflection is used to self manage improvements in their knowledge and skills in this area. **(10-12)**	**12**

3.3 Understand and apply a range of basic technical information	Evaluates and extracts information and applies acceptable skills to transfer basic measurements and details from a specification for marking out. Achieves tolerances specified for the task. **(0-8)**	Evaluates and extracts most of the relevant information and applies good skills to transfer basic measurements and details from a specification for marking out. Achieves most of the tolerances specified for the task. **(9-15)**	Evaluates and extracts all of the relevant information and applies a high standard of skills to transfer basic measurements and details from a specification for marking out. Achieves all of the tolerances specified through appropriate quality control checks. **(16-20)**	**20**
3.4 Be able to safely use a basic range of hand tools to produce a simple product	Demonstrates a reasonable level of simple skills and safe working practice, to produce a practical outcome to an acceptable standard and with some attention to detail. **(0-6)**	Demonstrates a good level of simple skills and safe working practice, to produce a practical outcome to a good standard and with a good level of attention to detail. **(7-11)**	Demonstrates a high level of simple skills and safe working practice, to produce a practical outcome to a high standard and with a high level of attention to detail. **(12-15)**	**15**

Assessment Guidance

Approaches to Assessment

Evidence for this unit will be by practical assessment sheet. This assessment sheet must be completed by the tutor and should include photographic evidence of work in progress and the completed outcome. Where work is 'hidden' or not evident in the completed outcome, for example prepared joints prior to assembly, then photographs showing the preliminary stage should be provided. Centres are required to ensure that sufficient high resolution photographs are provided to confirm the quality of the candidate work.
There are a number of tasks detailed above and it should be noted that there is no requirement for candidates to undertake any design work. It is the centres responsibility to provide appropriate working drawings and details that allow the candidate to complete a focused practical task.
Some assessment elements, such as quality control records and checks, or adoption of safe working practices can be assessed directly by the tutor during practical activities. If this approach is used suitable evidence would be observation records or witness statements. Guidance on the use of these is on the Edexcel website.
The assessment in this unit is covered by two activities. Assessment focus 1, relates to a small group activity to research, prepare and deliver a presentation covering the major requirements for health and safety and environmental protection. The presentation will be assessed via a copy of the detail and accompanying narrative together with witness statements verify the organisation, quality, timing and delivery of the spoken element of this section. Where group activities are used, e.g. the presentation on HASAW, tutors will need to ensure that individual learners are provided with equal experiential and assessment opportunities.

Assessment focus 2, 3 & 4 relate to the practical assessment activity from the learner's chosen material area.

Applying Marks in the Assessment Grid

The evidence requirements are shown in the assessment grid. The following table provides guidance on the expectations within the Assessment Grid in respect of the use of specific words. **Further guidance on this, together with guidance to assessors on the 'benchmark' standards of learner work expected for each mark band, is available in the Edexcel C&BE Principal Learning Tutor Support Materials.**

Word	Meaning
(example)s	at least two significant elements are addressed
some	More than two significant elements, but less than a majority, are addressed.
most	a majority of significant elements are addressed
all	all of the significant elements are addressed
a range	embraces representative, significant, elements partly across the breadth of the topic
a wide range	embracing representative, significant, elements fully across the breadth of the topic.
states	provides a simple statement of fact, without further elaboration
identifies	provides a simple naming, eg in the form of a list.
briefly describes	provides a description that just captures most of the key aspects, but includes minimal elaboration
describes	provides a description that just captures all of the key aspects and includes some elaboration
describes clearly	provides a rounded and well-structured description that fully captures and includes elaboration on all of the key aspects
examine	performs an inspection or logical questioning of relevant aspects
explain	provides an account of underlying reasons or aspects
compare	performs a comparison between two (or more) items or aspects
evaluate	performs an in-context appraisal against relevant criteria
analyse	performs a detailed examination of a topic
justify	demonstrates the validity or appropriateness of a topic

In allocating marks, the general principle is to decide which mark is to be applied to the work for each area of assessment focus.

- This will be on the principle of best fit and, for example, work may be classified as mark band 2 despite aspects of the work falling into mark band 1 and other areas of the work falling into mark band 3.

- Assessment of work does NOT follow a 'hurdle' approach, whereby the Assessor cannot award marks from the next band if one item for an assessment focus from a lower band has been omitted, regardless of the quality of the rest of the work for that assessment focus
- If the learner does all that is required in a band for an assessment focus then he/ she normally will be awarded the full available marks for that band.
- If a candidate does more on one aspect of work for an assessment focus than required by a band then he/she may be able to be awarded marks from the bottom of the higher band.
- Likewise if he/she has done less than is required in any aspect of work for an assessment focus, or indeed omitted an aspect, then the mark may move down within the band.
- Judgements are made on the principle of compensation and are completely separate for the individual assessment focus. Low marks in one focus area will be offset by higher marks in other areas as the awarding of grades is based on an overall aggregate marks obtained across all focus areas. It may therefore be possible, depending on the weighting of the assessment focus, for a learner to pass a unit even if zero marks are awarded for one focus area within the unit.

In general, progression across the assessment grid is achieved by: simple identification or statement for at least two elements, and simple use, at mark band 1; and clear description for a wide range of elements, and consistent use, at band 3. Learner additional support and guidance at band 1 may be significant, but at band 3 should be minimal.

Marks should take into consideration the quality of work produced by a student. For example, a learner may be required to 'describe clearly a range of … and explain the impact they have on …' If their response covers an appropriate range and this is accompanied by a clear description of each item in the range, the assessor should be considering a mark in the upper half of the relevant band. If there is also appropriate explanation of the impacts then full marks for that band should be awarded. If, on the other hand, the explanation is thin then marks are likely to be held near the middle of the band. If the student covers an appropriate range but the description is a bit thin, then the assessor should be considering a mark at the lower end of the band. Good explanation of the impacts will pull it up towards the middle.

For each assessment focus, assessors should clearly indicate in their marking the extent to which the learner's marks have been adjusted to reflect a level of learner guidance, supervision or autonomy that is considered to be outside of that which might reasonably be expected at the level.

When assessing a practical element of the project improvements in tolerance, fit and finish, as appropriate for the material area, provide progression across the bands.

Learner guidance, supervision and autonomy

Tutors must ensure that all learners are provided with equitable and appropriate levels of initial guidance, feedback and supervision for the assessment tasks. However, the levels of ongoing support and guidance needed and the degree of autonomy demonstrated by individual learners should be borne in mind when applying marks in the assessment grid, together with the final quality of the learner work. Where group work is used, tutors must ensure that the marks allocated to individual learners accurately represents their personal level of participation and achievement.

Guidance for teaching this Unit

General

Tutors delivering this unit have opportunities to use a wide range of techniques. Lectures, discussions, seminar presentations, independent learning, research, site visits, supervised practical, use of internet or library resources and use of personal and/or industrial experience are all suitable. Delivery should stimulate, motivate, educate, and enthuse the learner. Visiting expert speakers could add to the relevance of the subject. Throughout the delivery learners must have the opportunity to engage in applied and sector relevant learning and assessment activities.

Planning and reviewing are critical to experiential learning. It is essential that learners are engaged in the iterative and formative process of planning, doing and reviewing and, most importantly, doing again, to enable them to experience first hand how iteration can improve outcomes. Reviewing must be a formative and developmental process. Learners must be encouraged and provided with opportunities to plan and reflect on their experience, draw out and articulate lessons learned and apply their learning to new activities or situations.

Practical Activities

It is anticipated that most centres will have to work in partnership with an external provider of training to practice applied vocational skills to complete the practical task. Some centres may have a suitable external or covered area and will be able to import craft trainers for specific lessons, whilst others will find it necessary to use the facilities of their local FE provider. It should however be noted that this course is essentially a taster course and in the limited time available students will not be expected to develop skills to occupational competencies or commercially acceptable standards.

Classroom Activities

Most students will not have visited a construction site before starting this course and during introductory lessons would benefit from the use of construction drawings linked to photographs of the actual construction carried out on site. These should ideally be ICT based on CD or DVD ROM so as to allow their use in a variety of appropriate ways.
The investigations detailed in the 'Site/Office Visits' section (see below) will form the focus of many classroom activities.
Sample materials should be available and where possible, on permanent display within the classroom to enable pupils to become readily familiar with their identification, use and application.
Wall displays featuring architects' drawings and photographs of construction work will help to promote an effective learning environment and will focus students on construction and the vocational approach of the course.
The use of visiting speakers and role models from industry will help to promote and facilitate many classroom activities within a vocational context. This support could provide the introduction to a task or investigation, act as an ongoing resource or in an evaluative role at the end of the activity.

Where group work is used, tutors must ensure that individual learners are provided with equal experiential and assessment opportunities.

Industry Links

The involvement of industry is essential to the establishment of a real world context within the delivery of the course content. In the current industrial climate most medium to large construction companies are actively seeking links with schools, especially with a view to the recruitment of trainees and future graduates. Centres should actively seek links with such companies and establish what help they will be able to provide. Links or assistance could include:

- The use of visiting speakers to promote recruitment onto the diploma programme.
- Possible sponsorship of the centre's construction programme.
- Provision of materials or samples.
- Loan of or assistance with specialist equipment.
- Access to specifications, construction drawings, quality control documentation and health & safety documentation.
- Assistance with the development of links with other sources of help including, material suppliers, architects, clerk of works consultancies, trade associations, consultants etc.
- Sponsorship of individual students and direct recruitment onto modern apprenticeships and training schemes.
- The provision of focussed site visits.
- Visit to a tool shop or builders merchants.
- Access to visiting speakers who will put students' learning into industrial context. Specific content level and expected outcomes will have to be discussed in advance.

Site/Office Visits

Whilst site visits will aid the students' general awareness and perceptions of on site construction activities, it is nevertheless essential that all site visits have a specific focus. Preparation and follow up activities should be prepared and discussed with the company well in advance of the visit. It will probably be necessary to have copies of drawings or other documentation in advance of the visit. Suitable activities could include:

- An investigation of quality control procedures in use on site.
- An investigation into the different types of materials in use on site and their use within the main elements of substructure, superstructure, external works and drainage.
- The use of materials, for example brickwork or timber based products, as a feature or aesthetic element within construction.
- An investigation of on site wastage including procedures adopted to minimise waste and the segregation of waste and its disposal.
- To carry out a risk assessment of on site construction operations (companies will be sensitive possible conclusions and may require you to be guided by their health & safety officer).
- Carry out an observation on the safe use of tools, plant and equipment.
- Presentation from H&S Officer about construction site induction procedures.
- An investigation into the architectural detailing of installed construction components.
- An investigation into setting out and dimensional tolerance of on practical activities.
- How accurate batching of mortar is achieved during on site mixing.
- How stakeholders and the wider community are supported and informed throughout the construction process.
- The extent and use of prefabrication and the impact on the on-site construction period.
- Observation of sustainable site practice.

It may be that within one site visit different groups will investigate different 'on site' elements or operations.
It is essential that school and LEA guidelines and procedures are strictly adhered to for all visits and that teachers visit the site in advance to carry out risk assessments and agree specific health and safety requirements with the company's health and safety officer. Pupils, in small groups, should be supervised and accompanied at all times during a site visit.

Sustainability

Tutors should use every opportunity to develop a learners' understanding and appreciation of sustainability and its wide ranging impact upon modern construction. These impacts can be identified in many areas, including site and management practice, built structure design and characteristics and natural and environmental issues. Sustainability is a very important issue in the modern world of construction, and tutors/learners should utilise site visits and visiting speakers to reinforce and further their knowledge and understanding of current practice.

Learning Scenarios

In line with the vocational requirements of this course, all learning scenarios should, wherever possible, be placed in a realistic industrial context. Examples of this requirement are detailed in the above sections.

ConstructionSkills

ConstructionSkills is a resource to be used within schools, employing trained schools liaison officers in all regions. They publish a list of activities and organise competitions and events to stimulate and encourage students to become interested and involved in construction.

Exhibition Visits

Visits to exhibitions such as the Building Exhibition (Interbuild) will benefit all students and will allow them to view modern construction practices and become aware of new products and systems as they become available. (This is held annually at the National Exhibition Centre during the autumn term).

Health and Safety

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all workshops and activity areas, and risk assessments must be undertaken prior to practical activities. Centres are advised to read the delivery and approach section on page [15] and Annexe C(PUWER) of the specification.

Opportunities for developing and confirming Personal Learning and Thinking Skills

Tutors should note that the development and ongoing enhancement in learners of Personal Learning and Thinking skills (PLTS) underpins the Diploma concept. This Principal Learning unit should be treated as a vehicle through which these important generic skills can be delivered and reinforced, and in a context that is relevant both to the sector and to learner level. Although certain PLTS are identified elsewhere within this unit as an inherent part of the assessment criteria, there are further opportunities to develop and enhance a range of PLTS through various approaches to teaching and learning, and some examples of these are provided below. The use of formative assessment techniques and mentoring to aid learner development in these important personal skill areas is strongly encouraged. Where appropriate, group work may be used to provide further opportunities for developing and providing formative assessment on Team Working and Effective Participation.

Skill	Where learners are…
Independent enquirers	Investigating health and safety issues (AF 3.1) Investigating safe working practices (AF 3.2) Reading and interpreting construction drawings (AF 3.3)
Creative thinkers	Generating ideas for presentation style (AF 1)
Reflective learners	reviewing own development in respect of health and safety issues (AF 3.1) reviewing own development of practical skills (AF 3.4) Reviewing own general development (AF 3.1, 3.2, 3.3 & 3.4)
Team workers	Considering potential health and safety impacts on others arising from own activities (AF 3.1, 3.2)
Self managers	Planning and organising own work, including research analysis and attention to detail (AF 3.1, 3.2, 3.3 & 3.4)
Effective participator	participating in a presentation on Health and Safety issues construction (AF 3.1) Considering the safety of others in the workplace (AF 3.1, 3.2)

Functional skills

This Principal Learning unit should also be treated as a vehicle through which Functional Skills can be reinforced and developed in a context that is relevant both to the sector and to the learner. There are many opportunities within this unit to do so, and some examples of these are provided below. It is a requirement of the Level 1 Diploma that learners are separately assessed for Functional Skills at Level 1. The use of formative assessment techniques and mentoring to aid learner development in these important skill areas is strongly encouraged.

Functional Skills – Level 1

Skills	When learners are…
ICT – Use ICT Systems	
Interact with and use ICT systems independently to meet needs	Conducting research and preparing notes. Assembling and managing their e-portfolio
Evaluate their use of ICT systems	Reflecting on their learning
Manage information storage	Conducting research and managing notes. Assembling and managing their e-portfolio
Follow and understand the need for safety and security practices	Conducting research and managing notes. Assembling and managing their e-portfolio
ICT – Find and select information	
Select and use a variety of sources of information independently to meet needs	Conducting research into health and safety issues for their assignment task
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	Conducting research into health and safety issues for their assignment task
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose, including:	Assembling and managing their notes. Assembling and managing their e-portfolio
Text and tables	
Images	
Numbers	
Records	
Bring together information to suit content and purpose	Assembling and managing their research. Assembling and managing their e-portfolio
Present information in ways that are fit for purpose and audience	Producing and managing written work. Producing and managing their e-portfolio
Evaluate the selection and use of	Producing and managing written work. Assembling and

ICT tools and facilities used to present information	managing their e-portfolio
Select and use ICT to communicate and exchange information safely, independently, responsibly and effectively	Assembling and managing their e-portfolio, and when exchanging information with their tutor, peers and others
Skills	When learners are…
Maths	
Understand practical problems in familiar and unfamiliar contexts and situations, some of which are non routine	Performing a craft activity involving measurements and the use of arithmetic/ geometry
Identify and obtain necessary information to tackle the problem	Preparing for making measurements for a craft activity
Select and apply skills in an organised way to find solutions to practical problems for different purposes	Performing a craft activity involving measurements and the use of arithmetic/ geometry
Use appropriate checking procedures at each stage	Checking measurements during a craft activity
Interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations	Performing a craft activity involving measurements and the use of arithmetic/ geometry
English – Speaking and listening	
Take full part in formal and informal discussions/exchanges	Preparing and delivering a short talk/ discussion on heath and safety issues. Taking part in discussions with their tutor and peers, in a range of different learning situations
English - Reading	
Read and understand a range of texts	Understanding their assignment brief, and conducting and assimilating research information from various sources
English - Writing	
Write documents to communicate information, ideas and opinions using formats and styles suitable for their purpose and audience	Preparing and revising their notes and learning assignments, and in written communications with their tutor. Preparing and revising a set of notes for inclusion in their e-portfolio

Wider curriculum mapping

The Edexcel Principal Learning for the Diploma in Construction and the Built Environment provides opportunities for the learner to develop an understanding of spiritual, moral, ethical, social and cultural issues as well as an awareness of environmental issues, European developments, health and safety considerations and equal opportunities issues. Further information on these opportunities is provided in Annexe B of these specifications.

Work experience

All learners undertaking the Diploma are required to undergo a period of work experience that has relevance to the Construction and the Built Environment sector. To enable learners to achieve maximum benefit from their work experience, before and/or after this takes place, tutors should identify opportunities to reflect and incorporate relevant materials and activities into the delivery and assessment of this unit.

Specialist Resources

This unit will require specialist workshop facilities appropriate to the selected practical task.

Reference materials

Peter Brett - A Building Craft Foundation – Nelson Thornes 2002 – ISBN 07487 6531 X

George Foster – Construction Site Studies Production, Administration and Personnel – Longman 2000 – ISBN 0 582 019710

Des Millward – Construction and the Built Envioronment – Longman 2003 – ISBN 0582 41883 6

Roy Chudley – Advanced Construction Technolgy – Longman 2000 – ISBN 0 582 31617 0

CITB – Safety at Work – CITB 2002 – ISBN 1 85751 018 6

Building Regulations

Various Web-sites

Heineman – Brickwork - Heineman 2006 – ISBN 9780435430870

Heineman – Carpentry and Joinery - Heineman 2006 – ISBN 9780435325701

Heineman – Painting and Decorating - Heineman 2006 – ISBN 9780435463594

Unit 4: Create the Built Environment: Methods & Materials

Principal Learning Unit

Level 1

30 Guided learning hours

Externally assessed

About this Unit

In order to improve on productivity, new building and construction methods and materials are continuously being developed. The influences made to construction methods through the use of mechanisation changes regularly. And structural design professionals need to have a good understanding of the wide range of materials and methods available for use.

In this unit you will explore the ongoing changes in construction methods and materials, and will develop an understanding of the use of sustainable materials and processes. You will also explore and develop knowledge and understanding of the job roles available to those who construct the built environment, together with their relationships and career progression routes.

Learning outcomes

On completion of this unit a learner should:

4.1 Know about modern construction methods, materials and techniques

4.2 Understand the use of sustainable materials

4.3 Understand the job roles, career opportunities and progression routes, and the importance of team work, for those who construct the built environment.

What you need to cover

4.1 Know about modern construction methods, materials and techniques

In this unit you will explore the effects on construction methods of the use of mechanisation and new materials. In doing so you will find out about the various types of mechanical equipment or 'plant' used in the construction industry, and learn how the use of machinery has increased the efficiency, or 'productivity', of work.

You will learn about materials and their use, and how they have influenced modern building and construction techniques and increased productivity. During your explorations you will gain an understanding of the origin, manufacture and preparation of some of the main construction materials in common use. You will learn how some materials can be combined to provide 'composite' solutions that cover many functions, including structure, shelter, insulation, fire protection and aesthetics.

4.2 Understand the use of sustainable materials

'Sustainability' means the safe guarding the world for future generations, for example by using energy and other resources in ways that minimises the speed with which these are used up.

You will investigate sustainability issues, thereby gaining an understanding of principles and processes involved in making best use of materials that protect and sustain the built environment. You will gain knowledge of the raw-source, manufacture, processing and forming of 'sustainable' construction materials, and of their use in construction processes.

You will look at:

- a range of issues, such as productivity, wastage recycling, life cycle costing and the effective use of energy and material.
- Local sourcing of materials
- Re-claimed and recycled materials
- Use of timber
- Eco.-. friendly materials, and their use within sustainable construction.

4.3 Understand the job roles, career opportunities and progression routes, and the importance of team work, for those who construct the built environment

The construction industry employs more than 2 million people in the UK.

You will find out about the jobs, responsibilities and functional relationships, including teamwork, of craft operatives, technical staff, and supervisory and management personnel working within the construction industry, and explore the progression routes and qualifications for these.

QCF unit summary

Outcome Number	Learning Outcome The learner will:	Assessment The learner can:
4.1	Know about modern construction methods, materials and techniques	▪ Identify effects of mechanisation and new materials upon the construction of the built environment. ▪ Identify Understand the improvements in efficiency brought about by new technologies. ▪ Identify key building materials in common use throughout the UK. ▪ Identify Understand the key stages or processes involved in the construction of the built environment and how they fit into the construction programme. ▪ Describe Identify the functions of key materials and understand how they can be combined to produce composite solutions to provide structure, shelter, insulation, fire protection and aesthetics (CT 1).
4.2	Understand the use of sustainable materials	▪ Describe Understand the meaning of sustainability in the context of the built environment (IE 3). ▪ DescribeIdentifyExplain the use of materials in ways that protect and sustain the natural environment. ▪ Identify sustainable design and site practice. ▪ Describe Understand the need for appropriate sustainable site practice (CT 1).
4.3	Understand the job roles, career opportunities and progression routes, and the importance of team work, for those who construct the built environment	▪ Understand the scope and size of the employment market within the UK construction industry. ▪ Describe Identify job roles within the construction of the built environment. ▪ Explain DescribeUnderstand the jobs, responsibilities and functional relationships, including teamwork aspects, of craft operatives, technical staff, and supervisory and management personnel working within the construction industry (IE 3). ▪ Explain Identify progression routes and qualifications available within the construction of the built environment.

References in parenthesis indicate any PLTS elements that are naturally embedded within the unit assessment requirements. See page [19] of this specification. Opportunities for developing and enhancing learner PLTS are suggested in a later section of this unit.

How you will be assessed

This unit is suited to and therefore you will be assessed by external examination.

Guidance for teaching this unit

General

Tutors delivering on this unit have opportunities to use a wide range of techniques. Lectures discussions, seminar presentations, independent learning, research, site visits, supervised investigations, use of the internet or library resources and the use of personal and / or industrial experience are all suitable. Delivery should stimulate, motivate, educate and enthuse the learner. Visiting speakers could add to the relevance of the subject. Throughout the delivery learners must have the opportunity to engage in applied sector relevant learning and assessment activities.

Planning and reviewing are critical to experiential learning. It is essential that learners are engaged in the iterative and formative process of planning, doing and reviewing and, most importantly, doing again, to enable them to experience first hand how iteration can improve outcomes. Reviewing must be a formative and developmental process. Learners must be encouraged and provided with opportunities to plan and reflect on their experience, draw out and articulate lessons learned and apply their learning to new activities or situations.

Classroom Activities

Most students will not have visited a construction site before starting this course and during introductory lessons would benefit from the use of construction drawings linked to photographs of the actual construction carried out on site. These should ideally be ICT based on CD or DVD ROM so as to allow their use in a variety of appropriate ways.

The investigations detailed in the 'Site/Office Visits' section (see below) will form the focus of many classroom activities.

Sample materials should be available and where possible, on permanent display within the classroom to enable pupils to become readily familiar with their identification, use and application.

Wall displays featuring architects' drawings and photographs of construction work will help to promote an effective learning environment and will focus students on construction and the vocational approach of the course.

The use of visiting speakers and role models from industry will help to promote and facilitate many classroom activities within a vocational context. This support could provide the introduction to a task or investigation, act as an ongoing resource or in an evaluative role at the end of the activity.

Where group work is used, tutors must ensure that individual learners are provided with equal experiential opportunities.

Industry Links

The use of industry is essential to the establishment of an applied vocational context within the delivery of the course content. In the current industrial climate most medium to large construction companies are actively seeking links with schools, especially with a view to the recruitment of trainees and future graduates. Centres should actively seek links with such companies and establish what help they will be able to provide. Links or assistance could include:

- The use of visiting speakers to promote recruitment onto the diploma programme.
- Possible sponsorship of the centre's construction programme.
- Provision of materials or samples.

- Loan of or assistance with specialist equipment.
- Access to specifications, construction drawings, quality control documentation and health & safety documentation.
- Assistance with the development of links with other sources of help including, material suppliers, architects, clerk of works consultancies, trade associations, consultants etc.
- Sponsorship of individual students and direct recruitment onto modern apprenticeships and training schemes.
- The provision of focussed site visits.
- Access to visiting speakers who will put students' learning into industrial context. Specific content level and expected outcomes will have to be discussed in advance.

Site/Office Visits

Whilst site visits will aid the students' general awareness and perceptions of on site construction activities, it is nevertheless essential that all site visits have a specific focus. Preparation and follow up activities should be prepared and discussed with the company well in advance of the visit. It will probably be necessary to have copies of drawings or other documentation in advance of the visit. Activities could include:

- An investigation of quality control procedures in use on site.
- An investigation into the different types of materials in use on site and their use within the main elements of substructure, superstructure, external works and drainage.
- The use of materials, for example brickwork or timber based products, as a feature or aesthetic element within construction.
- An investigation of on site wastage including procedures adopted to minimise waste and the segregation of waste and its disposal.
- To carry out a risk assessment of on site construction operations (companies will be sensitive possible conclusions and may require you to be guided by their health & safety officer).
- Carry out an observation on the safe use of tools, plant and equipment.
- Presentation from H&S Officer about construction site induction procedures.
- An investigation into the architectural detailing of installed construction components.
- An investigation into setting out and dimensional tolerance of on practical activities.
- How accurate batching of mortar is achieved during on site mixing.
- How stakeholders and the wider community are supported and informed throughout the construction process.
- The extent and use of prefabrication and the impact on the on-site construction period.
- Observation of sustainable site practice.

It may be that within one site visit different groups will investigate different 'on site' elements or operations.

It is essential that school and LEA guidelines and procedures are strictly adhered to for all visits and that teachers visit the site in advance to carry out risk assessments and agree specific health and safety requirements with the company's health and safety officer. Pupils, in small groups, should be supervised and accompanied at all times during a site visit.

Sustainability

Tutors should use every opportunity to develop a learners' understanding and appreciation of sustainability and its wide ranging impact upon modern construction. These impacts can be identified in many areas, including site and management practice, built structure design and characteristics and natural and environmental issues. Sustainability is a very important issue in the modern world of construction, and tutors/learners should utilise site visits and visiting speakers to reinforce and further their knowledge and understanding of current practice.

Learning Scenarios

In line with the vocational requirements of this course, all learning scenarios should, wherever possible, be placed in a realistic industrial context. Examples of this requirement are detailed in the above sections.

ConstructionSkills

ConstructionSkills is a resource to be used within schools, employing trained schools liaison officers in all regions. They publish a list of activities and organise competitions and events to stimulate and encourage students to become interested and involved in construction.

Exhibition Visits

Visits to exhibitions such as the Building Exhibition (Interbuild) will benefit all students and will allow them to view modern and construction practices and become aware of new products and systems as they become available. (This is held annually at the National Exhibition Centre during the autumn term).

Health and Safety

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all workshops and activity areas, and risk assessments must be undertaken prior to practical activities. Centres are advised to read the delivery and approach section on page [15] and Annexe C (PUWER) of the specification.

Opportunities for developing and confirming Personal Learning and Thinking Skills

Tutors should note that the development and ongoing enhancement in learners of Personal Learning and Thinking skills (PLTS) underpins the Diploma concept. This Principal Learning unit should be treated as a vehicle through which these important generic skills can be delivered and reinforced, and in a context that is relevant both to the sector and to learner level. Although certain PLTS are identified elsewhere within this unit as an inherent part of the assessment criteria, there are further opportunities to develop and enhance a range of PLTS through various approaches to teaching and learning, and some examples of these are provided below. The use of formative assessment techniques and mentoring to aid learner development in these important personal skill areas is strongly encouraged. Where appropriate, group work may be used to provide further opportunities for developing and providing formative assessment on Team Working and Effective Participation.

Skill	Where learners are…
Independent enquirers	Carrying out investigations into construction methods and materials(AF 4.1, 4.2)
	Carrying out investigations into, and describing, construction job roles (AF 4.3)
Creative thinkers	Selecting modern and sustainable construction methods (AF 4.1 & 4.2)
	Considering use of materials and sustainability issues (AF 4.2)
Reflective learners	Reviewing own development (AF 4.1, 4.2, 4.3)
Team workers	Considering job roles and their interactions (AF 4.3)
Self managers	Reviewing own development (AF 4.1, 4.2, 4.3)
Effective participators	

Functional skills

The Principal Learning unit should also be treated as a vehicle through which

Functional Skills can be reinforced and developed in a context that is relevant both to the sector and to the learner. There may be many opportunities within this unit to do so, and some examples of these are provided below. It is a requirement of the Level 1 Diploma that learners are separately assessed for the Functional Skills at Level 1. The use of formative assessment techniques and mentoring aid learner development in these important skill areas is strongly encouraged.

Functional Skills – Level 1

Skills	When learners are…
ICT – Use ICT Systems	
Interact with and use ICT systems independently to meet needs	Conducting research and preparing notes
Evaluate their use of ICT systems	Reflecting as a learner.
Manage information storage	Conducting research and managing notes
Follow and understand the need for safety and security practices	Conducting research and managing notes
ICT – Find and select information	
Select and use a variety of sources of information independently to meet needs	Conducting and assimilating research into construction methods and sustainability
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	Conducting research into job roles
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose, including:	Assembling and managing their notes
Text and tables	
Images	
Numbers	
Records	
Bring together information to suit content and purpose	Assembling, assimilating and managing their research
Present information in ways that are fit for purpose and audience	Assembling and managing written work
Evaluate the selection and use of ICT tools and facilities used to present information	
Select and use ICT to communicate and exchange information safely, independently, responsibly and effectively	Exchanging information with their tutor, peers and others

Skills	When learners are…
Maths	
Understand practical problems in familiar and unfamiliar contexts and situations, some of which are non routine	
Identify and obtain necessary information to tackle the problem	
Select and apply skills in an organised way to find solutions to practical problems for different purposes	
Use appropriate checking procedures at each stage	
Interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations	
English – Speaking and listening	
Take full part in formal and informal discussions/exchanges	Taking part in discussions with their tutor and peers, in a range of different learning situations
English - Reading	
Read and understand a range of texts	Conducting and assimilating research information from various sources
English - Writing	
Write documents to communicate information, ideas and opinions using formats and styles suitable for their purpose and audience	Preparing and revising their notes and assignments, and in written communications with their tutor.

Wider curriculum mapping

The Edexcel Principal Learning for the Diploma in Construction and the Built Environment provides opportunities for the learner to develop an understanding of spiritual, moral, ethical, social and cultural issues as well as an awareness of environmental issues, European developments, health and safety considerations and equal opportunities issues. Further information on these opportunities is provided in Annexe B of these specifications.

Work experience

All learners undertaking the Diploma are required to undergo a period of work experience that has relevance to the Construction and the Built Environment sector. To enable learners to achieve maximum benefit from their work experience, before and/or after this takes place, tutors should identify opportunities to reflect and incorporate relevant materials and activities into the delivery and assessment of this unit.

Specialist Resources

This unit will can be taught within a traditional classroom environment. Access to construction documentation including exemplar drawings and specifications will be required linked to sites visited and investigations carried out.

Reference materials

Peter Brett - A Building Craft Foundation – Nelson Thornes 2002 – ISBN 07487 6531 X

George Foster – Construction Site Studies Production, Administration and Personnel – Longman 2000 – ISBN 0 582 019710

Des Millward – Construction and the Built Envioronment – Longman 2003 – ISBN 0582 41883 6

Roy Chudley – Advanced Construction Technology – Longman 2000 – ISBN 0 582 31617 0

CITB – Safety at Work – CITB 2002 – ISBN 1 85751 018 6

Building Regulations

Various Web-sites

Unit 5: Value and Use of the Built Environment

Principal Learning Unit

Level 1

60 Guided learning hours

(45 hours learning time with approx. 15 hours for assessment) Internally assessed

About this Unit	The Built Environment touches every aspect of our lives, providing somewhere to live, learn, work, rest and play. It is essential to our wellbeing. In this unit you will gain knowledge and understanding of how infrastructures and transport services affect the people and the places that use them, and how the welfare of the people who use the built environment can be protected. You will gain knowledge and understanding of where and how sustainable materials and processes are used in maintaining the built environment.

Learning outcomes

On completion of this unit a learner should:

5.1 Understand the basic function and use of structures

5.2 Understand how the built environment provides a feeling of society and well being

5.3 Know how the built environment is maintained

5.4 Understand the job roles, career opportunities and progression routes, and the importance of team work, for those who value and maintain the built environment.

What you need to cover

5.1 Understand the basic function and use of structures

You will explore the visual and social impact of the built environment and learn about gain an understanding of different structures and their uses, and how they contribute to the community. You will also think about the effect of land marks, structures and transport, and how individuals and communities are able to influence the built environment.

You will learn of how built structures are planned, designed, built, used, maintained and demolished (this is called the 'life cycle of structures'), and learn about the ways in which land can be used for different purposes. The economic importance of buildings and structures will also be explored.

5.2 Understand how the built environment provides a feeling of society and well being

You will gain an understanding of how the built environment can add to the well being, happiness, safety, security and wealth of people. You will find out about the ways in which the health, safety and security of people can be improved by changes to the built environment. The relationships between buildings or structures and our quality of life will be explored, together with the ways in which the built environment can help to produce economic opportunities and employment.

5.3 Know how the built environment is maintained

You will look at sustainability issues, and so gain an understanding of the methods used to maintain the built environment, whilst preserving e the natural environment and reducing the use of natural resources. You will explore the effect on the natural environment of design and maintenance where renewable and recyclable materials are used, and how we as individuals can help to protect the environment. The various effects on the built natural environment throughout the stages of the construction life cycle will also be looked at.

5.4 Understand the job roles, career opportunities and progression routes, and the importance of team work, for those who value and maintain the built environment

Using the understanding that you will gain of the value and use of the built environment, you will explore the different types of jobs of people who value and maintain the built environment. This will include craft and operative, technical, supervisory and management jobs. You will discover how these people work with other members of the construction team, and you will explore the progression routes and qualifications for their jobs.

QCF unit summary

Outcome Number	Learning Outcome The learner will:	Assessment The learner can:
5.1	Understand the basic function and use of structures	▪ Identify major factors relating to the basic function of a specified simple structure. ▪ Identify the uses of such structures
5.2	Understand how the built environment provides a feeling of society and well being	▪ Identify major factors that affect how the built environment provides a feeling of society and well being, for a specified simple structure.
5.3	Know how the built environment is maintained	▪ Identify sustainable practices relating to the maintenance and protection of the built environment, for a specified simple structure.
5.4	Understand the job roles, career opportunities and progression routes, and the importance of team work, for those who value and maintain the built environment	▪ Identify some of the job roles, career opportunities and progression routes including teamwork aspects, of available to those who value and maintain the built environment. ▪ Identify career opportunities and the corresponding progression routes for these roles. ▪ Identify relevant professional bodies.

References in parenthesis indicate any PLTS elements that are naturally embedded within the unit assessment requirements. See page [19] of this specification. Opportunities for developing and enhancing learner PLTS are suggested in a later section of this unit.

How you will be assessed

This unit is suited to activity based assessment and therefore you will be assessed by your tutor. You are expected to present your evidence within an e-portfolio, and this must be constructed so that its contents can be assessed usung 5th generation, or equivalent, web browsers.

Task One

Your tutor will supply provide you with a simple the details of a simple design brief for a simple w new building or structure, and agree with you a schedule. You have been asked to act as a researcher and are required to carry out an investigation within your local community on to identify the suitability and likely effects of the proposed design, and to suggest propose a possible site location for it.

You will provide and be marked on a portfolio of evidence, which will include your own notes on:

1. The suitability of the proposed project design for its the intended purpose function and use.
2. The effects that the development is likely to will have on the community and on properties in the area locality.
3. The effects on the natural environment, including the ways in which and how the design will help to assist in protecting the environment and ensuring sustainability.
4. The ways in which the health, safety, security, social integration and general well being of the community can be improved by changes to the built environment.

You must also include in your portfolio photographs of the proposed site(s), in support of your notes.

You should also include in your evidence copies of the brief and the agreed schedule, together with notes showing how you have used these to regularly review, evaluate and adjust your quality of work, and your progress in completing the task.

Your notes must be clearly readable, and preferably word-processed. Should you need to provide any drawings or sketches then they should be no larger than A3, and should be included in your portfolio. Each page of your portfolio should be numbered and include the following information; candidate name, candidate number, centre name and centre number.

Should you need to provide any drawings or sketches, then they should be no larger than A3 and should be incorporated into your portfolio. Each page of the portfolio should be numbered and include the following information: candidate name; candidate number; centre name; and centre number.

Task Two

You are a to take the role of a recruitment consultant, working in the recruitment sector, and your specialist area is the construction industry

You have been approached by a government agency, and asked to produce some advertising materials to encourage young people to consider a career in the 'value and use' sector of the construction industry.

To do this, you will first need to research the jobs and careers within the areas of craft, technical, supervisory and management, of people those who value and maintain the built environment' You will also need to think about consider the roles of the relevant professional institutions. Your advertising material should reflect all of these.

The material(s) that you produce must be included in your portfolio, and could take one of a variety of different forms, including for example: paper based outcomes such as posters and leaflets; a recording for a radio promotional feature; a video recording for a television promotional feature; or even a web- site. You will be marked only on the content of the promotional material, and not on the form of your materials. You should include in your portfolio copies of any relevant observation records or witness statements.

Assessment

The evidence requirements are shown in the assessment grid, and each Assessment Focus relates directly to one of the Learning outcomes of this unit. **You should concentrate your efforts on these requirements in order to help maximise your final marks for this unit.**

The maximum marks available for each Assessment Focus represent its relative significance within the unit. The assessment grid will be used by your tutor when marking your completed work. Your tutor will decide which mark band should be applied to your work for each area of assessment focus. This will be on the principle of best fit, for example, work may be classified as band mark 2 despite aspects of the work falling into band 1 and other areas of work falling into band mark 3.

To improve your marks and move across the mark bands from band 1 to band 3 your work will have to generally increase in depth, breadth and attention to detail and quality, with some clear description as you move across the mark bands.

To improve your marks and move across the mark bands from band 1 to band 3 your work will have to generally increase in depth and complexity with more description, reasoning and justification as you move across the mark bands.

To improve your marks and move across the mark bands from band 1 to band 3 your work will have to generally increase in depth, breadth and attention to detail and quality, with some description and explanation as you move across the mark bands.

Assessment Grid

Assessment Focus	Band 1	Band 2	Band 3	Mark awarded
5.1 Understand the basic function and use of structures	Identifies major factors relating to the suitability and impact of a specified simple structure. **(0-8)**	Briefly describes most of the major factors relating to the suitability and impact of a specified simple structure. **(9-15)**	Describes all of the major factors relating to the suitability and impact of a specified simple structure. **(16-20)**	**20**
5.2 Understand How the Built environment provides a feeling of society and well-being	Identifies major factors that affect how the built environment provides a feeling of society and well being, for a specified simple structure.	Briefly describes most of the major factors that affect how the built environment provides a feeling of society and well being, for a specified simple structure.	Describes all of the major factors that affect how the built environment provides a feeling of society and well being, for a specified simple structure.	
	(0-5)	**(6-10)**	**(10-12)**	**12**

5.3 Know how the built environment is maintained	Identifies sustainable practices relating to the maintenance and protection of the built environment, for a specified simple structure. **(0-5)**	Briefly describes a range of sustainable practices relating to the maintenance and protection of the built environment, for a specified simple structure. **(6-8)**	Describes a broad range of sustainable practices relating to the maintenance and protection of the built environment, for a specified simple structure. **(9-13)**	**13**
5.4 Understand the job roles, career opportunities and progression routes, and the importance of team work, for those who value and maintain the built environment	Identifies some of the job roles, teamwork aspects, career opportunities and progression routes available to those who value and maintain the built environment. Identifies relevant professional institutions. **(0-5)**	Briefly describes a range of job roles, teamwork aspects, career opportunities and progression routes available to those who value and maintain the built environment. Briefly describes relevant professional institutions. **(6-10)**	Describes broad a range of job roles, teamwork aspects, career opportunities and progression routes available to those who value and maintain the built environment. Describes the relevant professional institutions. **(11-15)**	**15**
			Total marks	**60**

Assessment Guidance

Approaches to Assessment

There are a number of assessment tasks detailed above and it should be noted that there is no requirement for candidates to undertake any design work. It is the centre's responsibility to provide appropriate working drawings and details that allow the candidate to complete a focused investigative task.

Some assessment elements can be assessed directly by the tutor during practical activities. If this approach is used suitable evidence would be observation records or witness statements. Guidance on the use of these is provided on the Edexcel website.

The assessment in this unit is covered by two activities.

The first of theses addresses Assessment Focuses 1,2 and 3, and requires the learner to undertake an investigation into the suitability and impact on the community of a proposed new building or structure. Evidence for this activity will be contained within a portfolio of planning and investigation work. The portfolio should include plans and documentation and any photographic evidence. Centres are required to ensure that sufficient high resolution photographs are provided to confirm the quality of a candidate's work.

The second activity relates to the jobs and careers available to those working in the value, maintenance and support areas of the built environment and a number of alternative ways of providing assessment evidence are outlined above. When evidence is in the form of a recorded outcome eg radio advertisement or TV advertisement, or an ICT based outcome eg web-site, then a candidate's work must be submitted for moderation in either CD or DVD form.

Where group activities are used, tutors will need to ensure that individual learners are provided with equal experiential and assessment opportunities.

Applying Marks in the Assessment Grid

The evidence requirements are shown in the assessment grid. The general principle is to decide which mark is to be applied to the work for each area of assessment focus.
This will be on the principle of best fit and, for example, work may be classified as mark band 2 despite aspects of the work falling into mark band 1 and other areas of the work falling into mark band 3.

If the candidate does all that is required in a band for an assessment focus then he/ she will be awarded the full available marks for that band. Also if a candidate does more on one aspect of work for an assessment focus than required by a band then he/she may be able to be awarded marks from the bottom of the higher band. Likewise if he/she has done less than is required in any aspect of work for an assessment focus, or indeed omitted an aspect, then the mark may move down the band.

Assessment of work does not follow a 'hurdle' approach final grades are awarded on the principle of compensation and are completely separate from the individual assessment focus. Low marks in one focus area will be offset by higher marks in other areas as the awarding of grades is based on an overall aggregate marks obtained across all focus areas. It may therefore be possible, depending on the weighting of the assessment focus, for a learner to pass a unit even if zero marks are awarded for one focus area within the unit.

The evidence requirements are shown in the assessment grid. The following table provides guidance on the expectations within the Assessment Grid in respect of the use of specific words. **Further guidance on this, together with guidance to assessors on the 'benchmark' standards of learner work expected for each mark band, is available in the Edexcel C&BE Principal Learning Tutor Support Materials.**

Word	Meaning
(example)s	at least two significant elements are addressed
some	More than two significant elements, but less than a majority, are addressed.
most	a majority of significant elements are addressed
all	all of the significant elements are addressed
a range	embraces representative, significant, elements partly across the breadth of the topic
a wide range	embracing representative, significant, elements fully across the breadth of the topic.
states	provides a simple statement of fact, without further elaboration
identifies	provides a simple naming, eg in the form of a list.
briefly describes	provides a description that just captures most of the key aspects, but includes minimal elaboration
describes	provides a description that just captures all of the key aspects and includes some elaboration
describes clearly	provides a rounded and well-structured description that fully captures and includes elaboration on all of the key aspects

examine	performs an inspection or logical questioning of relevant aspects
explain	provides an account of underlying reasons or aspects
compare	performs a comparison between two (or more) items or aspects
evaluate	performs an in-context appraisal against relevant criteria
analyse	performs a detailed examination of a topic
justify	demonstrates the validity or appropriateness of a topic

In allocating marks, the general principle is to decide which mark is to be applied to the work for each area of assessment focus.
The evidence requirements are shown in the assessment grid. The general principle is to decide which mark is to be applied to the work for each area of assessment focus.

- This will be on the principle of best fit and, for example, work may be classified as mark band 2 despite aspects of the work falling into mark band 1 and other areas of the work falling into mark band 3.
- Assessment of work does NOT follow a 'hurdle' approach, whereby the Assessor cannot award marks from the next band if one item for an assessment focus from a lower band has been omitted, regardless of the quality of the rest of the work for that assessment focus
- If the learner does all that is required in a band for an assessment focus then he/ she normally will be awarded the full available marks for that band.
- If a candidate does more on one aspect of work for an assessment focus than required by a band then he/she may be able to be awarded marks from the bottom of the higher band.
- Likewise if he/she has done less than is required in any aspect of work for an assessment focus, or indeed omitted an aspect, then the mark may move down within the band.
- Judgements are made on the principle of compensation and are completely separate for the individual assessment focus. Low marks in one focus area will be offset by higher marks in other areas as the awarding of grades is based on an overall aggregate marks obtained across all focus areas. It may therefore be possible, depending on the weighting of the assessment focus, for a learner to pass a unit even if zero marks are awarded for one focus area within the unit.

In general progression across the assessment grid is achieved by identification, selection and description at mark band 1, the addition of explanation and reasoning at mark band 2 and justification and evaluation at mark band 3.

In general, progression across the assessment grid is achieved by: simple identification or statement for at least two elements, and simple use, at mark band 1; and clear description for a wide range of elements, and consistent use, at band 3. Learner additional support and guidance at band 1 may be significant, but at band 3 should be minimal.

Marks should take into consideration the quality of work produced by a student. For example, a learner may be required to 'describe clearly a range of … and explain the impact they have on …' If their response covers an appropriate range and this is accompanied by a clear description of each item in the range, the assessor should be considering a mark in the upper half of the relevant band. If there is also appropriate explanation of the impacts then full marks for that band should be awarded. If, on the other hand, the explanation is thin then marks are likely to be held near the middle of the band. If the student covers an appropriate

range but the description is a bit thin, then the assessor should be considering a mark at the lower end of the band. Good explanation of the impacts will pull it up towards the middle.

In general, progression across the assessment grid is achieved by: simple identification, use, and statement, at mark band 1; and the addition of further examples, selection and consistent use, and brief descriptions or explanations, at mark band 3. Learner additional support and guidance at band 1 may be significant, but at level 3 should be minimal.

For each assessment focus, assessors should clearly indicate in their marking the extent to which the learner's marks have been adjusted to reflect a level of learner guidance, supervision or autonomy that is considered to be outside of that which might reasonably be expected at the level.

Learner guidance, supervision and autonomy

Tutors must ensure that all learners are provided with equitable and appropriate levels of initial guidance, feedback and supervision for the assessment tasks. However, the levels of ongoing support and guidance needed and the degree of autonomy demonstrated by individual learners should be borne in mind when applying marks in the assessment grid, together with the final quality of the learner work.

Where group work is used, tutors must ensure that the marks allocated to individual learners accurately represents their personal level of participation and achievement.

Guidance for teaching this unit

General

Tutors delivering on this unit have opportunities to use a wide range of techniques. Lectures discussions, seminar presentations, independent learning, research, site visits, supervised investigations, use of the internet or library resources and the use of personal and / or industrial experience are all suitable. Delivery should stimulate, motivate, educate and enthuse the learner. Visiting speakers could add to the relevance of the subject. Throughout the delivery learners must have the opportunity to engage in applied sector relevant learning and assessment activities.

Planning and reviewing are critical to experiential learning. It is essential that learners are engaged in the iterative and formative process of planning, doing and reviewing and, most importantly, doing again, to enable them to experience first hand how iteration can improve outcomes. Reviewing must be a formative and developmental process. Learners must be encouraged and provided with opportunities to plan and reflect on their experience, draw out and articulate lessons learned and apply their learning to new activities or situations.

Classroom Activities

Most students will not have visited a construction site before starting this course and during introductory lessons would benefit from the use of construction drawings linked to photographs of the actual construction carried out on site. These should ideally be ICT based on CD or DVD ROM so as to allow their use in a variety of appropriate ways.

The investigations detailed in the 'Site/Office Visits' section (see below) will form the focus of many classroom activities.

Sample materials should be available and where possible, on permanent display within the classroom to enable pupils to become readily familiar with their identification, use and application.

Wall displays featuring architects' drawings and photographs of construction work will help to promote an effective learning environment and will focus students on construction and the vocational approach of the course.

The use of visiting speakers and role models from industry will help to promote and facilitate many classroom activities within a vocational context. This support could provide the introduction to a task or investigation, act as an ongoing resource or in an evaluative role at the end of the activity.

Where group work is used, tutors must ensure that individual learners are provided with equal experiential and assessment opportunities.

Industry Links

The use of industry is essential to the establishment of an applied vocational context within the delivery of the course content. In the current industrial climate most medium to large construction companies are actively seeking links with schools, especially with a view to the recruitment of trainees and future graduates. Centres should actively seek links with such companies and establish what help they will be able to provide. Links or assistance could include:

- The use of visiting speakers to promote recruitment onto the diploma programme.
- Possible sponsorship of the centre's construction programme.
- Provision of materials or samples.
- Loan of or assistance with specialist equipment.
- Access to specifications, construction drawings, quality control documentation and health & safety documentation.
- Assistance with the development of links with other sources of help including, material suppliers, architects, clerk of works consultancies, trade associations, consultants etc.
- Sponsorship of individual students and direct recruitment onto modern apprenticeships and training schemes.
- The provision of focussed site visits.
- Access to visiting speakers who will put students' learning into industrial context. Specific content level and expected outcomes will have to be discussed in advance.

Site/Office Visits

Whilst site visits will aid the students' general awareness and perceptions of on site construction activities, it is nevertheless essential that all site visits have a specific focus. Preparation and follow up activities should be prepared and discussed with the company well in advance of the visit. It will probably be necessary to have copies of drawings or other documentation in advance of the visit. Activities could include:

- An investigation of maintenance procedures in use on site.
- An investigation into the different types of materials used on the project and their incorporation within the main elements of substructure and superstructure with a focus on the impact of design team decisions on future maintenance issues.
- The use of materials, for example brickwork or timber based products, as a feature or aesthetic element within construction.
- An investigation into how suitable specifications can minimise the need for maintenance.
- An investigation into the architectural detailing of installed construction components.
- How stakeholders and the wider community are supported and informed throughout the construction process.
- Observation of sustainable maintenance practices.
- Observation and use of product libraries and databases.
- An investigation or research into the planning process and the impact of legislation on the design team and future maintenance issues.
- Interviews with members of the facilities management/property services team to consider their approach to sustainability within construction activities.
- Research into construction details and specifications that are considered robust within a local context.

It may be that within one site visit different groups will investigate different 'on site' elements or operations.

It is essential that school and LEA guidelines and procedures are strictly adhered to for all visits and that teachers visit the site in advance to carry out risk assessments and agree specific health and safety requirements with the company's health and safety officer. Pupils, in small groups, should be supervised and accompanied at all times during a site visit.

Sustainability

Tutors should use every opportunity to develop a learners' understanding and appreciation of sustainability and its wide ranging impact upon modern construction. These impacts can be identified in many areas, including site and management practice, built structure design and characteristics and natural and environmental issues. Sustainability is a very important issue in the modern world of construction, and tutors/learners should utilise site visits and visiting speakers to reinforce and further their knowledge and understanding of current practice.

Learning Scenarios

In line with the vocational requirements of this course, all learning scenarios should, wherever possible, be placed in a realistic industrial context. Examples of this requirement are detailed in the above sections.

ConstructionSkills

Construction Skills is a resource to be used within schools, employing trained schools liaison officers in all regions. They publish a list of activities and organise competitions and events to stimulate and encourage students to become interested and involved in construction.

Exhibition Visits

Visits to exhibitions such as the Building Exhibition (Interbuild) will benefit all students and will allow them to view modern construction practices and become aware of new products and systems as they become available. (This is held annually at the National Exhibition Centre during the autumn term).

Health and Safety

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all workshops and activity areas, and risk assessments must be undertaken prior to practical activities. Centres are advised to read the delivery and approach section on page 16 and annexe C (PUWER) of the specification.

Opportunities for developing and confirming Personal Learning and Thinking Skills

Tutors should note that the development and ongoing enhancement in learners of Personal Learning and Thinking skills (PLTS) underpins the Diploma concept. This Principal Learning unit should be treated as a vehicle through which these important generic skills can be delivered and reinforced, and in a context that is relevant both to the sector and to learner level. Although certain PLTS are identified elsewhere within this unit as an inherent part of the assessment criteria, there are further opportunities to develop and enhance a range of PLTS through various approaches to teaching and learning, and some examples of these are provided below. The use of formative assessment techniques and mentoring to aid learner development in these important personal skill areas is strongly encouraged. Where appropriate, group work may be used to provide further opportunities for developing and providing formative assessment on Team Working and Effective Participation.

Skill	**Where learners are…**
Independent enquirers (AF 5.1, 5.2, 5.3 & 5.4)	Investigating different aspects and functions of the built environment
Creative thinkers (AF 5.4)	Considering the production of promotional materials
Reflective learners (AF 5.1, 5.2, 5.3 & 5.4)	Conducting an impact study or a simple new building (AF 5.1, 5.2) Reviewing own development
Team workers	DescribingConsidering job roles and their interaction (AF 5.4)
Self managers	Conducting an impact study or a simple new building (AF 5.1, 5.2) Planning and organising own work, including research analysis (AF 5.1, 5.2, 5.3 & 5.4)
Effective participators	

Functional skills

This Principal Learning unit should also be treated as a vehicle through which Functional Skills can be reinforced and developed in a context that is relevant both to the sector and to the learner. There may be many opportunities within this unit to do so, and some examples of these are provided below. It is a requirement of the Level 1 Diploma that learners are separately assessed for the Functional Skills at Level 1. The use of formative assessment techniques and mentoring aid learner development in these important skill areas is strongly encouraged.

Skill	**where learners can…**
Mathematics	Interpret results and solutions (AF 1, 2,)
	Draw conclusions in light of the situation (AF 1, 2, 3)
English	Present information/points of view clearly (AF 1, 2, 3 and 4)
ICT	Access, search, select and use ICT information (AF 1, 2, 3 and 4)

Functional Skills – Level 1

Skills	When learners are…
ICT – Use ICT Systems	
Interact with and use ICT systems independently to meet needs	Conducting research and preparing notes. Assembling and managing their e-portfolio
Evaluate their use of ICT systems	Reflecting on their learning
Manage information storage	Conducting research and managing notes. Assembling and managing their e-portfolio
Follow and understand the need for safety and security practices	Conducting research and managing notes. Assembling and managing their e-portfolio
ICT – Find and select information	
Select and use a variety of sources of information independently to meet needs	Conducting research into proposals for a new structure, and into jobs and careers, for their assignment task
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	Conducting research into proposals for a new structure, and into jobs and careers for their assignment task
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose, including:	Producing advertising materials. Assembling and managing their notes. Assembling and managing their e-portfolio
Text and tables	
Images	
Numbers	
Records	
Bring together information to suit content and purpose	Producing advertising materials. Assembling and managing their research. Assembling and managing their e-portfolio
Present information in ways that are fit for purpose and audience	Producing advertising materials. Producing and managing written work. Producing and managing their e-portfolio
Evaluate the selection and use of ICT tools and facilities used to present information	Producing and managing written work. Assembling and managing their e-portfolio

Select and use ICT to communicate and exchange information safely, independently, responsibly and effectively	Producing advertising materials. Assembling and managing their e-portfolio, and when exchanging information with their tutor, peers and others
Skills	When learners are…
Maths	
Understand practical problems in familiar and unfamiliar contexts and situations, some of which are non routine	
Identify and obtain necessary information to tackle the problem	
Select and apply skills in an organised way to find solutions to practical problems for different purposes	
Use appropriate checking procedures at each stage	
Interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations	
English – Speaking and listening	
Take full part in formal and informal discussions/exchanges	Presenting advertising materials. Taking part in discussions with their tutor and peers, in a range of different learning situations
English - Reading	
Read and understand a range of texts	Understanding their assignment brief, and conducting and assimilating research information from various sources
English - Writing	
Write documents to communicate information, ideas and opinions using formats and styles suitable for their purpose and audience	Preparing advertising materials. Preparing and revising their notes and learning assignments, and in written communications with their tutor. Preparing and revising a set of notes for inclusion in their e-portfolio

Wider curriculum mapping

The Edexcel Principal Learning for the Diploma in Construction and the Built Environment provides opportunities for the learner to develop an understanding of spiritual, moral, ethical, social and cultural issues as well as an awareness of environmental issues, European developments, health and safety considerations and equal opportunities issues. Further information on these opportunities is provided in Annexe B of these specifications.

Work experience

All learners undertaking the Diploma are required to undergo a period of work experience that has relevance to the Construction and the Built Environment sector. To enable learners to achieve maximum benefit from their work experience, before and/or after this takes place, tutors should identify opportunities to reflect and incorporate relevant materials and activities into the delivery and assessment of this unit.

Specialist Resources

This unit will can be taught within a traditional classroom environment. Access to construction documentation including exemplar drawings and specifications will be required linked to sites visited and investigations carried out.

Reference materials

Peter Brett - A Building Craft Foundation – Nelson Thornes 2002 – ISBN 07487 6531 X

George Foster – Construction Site Studies Production, Administration and Personnel – Longman 2000 – ISBN 0 582 019710

Des Millward – Construction and the Built Environment – Longman 2003 – ISBN 0582 41883 6

Roy Chudley – Advanced Construction Technology – Longman 2000 – ISBN 0 582 31617 0

CITB – Safety at Work – CITB 2002 – ISBN 1 85751 018

Building Regulations

Various Web-sites

Unit 6: Maintenance of the Built Environment

Principal Learning Unit

Level 1

30 Guided learning hours

(20 hours learning time with approx. 10 hours for assessment).**Internally assessed**

About this Unit

Construction projects can be diverse, and structures adopt many different forms that require different approaches for their construction and maintenance. When working on the design of a structure and determining the materials to be used, the architect will have to take into consideration the needs of the client, together with the function, performance requirements and life expectancy of the structure.

The predicted operating costs of the completed project will be required by the client, and in this unit you will explore these. When a project is completed it should remain in good condition for many years, with the minimum of maintenance. You will gain knowledge and understanding of the principles and practices of basic construction maintenance, and carry out some simple maintenance procedures.

You will explore the causes for a building or structure to deteriorate and provide solutions to minimise defects, failure and maintenance. You will carry out an inspection of a building or structure and record any defects and remedial work required.

Learning outcomes

On completion of this unit a learner should:

6.1 Understand the need for building and structural maintenance, and the importance of good design and workmanship

6.2 Know how to identify and describe a range of common building and structural defects

6.3 Be able to develop and use safe working practices and simple skills for undertaking routine building and structural maintenance operations.

What you need to cover

6.1 Understand the need for building and structural maintenance, and the importance of good design and workmanship.

In this unit you will explore the principles and practice of basic and structural maintenance, including the importance of high-quality workmanship and making repairs in good time. The manufacturers of construction materials predict the life of their products by testing them under extreme conditions (outlined by British Standards). When a building or structure is completed it should remain in good condition for many years, with the minimum of maintenance. You will explore the benefits of good design and good workmanship, including how these can help to extend the life span of the building or structure, and minimise both the use of natural resources and the maintenance requirements of a structure.

6.2 Know how to identify and describe a range of common building and structural defects.

You will learn how to recognise and describe a range of common building and structural defects, such as:

- bad workmanship
- flaking paintwork
- cracked windows
- damaged door fittings
- rotten floorboards
- dripping tap
- defective plaster
- water penetration from various sources
- damp, from various sources
- timber decay and infestation
- sheet weathering
- faulty electrical fittings and equipment

You will draw up a maintenance summary for a building or structure, identifying any defects, likely components requiring maintenance, causes of faults, and briefly describe the remedial work required to restore it.

6.3 Be able to develop and use safe working practices and simple skills for undertaking routine building and structural maintenance operations.

You will develop appropriate skills and apply safe working practices whilst carrying out a basic practical maintenance activity, including:

- the correct use of appropriate PPE
- safe use of access equipment
- use of safe manual-handling techniques
- Observance of health and safety regulations.

QCF unit summary

Outcome Number	Learning Outcome The learner will:	Assessment The learner can:
6.1	Understand the need for building and structural maintenance, and the importance of good design and workmanship	▪ Produce a simple maintenance summary with supporting notes for a specified simple building or structure (IE 2) ▪ Identify the key benefits of maintenance activities, and the importance of good design and workmanship (IE 4).
6.2	Know how to identify and describe a range of common building and structural defects	▪ Identify common defects requiring maintenance, for a specified building or structure ▪ Produce a simple maintenance summary with a set of maintenance requirements describing the required maintenance (IE 6). ▪ Identify common defects requiring maintenance (IE 2).
6.3	Be able to develop and use safe working practices and simple skills for undertaking routine building and structural maintenance operations.	▪ Develop and use simple skills and safe working practice, to complete a routine building maintenance operations task. ▪ Evaluate own experience (RL5) to self-manage improvements (SM2) in own skills and safe-working practice. (RL 2, RL 6, SM 2).

The references in parenthesis indicate the PLTS elements that are naturally embedded within the unit assessment requirements. See page [19] of this specification. Opportunities for developing and enhancing learner PLTS are suggested in a later section of this unit.

How you will be assessed

This unit is suited to activity based assessment and therefore you will be assessed by your tutor. You are expected to present your evidence within an e-portfolio, and this must be constructed so that its contents can be assessed usung 5th generation, or equivalent, web browsers.

Task 1

Your tutor will identify a suitable organisation that is involved in facilities management. This may be a large local employer, a shopping centre, or a sports facility, for example, but it must be of sufficient size to make use of full time facilities management services. You have been asked by the Managing Director of the company to:

Activity A. Survey the facility, and draw up a planned maintenance summary for the building or structure. This can be prepared on a in the form of a pro-forma chart produced by your tutor, and must list show all of the list of items that you believe are in need of maintenance.

Activity B. Produce For each defect that you have found, produce some simple maintenance notes on the defects found, notes, including, (as applicable and for example): the likely cause of the defect; the work required; ; what could happen if the maintenance is not carried out; and, as appropriate: in a timely manner and with good workmanship; the work required; the materials required; risks, including any health and safety issues; the workforce/skills required;, the estimated repair time; the estimated costs including the hire of equipment or specialist services; the disposal of waste, etc. The pro-forma may be used for this.

Activity C. Provide a set of notes describing the key general benefits to the organisation of building and structural maintenance activities, and of good design and workmanship.

The maintenance summary and notes may be entered by you onto a templated document, provided by your tutor. Your notes must be clearly readable, and preferably word-processed. Sand should you need to provide any drawings or sketches then they should be no larger than A3 and should be included in your portfolio. Each page of your portfolio should be numbered and include the following information; candidate name, candidate number, centre name and centre number.

AND

Task 2

While working in a workshop, you will be observed applying safe working practices whilst carrying out a routine practical maintenance activity on a defective part, for example –

- Changing a tap washer
- Replacing a door lock or other door fitting.
- Re-pointing brickwork.
- Replacing a faulty electrical fitting.

On completing this exercise you should produce some notes describing how you have used ongoing personal reflection to continually develop your understanding and skills in this area.

You should include in your portfolio a copy of any relevant observation records or witness statements.

Assessment

The evidence requirements are shown in the assessment grid, and each Assessment Focus relates directly to one of the Learning outcomes of this unit. **You should concentrate your efforts on these requirements in order to help maximise your final marks for this unit.**

The maximum marks available for each Assessment Focus represent its relative significance within the unit. The assessment grid will be used by your tutor when marking your completed work. Your tutor will decide which mark band should be applied to your work for each area of assessment focus. This will be on the principle of best fit, for example, work may be classified as band mark 2 despite aspects of the work falling into band 1 and other areas of work falling into band mark 3.

To improve your marks and move across the mark bands from band 1 to band 3 your work will have to generally increase in depth, breadth and attention to detail and quality, with some clear description as you move across the mark bands.

Within the practical element of this unit you will move across the mark bands by paying greater attention to detail and accuracy and demonstrating increased levels of skill in manipulating tools to produce a practical outcome.

Assessment Grid

Assessment Focus	Band 1	Band 2	Band 3	Mark awarded
6.1 Understand the need for building and structural maintenance, and the importance of good design and workmanship	Identifies some of the key benefits of maintenance activities and of good design and workmanship. **(0-8)**	Briefly describes a range of the benefits of maintenance activities and of good design and workmanship. **(9-15)**	Describes a wide range of the benefits of maintenance activities and of good design and workmanship. **(16-20)**	**20**
6.2 Know how to identify and describe a range of common building and structural defects	Produces a list identifying some of the common defects requiring maintenance, for a specified simple building or structure. Identifies the maintenance requirements for each of these. **(0-8)**	Produces a list identifying most of the common defects requiring maintenance, for a specified simple building or structure. Briefly describes the maintenance requirements for each of these. **(9-15)**	Produces a list identifying all of the common defects requiring maintenance, for a specified simple building or structure. Describes the maintenance requirements for each of these. **(16-20)**	**20**

6.3 Be able to develop and use safe working practices and simple skills for undertaking routine building and structural maintenance operations.	Demonstrates a reasonable level of skills and uses safe working practice, to complete a routine building maintenance operations task satisfactorily. States how own experience and reflection has been used to self-manage the development of their relevant knowledge and skills. **(0-8)**	Demonstrates a good level of skills and uses safe working practice, to complete a routine building maintenance operations task well. Briefly describes how own experience and reflection has been used to self-manage the development of their relevant knowledge and skills. **(9-15)**	Demonstrates high level skills and uses safe working practice, to complete a routine building maintenance operations task to a high standard. Describes how own experience and reflection has been used to self-manage the development of their relevant knowledge and skills. **(16-20)**	**20**
			Total marks	**60**

Assessment Guidance

Approaches to Assessment

Evidence for this unit will be generated by the production of a maintenance schedule, and the completion of a practical assessment sheet.

It is the centre's responsibility to make appropriate arrangements with an organisation that is involved in facilities management, and to ensure the provision of the information, materials and facilities necessary for the completion of the maintenance task.

Some assessment elements, such as the maintenance exercise and the adoption of safe working practices, can be assessed directly by the tutor during practical activities. If this approach is used suitable evidence would be observation records or witness statements. Guidance on the use of these is on the Edexcel website.

The assessment of this unit is covered by two activities. The maintenance schedule and report forms the main part of the assessment of this unit and addresses all of the first three assessment foci. Where group activities are used, e.g. conducting research by visiting sites and interviewing people from industry or the local planning department, tutors will need to ensure that individual learners are provided with equal experiential and assessment opportunities. The second activity addresses assessment focus number four, and requires the learner to complete a simple maintenance activity. An assessment sheet for this must be completed by the tutor, and should include photographic evidence of work in progress and the completed outcome. Where work is 'hidden' or not evident in the completed outcome, for example prepared joints prior to assembly, then photographs showing the preliminary stage should be provided. Centres are required to ensure that sufficient high resolution photographs are provided to confirm the quality of the candidates work.

Applying Marks in the Assessment Grid

The evidence requirements are shown in the assessment grid. The following table provides guidance on the expectations within the Assessment Grid in respect of the use of specific words. **Further guidance on this, together with guidance to assessors on the 'benchmark' standards of learner work expected for each mark band, is available in the Edexcel C&BE Principal Learning Tutor Support Materials.**

Word	Meaning
(example)s	at least two significant elements are addressed
some	More than two significant elements, but less than a majority, are addressed.
most	a majority of significant elements are addressed
all	all of the significant elements are addressed
a range	embraces representative, significant, elements partly across the breadth of the topic
a wide range	embracing representative, significant, elements fully across the breadth of the topic.
states	provides a simple statement of fact, without further elaboration
identifies	provides a simple naming, eg in the form of a list.

briefly describes	provides a description that just captures most of the key aspects, but includes minimal elaboration
describes	provides a description that just captures all of the key aspects and includes some elaboration
describes clearly	provides a rounded and well-structured description that fully captures and includes elaboration on all of the key aspects
examine	performs an inspection or logical questioning of relevant aspects
explain	provides an account of underlying reasons or aspects
compare	performs a comparison between two (or more) items or aspects
evaluate	performs an in-context appraisal against relevant criteria
analyse	performs a detailed examination of a topic
justify	demonstrates the validity or appropriateness of a topic

In allocating marks, the general principle is to decide which mark is to be applied to the work for each area of assessment focus.

- This will be on the principle of best fit and, for example, work may be classified as mark band 2 despite aspects of the work falling into mark band 1 and other areas of the work falling into mark band 3.
- Assessment of work does NOT follow a 'hurdle' approach, whereby the Assessor cannot award marks from the next band if one item for an assessment focus from a lower band has been omitted, regardless of the quality of the rest of the work for that assessment focus
- If the learner does all that is required in a band for an assessment focus then he/ she normally will be awarded the full available marks for that band.
- If a candidate does more on one aspect of work for an assessment focus than required by a band then he/she may be able to be awarded marks from the bottom of the higher band.
- Likewise if he/she has done less than is required in any aspect of work for an assessment focus, or indeed omitted an aspect, then the mark may move down within the band.
- Judgements are made on the principle of compensation and are completely separate for the individual assessment focus. Low marks in one focus area will be offset by higher marks in other areas as the awarding of grades is based on an overall aggregate marks obtained across all focus areas. It may therefore be possible, depending on the weighting of the assessment focus, for a learner to pass a unit even if zero marks are awarded for one focus area within the unit.

In general, progression across the assessment grid is achieved by: simple identification or statement for at least two elements, and simple use, at mark band 1; and clear description for a wide range of elements, and consistent use, at band 3. Learner additional support and guidance at band 1 may be significant, but at band 3 should be minimal.

Marks should take into consideration the quality of work produced by a student. For example, a learner may be required to 'describe clearly a range of … and explain the impact they have on …' If their response covers an appropriate range and this is accompanied by a clear description of each item in the range, the assessor should be considering a mark in the upper

half of the relevant band. If there is also appropriate explanation of the impacts then full marks for that band should be awarded. If, on the other hand, the explanation is thin then marks are likely to be held near the middle of the band. If the student covers an appropriate range but the description is a bit thin, then the assessor should be considering a mark at the lower end of the band. Good explanation of the impacts will pull it up towards the middle.

For each assessment focus, assessors should clearly indicate in their marking the extent to which the learner's marks have been adjusted to reflect a level of learner guidance, supervision or autonomy that is considered to be outside of that which might reasonably be expected at the level.

Learner guidance, supervision and autonomy

Tutors must ensure that all learners are provided with equitable and appropriate levels of initial guidance, feedback and supervision for the assessment tasks. However, the levels of ongoing support and guidance needed and the degree of autonomy demonstrated by individual learners should be borne in mind when applying marks in the assessment grid, together with the final quality of the learner work. Where group work is used, tutors must ensure that the marks allocated to individual learners accurately represents their personal level of participation and achievement.

Guidance for teaching this Unit

General

Tutors delivering this unit have opportunities to use a wide range of techniques. Lectures, discussions, seminar presentations, independent learning, research, site visits, supervised practical, use of internet or library resources and use of personal and/or industrial experience are all suitable. Delivery should stimulate, motivate, educate, and enthuse the learner. Visiting expert speakers could add to the relevance of the subject. Throughout the delivery learners must have the opportunity to engage in applied and sector relevant learning and assessment activities.

Planning and reviewing are critical to experiential learning. It is essential that learners are engaged in the iterative and formative process of planning, doing and reviewing and, most importantly, doing again, to enable them to experience first hand how iteration can improve outcomes. Reviewing must be a formative and developmental process. Learners must be encouraged and provided with opportunities to plan and reflect on their experience, draw out and articulate lessons learned and apply their learning to new activities or situations.

Practical Activities

It is anticipated that most centres will have to work in partnership with an external provider of training to practice applied vocational skills to complete the practical task. Some centres may have a suitable external or covered area and will be able to import craft trainers for specific lessons, whilst others will find it necessary to use the facilities of their local FE provider. It should however be noted that this course is essentially a taster course and in the limited time available students will not be expected to develop skills to occupational competencies or commercially acceptable standards.

Classroom Activities

Most students will not have visited a construction site before starting this course and during introductory lessons would benefit from the use of construction drawings linked to photographs of the actual construction carried out on site. These should ideally be ICT based on CD or DVD ROM so as to allow their use in a variety of appropriate ways.
The investigations detailed in the 'Site/Office Visits' section (see below) will form the focus of many classroom activities.
Sample materials should be available and where possible, on permanent display within the classroom to enable pupils to become readily familiar with their identification, use and application.
Wall displays featuring architects' drawings and photographs of construction work will help to promote an effective learning environment and will focus students on construction and the vocational approach of the course.
The use of visiting speakers and role models from industry will help to promote and facilitate many classroom activities within a vocational context. This support could provide the introduction to a task or investigation, act as an ongoing resource or in an evaluative role at the end of the activity.
Where group work is used, tutors must ensure that individual learners are provided with equal experiential and assessment opportunities.

Industry Links

The involvement of industry is essential to the establishment of a real world context within the delivery of the course content. In the current industrial climate most medium to large construction companies are actively seeking links with schools, especially with a view to the recruitment of trainees and future graduates. Centres should actively seek links with such companies and establish what help they will be able to provide. Links or assistance could include:

- The use of visiting speakers to promote recruitment onto the diploma programme.
- Possible sponsorship of the centre's construction programme.
- Provision of materials or samples.
- Loan of or assistance with specialist equipment.
- Access to specifications, construction drawings, quality control documentation and health & safety documentation.
- Assistance with the development of links with other sources of help including, material suppliers, architects, clerk of works consultancies, trade associations, consultants etc.
- Sponsorship of individual students and direct recruitment onto modern apprenticeships and training schemes.
- The provision of focussed site visits.
- Access to visiting speakers who will put students' learning into industrial context. Specific content level and expected outcomes will have to be discussed in advance.

Site/Office Visits

Whilst site visits will aid the students' general awareness and perceptions of on site construction activities, it is nevertheless essential that all site visits have a specific focus. Preparation and follow up activities should be prepared and discussed with the company well in advance of the visit. It will probably be necessary to have copies of drawings or other documentation in advance of the visit. Suitable activities could include:

- An investigation of maintenance procedures in use on site
- An investigation into the different types of materials used on the project and their incorporation within the main elements of substructure and superstructure with a focus on the impact of design team decisions on future maintenance issues.
- An investigation into how suitable specifications can minimise the need for maintenance.
- An investigation into the architectural detailing of installed construction components and the maintenance implications.
- Observation of sustainable maintenance practices.
- Observation and use of product libraries and databases.
- An investigation or research into the planning process and the impact of legislation on the design team and future maintenance issues.
- Interviews with members of the facilities management/property services team to consider their approach to sustainability within construction activities.
- Research into construction details and specifications that are considered robust within a local context.
- An investigation into the maintenance requirements relating to a building or structure of historic interest, eg a church or municipal building.
- An investigation into the maintenance of installed construction components.

It may be that within one site visit different groups will investigate different 'on site' elements or operations.

It is essential that school and LEA guidelines and procedures are strictly adhered to for all visits and that teachers visit the site in advance to carry out risk assessments and agree specific health and safety requirements with the company's health and safety officer. Pupils, in small groups, should be supervised and accompanied at all times during a site visit.

Sustainability

Tutors should use every opportunity to develop a learners' understanding and appreciation of sustainability and its wide ranging impact upon modern construction. These impacts can be identified in many areas, including site and management practice, built structure design and characteristics and natural and environmental issues. Sustainability is a very important issue in the modern world of construction, and tutors/learners should utilise site visits and visiting speakers to reinforce and further their knowledge and understanding of current practice.

Learning Scenarios

In line with the vocational requirements of this course, all learning scenarios should, wherever possible, be placed in a realistic industrial context. Examples of this requirement are detailed in the above sections.

ConstructionSkills

Construction Skills is a resource to be used within schools, employing trained schools liaison officers in all regions. They publish a list of activities and organise competitions and events to stimulate and encourage students to become interested and involved in construction.

Exhibition Visits

Visits to exhibitions such as the Building Exhibition (Interbuild) will benefit all students and will allow them to view modern construction practices and become aware of new products and systems as they become available. (This is held annually at the National Exhibition Centre during the autumn term).

Health and Safety

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all workshops and activity areas, and risk assessments must be undertaken prior to practical activities. Centres are advised to read the delivery and approach section on page [15] and Annexe C(PUWER) of the specification.

Opportunities for developing and confirming Personal Learning and Thinking Skills

Tutors should note that the development and ongoing enhancement in learners of Personal Learning and Thinking skills (PLTS) underpins the Diploma concept. This Principal Learning unit should be treated as a vehicle through which these important generic skills can be delivered and reinforced, and in a context that is relevant both to the sector and to learner level. Although certain PLTS are identified elsewhere within this unit as an inherent part of the assessment criteria, there are further opportunities to develop and enhance a range of PLTS through various approaches to teaching and learning, and some examples of these are provided below. The use of formative assessment techniques and mentoring to aid learner development in these important personal skill areas is strongly encouraged. Where appropriate, group work may be used to provide further opportunities for developing and providing formative assessment on Team Working and Effective Participation.

Skill	**Where learners are…**
Independent enquirers (AF 6.1, 6 2)	Considering and researching maintenance requirements
Creative thinkers	
Reflective learners	Reviewing development of understanding and skills for a practical task (AF 6.3) Reviewing own development (AF 6.1, 6.2, 6.3)
Team workers	

Self managers	Developing own skills and planning / organising the practical maintenance activity (AF 6.3)
	Planning and organising own work, including research analysis and skill development (AF 6.1, 6.2, 6.3)
Effective participators	

Functional skills

This Principal Learning unit should also be treated as a vehicle through which Functional Skills can be reinforced and developed in a context that is relevant both to the sector and to the learner. There are many opportunities within this unit to do so, and some examples of these are provided below. It is a requirement of the Level 1 Diploma that learners are separately assessed for Functional Skills at Level 1. The use of formative assessment techniques and mentoring to aid learner development in these important skill areas is strongly encouraged.

Functional Skills – Level 1

Skills	When learners are…
ICT – Use ICT Systems	
Interact with and use ICT systems independently to meet needs	Conducting research and preparing notes. Assembling and managing their e-portfolio
Evaluate their use of ICT systems	Reflecting on their learning
Manage information storage	Conducting research and managing notes. Assembling and managing their e-portfolio
Follow and understand the need for safety and security practices	Conducting research and managing notes. Assembling and managing their e-portfolio
ICT – Find and select information	
Select and use a variety of sources of information independently to meet needs	Conducting research into building maintenance for their assignment task
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	Conducting research into building maintenance for their assignment task
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose, including:	Completing a pro-forma survey report using ICT. Assembling and managing their notes. Assembling and managing their e-portfolio
Text and tables	
Images	
Numbers	
Records	
Bring together information to suit content and purpose	Assembling and managing their research. Assembling and managing their e-portfolio
Present information in ways that are fit for purpose and audience	Producing and managing written work. Producing and managing their e-portfolio
Evaluate the selection and use of ICT tools and facilities used to present information	Producing and managing written work. Assembling and managing their e-portfolio
Select and use ICT to communicate and exchange information safely, independently, responsibly and effectively	Assembling and managing their e-portfolio, and when exchanging information with their tutor, peers and others

Skills	When learners are…
Maths	
Understand practical problems in familiar and unfamiliar contexts and situations, some of which are non routine	
Identify and obtain necessary information to tackle the problem	
Select and apply skills in an organised way to find solutions to practical problems for different purposes	
Use appropriate checking procedures at each stage	
Interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations	
English – Speaking and listening	
Take full part in formal and informal discussions/exchanges	Reflecting with others on their learning experiences. Taking part in discussions with their tutor and peers, in a range of different learning situations
English - Reading	
Read and understand a range of texts	Understanding their assignment brief, and conducting and assimilating research information from various sources
English - Writing	
Write documents to communicate information, ideas and opinions using formats and styles suitable for their purpose and audience	Preparing and revising their notes and learning assignments, and in written communications with their tutor. Preparing and revising a set of notes for inclusion in their e-portfolio

Wider curriculum mapping

The Edexcel Principal Learning for the Diploma in Construction and the Built Environment provides opportunities for the learner to develop an understanding of spiritual, moral, ethical, social and cultural issues as well as an awareness of environmental issues, European developments, health and safety considerations and equal opportunities issues. Further information on these opportunities is provided in Annexe B of these specifications.

Work experience

All learners undertaking the Diploma are required to undergo a period of work experience that has relevance to the Construction and the Built Environment sector. To enable learners to achieve maximum benefit from their work experience, before and/or after this takes place, tutors should identify opportunities to reflect and incorporate relevant materials and activities into the delivery and assessment of this unit.

Specialist Resources

This unit will require specialist workshop facilities appropriate to the selected practical maintenance task.

Reference materials

Peter Brett - A Building Craft Foundation – Nelson Thornes 2002 – ISBN 07487 6531 X

George Foster – Construction Site Studies Production, Administration and Personnel – Longman 2000 – ISBN 0 582 019710

Des Millward – Construction and the Built Envioronment – Longman 2003 – ISBN 0582 41883 6

Chudley R and Greeno R – Construction Technology – 4th Edition _ Pierce Prentice hall 2005 – ISBN 0131286420

CITB – Safety at Work – CITB 2002 – ISBN 1 85751 018 6

Building Regulations

Various Web-sites

Unit 7: Modern Methods of Construction

Principal Learning Unit

Level 1

30 Guided learning hours

(20 hours learning time with approx. 10 hours for assessment) Internally assessed

About this Unit	As technology advances new cost effective methods and systems of working are introduced. In this unit, you will gain knowledge and understanding of modern methods of construction and their impact, as compared to the traditional forms of construction. You will investigate a range of methods and techniques designed to save time, reduce costs and increase productivity.

Learning outcomes

On completion of this unit a learner should:

7.1 Know about traditional construction methods

7.2 Understand the alternative methods of construction

7.3 Be able to identify key factors influencing speed, quality cost and sustainability of construction methods, and select a construction method.

What you need to cover

7.1	Know about traditional construction methods	You will explore the traditional forms of construction e.g. brick building, use of slag blocks, cavity walls, plaster and lath, multi coat plaster finishes, use of slate, solder type copper fittings and fixed partitioning, and how they have been replaced by modern methods of construction such as pre-fabricated buildings and structures, steel/timber frame buildings, plasterboards, dry lining, curtain walling, thermal blocks, push-fit plastic plumbing fittings. You will also explore how these traditional construction practices relate to modern construction techniques.
7.2	Understand the alternative methods of construction	You will come to understand the benefits of modern construction methods in terms of speed, quality, cost and sustainability. You will learn about the different types of structure in common use within modern construction including; framed, shell, crosswall and cellular; including how buildings and structures are connected to foundations, methods of erection, the detail of the external envelope.
7.3	Be able to identify key factors influencing speed, quality cost and sustainability of construction methods, and select a construction method	Speed (productivity), quality, cost and sustainability have become very important factors in modern construction. Projects can now be completed using entirely site based 'in-situ' construction methods. You will discover how off-site fabrication can be used to speed up the overall construction process and improve quality control, ranging from the use of trussed rafters, timber frame construction, structural steel frames through to complete buildings and structural solutions having all services and finishes completed whilst still in the factory. You will also look at the erection techniques for pre-fabricated buildings and structures. You will draw up a working schedule and use a Gantt chart to project realistic targets for the construction team to achieve, and produce a simple report identifying the factors influencing construction speed, quality and cost.

QCF unit summary

Outcome Number	Learning Outcome The learner will:	Assessment The learner can:
7.1	Know about traditional construction methods	▪ Identify major aspects of traditional construction methods for a specified low rise simple building or structure (IE 2) ▪ Identify the impact of these on the design and building processes (IE 4)
7.2	Understand the alternative methods of construction	▪ Identify major aspects of modern construction methods for a specified simple low rise building or structure (IE 2) ▪ Identify the impact of these on the design and building processes (IE 4)
7.3	Be able to identify key factors influencing speed, quality cost and sustainability of construction methods, and select a construction method	▪ Identify major factors that influence the choice of traditional or alternative modern construction methods, using information (IE 4) provided on the requirements for a specified simple low-rise building or structure (IE 3) ▪ Identify a preferred construction method (CT 1) for a specified simple low-rise building or structure (IE 6, CT 1)

The references in parenthesis indicate the PLTS elements that are naturally embedded within the unit assessment requirements. See page [19] of this specification. Opportunities for developing and enhancing learner PLTS are suggested in a later section of this unit.

How you will be assessed

This unit is suited to activity based assessment and therefore will be assessed by you tutor. You are expected to present your evidence within an e-portfolio, and this must be constructed so that its contents can be assessed usung 5th generation, or equivalent, web browsers.

Your tutor will provide you with the details, including specifications and drawings, of a proposed low rise building or similar structure, eg a garage.

You will take the role of Planning Assistant responsible for the planning of the project. It is your role to plan the work in a way that makes the most efficient and economical use of labour, materials, plant and equipment.

Using your knowledge of traditional and alternative methods of construction, you will:

Activity A. Write a short set of notes summarising the factors influencing the design, speed of erection, quality and cost of these different approaches to constructing the building.

Activity B. Prepare two working schedules, in the form of Gantt charts:
i) for the construction of the building or structure using tradititional methods; and,
ii) for erecting it as a pre-fabricated building or structure; then,

Activity C. State your preferred method of construction, and explain the reasons for your choice.

Your notes must be clearly readable, and preferably word processed and your Gantt charts and any sketches should be no larger than A3, and should be included in your portfolio. Each page of your portfolio should be numbered and include the following information; candidate name, candidate number, centre name and centre number.

Assessment

The evidence requirements are shown in the assessment grid, and each Assessment Focus relates directly to one of the Learning outcomes of this unit. **You should concentrate your efforts on these requirements in order to help maximise your final marks for this unit.**

The maximum marks available for each Assessment Focus represent its relative significance within the unit. The assessment grid will be used by your tutor when marking your completed work. Your tutor will decide which mark band should be applied to your work for each area of assessment focus. This will be on the principle of best fit, for example, work may be classified as band mark 2 despite aspects of the work falling into band 1 and other areas of work falling into band mark 3.

To improve your marks and move across the mark bands from band 1 to band 3 your work will have to generally increase in depth, breadth and attention to detail and quality, with some clear description as you move across the mark bands.

Assessment Grid

Criterion	Band 1	Band 2	Band 3	Mark awarded
7.1 Know about traditional construction methods	Identifies major aspects of traditional construction methods for a specified low rise simple building or structure, and states their impact on the design and building processes. **(0-8)**	Briefly describes most of the major aspects of traditional construction methods for a specified low rise simple building or structure, including their impact on the design and building processes. **(9-15)**	Describes all of the major aspects of traditional construction methods for a specified low rise simple building or structure, including their impact on the design and building processes. **(16-20)**	**20**
7.2 Understand the alternative methods of construction	Identifies major aspects of modern construction methods for a specified simple low rise building or structure, and states their impact on the design and building processes. **(0-8)**	Briefly describes most of the major aspects of modern construction methods for a specified simple low rise building or structure, including their impact on the design and building processes. **(9-15)**	Describes all of the major aspects of modern construction methods for a specified simple low rise building or structure, including their impact on the design and building processes. **(16-20**	**20**
7.3 Be able to identify key factors influencing speed, quality cost and sustainability of construction methods, and select a construction method	Identifies major factors that influence the choice of traditional or alternative modern construction methods for a specified simple low-rise building or structure, and identifies the main features of a preferred construction method.	Briefly describes most of the major factors that influence the choice of traditional or alternative modern construction methods for a specified simple low-rise building or structure, and briefly describes a preferred construction method.	Describes all of the major factors that influence the choice of traditional or alternative modern construction methods for a specified simple low-rise building or structure, and describes a preferred construction method.	
	(0-8)	**(9-15)**	**(16-20)**	**20**

Total marks	**60**

Assessment Guidance

Approaches to Assessment

Evidence for this unit will be contained within a technical report. The report should include the completion of two Gantt charts. Where work is 'hidden' or not evident in the completed outcome, for example any 'field work', then photographs showing the work at a preliminary stage should be provided. Centres are required to ensure that sufficient high resolution photographs are provided to confirm the quality of the candidates work.

There are a number of assessment tasks detailed above and it should be noted that there is no requirement for candidates to undertake any design work. It is the centres responsibility to provide appropriate drawings and details that allow the candidate to complete the report.

The assessment in this unit is covered by one activity. Assessment Focus 1, 2 and 3 relate to the preparation of technical report, including two Gantt charts, for the construction of a single storey building or similar structure using both traditional and modern construction methods. Within the technical report, the candidate should identified their preferred model for this or structure and the reasons why. The report should include Gantt charts, plans and documentation and any photographic evidence.

Applying Marks in the Assessment Grid

The evidence requirements are shown in the assessment grid. The following table provides guidance on the expectations within the Assessment Grid in respect of the use of specific words. **Further guidance on this, together with guidance to assessors on the 'benchmark' standards of learner work expected for each mark band, is available in the Edexcel C&BE Principal Learning Tutor Support Materials.**

Word	Meaning
(example)s	at least two significant elements are addressed
some	More than two significant elements, but less than a majority, are addressed.
most	a majority of significant elements are addressed
all	all of the significant elements are addressed
a range	embraces representative, significant, elements partly across the breadth of the topic
a wide range	embracing representative, significant, elements fully across the breadth of the topic.
states	provides a simple statement of fact, without further elaboration
identifies	provides a simple naming, eg in the form of a list.
briefly describes	provides a description that just captures most of the key aspects, but includes minimal elaboration
describes	provides a description that just captures all of the key aspects and includes some elaboration

describes clearly	provides a rounded and well-structured description that fully captures and includes elaboration on all of the key aspects
examine	performs an inspection or logical questioning of relevant aspects
explain	provides an account of underlying reasons or aspects
compare	performs a comparison between two (or more) items or aspects
evaluate	performs an in-context appraisal against relevant criteria
analyse	performs a detailed examination of a topic
justify	demonstrates the validity or appropriateness of a topic

In allocating marks, the general principle is to decide which mark is to be applied to the work for each area of assessment focus.

- This will be on the principle of best fit and, for example, work may be classified as mark band 2 despite aspects of the work falling into mark band 1 and other areas of the work falling into mark band 3.
- Assessment of work does NOT follow a 'hurdle' approach, whereby the Assessor cannot award marks from the next band if one item for an assessment focus from a lower band has been omitted, regardless of the quality of the rest of the work for that assessment focus
- If the learner does all that is required in a band for an assessment focus then he/ she normally will be awarded the full available marks for that band.
- If a candidate does more on one aspect of work for an assessment focus than required by a band then he/she may be able to be awarded marks from the bottom of the higher band.
- Likewise if he/she has done less than is required in any aspect of work for an assessment focus, or indeed omitted an aspect, then the mark may move down within the band.
- Judgements are made on the principle of compensation and are completely separate for the individual assessment focus. Low marks in one focus area will be offset by higher marks in other areas as the awarding of grades is based on an overall aggregate marks obtained across all focus areas. It may therefore be possible, depending on the weighting of the assessment focus, for a learner to pass a unit even if zero marks are awarded for one focus area within the unit.

In general, progression across the assessment grid is achieved by: simple identification or statement for at least two elements, and simple use, at mark band 1; and clear description for a wide range of elements, and consistent use, at band 3. Learner additional support and guidance at band 1 may be significant, but at band 3 should be minimal.

Marks should take into consideration the quality of work produced by a student. For example, a learner may be required to 'describe clearly a range of … and explain the impact they have on …' If their response covers an appropriate range and this is accompanied by a clear description of each item in the range, the assessor should be considering a mark in the upper half of the relevant band. If there is also appropriate explanation of the impacts then full marks for that band should be awarded. If, on the other hand, the explanation is thin then marks are likely to be held near the middle of the band. If the student covers an appropriate range but the description is a bit thin, then the assessor should be considering a mark at the lower end of the band. Good explanation of the impacts will pull it up towards the middle.

For each assessment focus, assessors should clearly indicate in their marking the extent to which the learner's marks have been adjusted to reflect a level of learner guidance, supervision or autonomy that is considered to be outside of that which might reasonably be expected at the level.

Learner guidance, supervision and autonomy

Tutors must ensure that all learners are provided with equitable and appropriate levels of initial guidance, feedback and supervision for the assessment tasks. However, the levels of ongoing support and guidance needed and the degree of autonomy demonstrated by individual learners should be borne in mind when applying marks in the assessment grid, together with the final quality of the learner work. Where group work is used, tutors must ensure that the marks allocated to individual learners accurately represents their personal level of participation and achievement.

Guidance for teaching this unit

General

Tutors delivering on this unit have opportunities to use a wide range of techniques. Lectures discussions, seminar presentations, independent learning, research, site visits, supervised investigations, use of the internet or library resources and the use of personal and / or industrial experience are all suitable. Delivery should stimulate, motivate, educate and enthuse the learner. Visiting speakers could add to the relevance of the subject. Throughout the delivery learners must have the opportunity to engage in applied sector relevant learning and assessment activities.

Planning and reviewing are critical to experiential learning. It is essential that learners are engaged in the iterative and formative process of planning, doing and reviewing and, most importantly, doing again, to enable them to experience first hand how iteration can improve outcomes. Reviewing must be a formative and developmental process. Learners must be encouraged and provided with opportunities to plan and reflect on their experience, draw out and articulate

Classroom Activities

Most students will not have visited a construction site before starting this course and during introductory lessons would benefit from the use of construction drawings linked to photographs of the actual construction carried out on site. These should ideally be ICT based on CD or DVD ROM so as to allow their use in a variety of appropriate ways.
The investigations detailed in the 'Site/Office Visits' section (see below) will form the focus of many classroom activities.
Sample materials should be available and where possible, on permanent display within the classroom to enable pupils to become readily familiar with their identification, use and application.
Wall displays featuring architects' drawings and photographs of construction work will help to promote an effective learning environment and will focus students on construction and the vocational approach of the course.
The use of visiting speakers and role models from industry will help to promote and facilitate many classroom activities within a vocational context. This support could provide the introduction to a task or investigation, act as an ongoing resource or in an evaluative role at the end of the activity.

Where group work is used, tutors must ensure that individual learners are provided with equal experiential and assessment opportunities.

Industry Links

The use of industry is essential to the establishment of an applied vocational context within the delivery of the course content. In the current industrial climate most medium to large construction companies are actively seeking links with schools, especially with a view to the recruitment of trainees and future graduates. Centres should actively seek links with such companies and establish what help they will be able to provide. Links or assistance could include:

- The use of visiting speakers to promote recruitment onto the diploma programme.
- Possible sponsorship of the centre's construction programme.
- Provision of materials or samples.
- Loan of or assistance with specialist equipment.
- Access to specifications, construction drawings, quality control documentation and health & safety documentation.
- Assistance with the development of links with other sources of help including, material suppliers, architects, clerk of works consultancies, trade associations, consultants etc.
- Sponsorship of individual students and direct recruitment onto modern apprenticeships and training schemes.
- The provision of focussed site visits.
- Access to visiting speakers who will put students' learning into industrial context. Specific content level and expected outcomes will have to be discussed in advance.

Site/Office Visits

Whilst site visits will aid the students' general awareness and perceptions of on site construction activities, it is nevertheless essential that all site visits have a specific focus. Preparation and follow up activities should be prepared and discussed with the company well in advance of the visit. It will probably be necessary to have copies of drawings or other documentation in advance of the visit. Activities could include:

- An investigation of quality control procedures in use on site.
- An investigation into the different types of materials in use on site and their use within the main elements of substructure, superstructure, external works and drainage.
- An investigation into how materials are handled and stored on site.
- An investigation into the use of offsite fabrication techniques, and how these can speed the production process.
- Interviews with members of the facilities management/property services team to consider their approach to sustainability within construction activities.
- An investigation of on site wastage and the procedures adopted to minimise waste.
- An investigation into the architectural detailing of installed construction components
- An investigation into setting out and dimensional tolerance during practical activities.
- Carry out an observation on the safe use of tools, plant and equipment.
- The use of materials, for example brickwork or timber based products, as a feature or aesthetic element within construction.
- Observation of sustainable maintenance practices.
- Observation and use of product libraries and databases.

It may be that within one site visit different groups will investigate different 'on site' elements or operations.

It is essential that school and LEA guidelines and procedures are strictly adhered to for all visits and that teachers visit the site in advance to carry out risk assessments and agree specific health and safety requirements with the company's health and safety officer. Pupils, in small groups, should be supervised and accompanied at all times during a site visit.

Sustainability

Tutors should use every opportunity to develop a learners' understanding and appreciation of sustainability and its wide ranging impact upon modern construction. These impacts can be identified in many areas, including site and management practice, built structure design and characteristics and natural and environmental issues. Sustainability is a very important issue in the modern world of construction, and tutors/learners should utilise site visits and visiting speakers to reinforce and further their knowledge and understanding of current practice.

Learning Scenarios

In line with the vocational requirements of this course, all learning scenarios should, wherever possible, be placed in a realistic industrial context. Examples of this requirement are detailed in the above sections.

ConstructionSkills

Construction Skills is a resource to be used within schools, employing trained schools liaison officers in all regions. They publish a list of activities and organise competitions and events to stimulate and encourage students to become interested and involved in construction.

Exhibition Visits

Visits to exhibitions such as the Building Exhibition (Interbuild) will benefit all students and will allow them to view modern construction practices and become aware of new products and systems as they become available. (This is held annually at the National Exhibition Centre during the autumn term).

Health and Safety

Health, safety and welfare issues are paramount and should be strictly reinforced through close supervision of all workshops and activity areas, and risk assessments must be undertaken prior to practical activities. Centres are advised to read the delivery and approach section on page [15] and annexe C(PUWER) of the specification.

Opportunities for developing and confirming Personal Learning and Thinking Skills

Tutors should note that the development and ongoing enhancement in learners of Personal Learning and Thinking skills (PLTS) underpins the Diploma concept. This Principal Learning unit should be treated as a vehicle through which these important generic skills can be delivered and reinforced, and in a context that is relevant both to the sector and to learner level. Although certain PLTS are identified elsewhere within this unit as an inherent part of the assessment criteria, there are further opportunities to develop and enhance a range of PLTS through various approaches to teaching and learning, and some examples of these are provided below. The use of formative assessment techniques and mentoring to aid learner development in these important personal skill areas is strongly encouraged. Where appropriate, group work may be used to provide further opportunities for developing and providing formative assessment on Team Working and Effective Participation.

Skill	Where learners are…
Independent enquirers (AF 7.1 and 7.2)	Investigating traditional and modern construction methods
Creative thinker	Identifying a preferred construction approach for a building or structure (AF7.3).
Reflective learners	Reviewing own development (AF 7.1, 7.2, 7.3)
Team workers	
Self managers	Reviewing own development (AF 7.1, 7.2, 7.3)
Effective participators	

Functional skills

The Principal Learning unit should also be treated as a vehicle through which Functional Skills can be reinforced and developed in a context that is relevant both to the sector and to the learner. There may be many opportunities within this unit to do so, and some examples of these are provided below. It is a requirement of the Level 1 Diploma that learners are separately assessed for the Functional Skills at Level 1. The use of formative assessment techniques and mentoring aid learner development in these important skill areas is strongly encouraged.

Functional Skills – Level 1

Skills	When learners are…
ICT – Use ICT Systems	
Interact with and use ICT systems independently to meet needs	Conducting research and preparing notes. Assembling and managing their e-portfolio
Evaluate their use of ICT systems	Reflecting on their learning
Manage information storage	Conducting research and managing notes. Assembling and managing their e-portfolio
Follow and understand the need for safety and security practices	Conducting research and managing notes. Assembling and managing their e-portfolio
ICT – Find and select information	
Select and use a variety of sources of information independently to meet needs	Conducting research into project planning processes for their assignment task
Access, search for, select and use ICT-based information and evaluate its fitness for purpose	Conducting research into project planning processes for their assignment task
ICT – Develop, present and communicate information	
Enter, develop and format information independently to suit its meaning and purpose, including:	Producing and managing their notes and Gantt charts. Assembling and managing their e-portfolio
Text and tables	
Images	
Numbers	
Records	
Bring together information to suit content and purpose	Assembling and managing their research. Assembling and managing their e-portfolio
Present information in ways that	Producing and managing written work. Producing and

are fit for purpose and audience	managing their e-portfolio
Evaluate the selection and use of ICT tools and facilities used to present information	Producing and managing written work. Assembling and managing their e-portfolio
Select and use ICT to communicate and exchange information safely, independently, responsibly and effectively	Assembling and managing their e-portfolio, and when exchanging information with their tutor, peers and others

Skills	When learners are…
Maths	
Understand practical problems in familiar and unfamiliar contexts and situations, some of which are non routine	
Identify and obtain necessary information to tackle the problem	
Select and apply skills in an organised way to find solutions to practical problems for different purposes	
Use appropriate checking procedures at each stage	
Interpret and communicate solutions to practical problems, drawing simple conclusions and giving explanations	
English – Speaking and listening	
Take full part in formal and informal discussions/exchanges	Taking part in discussions with their tutor and peers, in a range of different learning situations
English - Reading	
Read and understand a range of texts	Understanding their assignment brief, and conducting and assimilating research information from various sources
English - Writing	
Write documents to communicate information, ideas and opinions using formats and styles suitable for their purpose and audience	Preparing and revising their notes and learning assignments, and in written communications with their tutor. Preparing and revising a set of notes for inclusion in their e-portfolio

Wider curriculum mapping

The Edexcel Principal Learning for the Diploma in Construction and the Built Environment provides opportunities for the learner to develop an understanding of spiritual, moral, ethical, social and cultural issues as well as an awareness of environmental issues, European developments, health and safety considerations and equal opportunities issues. Further information on these opportunities is provided in Annexe B of these specifications.

Work experience

All learners undertaking the Diploma are required to undergo a period of work experience that has relevance to the Construction and the Built Environment sector. To enable learners to achieve maximum benefit from their work experience, before and/or after this takes place, tutors should identify opportunities to reflect and incorporate relevant materials and activities into the delivery and assessment of this unit.

Specialist Resources

This unit will can be taught within a traditional classroom environment. Access to construction documentation including exemplar drawings and specifications will be required linked to sites visited and investigations carried out.

Reference materials

Peter Brett - A Building Craft Foundation – Nelson Thornes 2002 – ISBN 07487 6531 X

George Foster – Construction Site Studies Production, Administration and Personnel – Longman 2000 – ISBN 0 582 019710

Des Millward – Construction and the Built Environment – Longman 2003 – ISBN 0582 41883 6

Roy Chudley – Advanced Construction Technology – Longman 2000 – ISBN 0 582 31617 0

CITB – Safety at Work – CITB 2002 – ISBN 1 85751 018 6

Building Regulations Various web-site