

Unit 83: Construction Design Technology

Unit code: K/600/0460

QCF Level: 3

Credit value: 10

Guided learning hours: 60

Unit aim

This unit gives learners an understanding of how specifications are used to realise design solutions and of the importance of 'buildability' and 'sustainability'. Learners will gain knowledge of how construction materials fail in use and how to prevent these failures, and develop effective drawing skills. Learners will investigate essential design aspects that must be provided for in the construction process. They will also develop the technical knowledge needed to realise design solutions. Good architectural detailing, using both manual and CAD techniques, is stressed throughout.

Learning outcomes and assessment criteria

In order to pass this unit, the evidence that the learner presents for assessment needs to demonstrate that they can meet all the learning outcomes for the unit.

The assessment criteria determine the standard required to achieve the unit.

Learning outcomes	Assessment criteria
1 Understand how specifications are used to realise design solutions	1.1 Explain how materials, systems and methods are specified for construction projects
2 Know how construction materials fail in use and how such failures can be prevented	2.1 Describe how common building materials fail in use
	2.2 Describe preventative and remedial measures used to reduce or eliminate the failure of building materials
3 Understand the importance of 'buildability' and 'sustainability' in the modern built environment	3.1 Explain the terms 'buildability' and 'sustainability'
	3.2 Analyse the technical design of a given construction project in terms of buildability and sustainability
4 Be able to demonstrate effective drawing skills	4.1 Use drawing techniques to produce construction drawings to support design proposals

Unit content

1 Understand how specifications are used to realise design solutions

Specification of materials, methods and systems: specification techniques; preparation of specification documents; items referenced in Building Regulations, British Standards Codes of Practice, Agrément Certificates, Code for Sustainable Housing (CSH) and trade associations; criteria used for inspecting quality of materials and workmanship; quality control onsite and offsite; reference sources (British Standards Codes of Practice, Building Regulations, Agrément Certificates, Code for Sustainable Housing)

2 Know how construction materials fail in use and how such failures can be prevented

Failures of materials: causes of failure (natural deterioration, human factors, poor design and detailing of the building, human traffic, vandalism); reasons for failures; types of failure

Preventative and remedial measures: techniques used to address material failures; planned maintenance and repair programmes; lifespan and cost-in-use issues, legal and design aspects; associated health and safety issues; cost-effectiveness of preventative and remedial work and ongoing maintenance; defects schedules; programmes of planned and emergency maintenance

3 Understand the importance of 'buildability' and 'sustainability' in the modern built environment

Buildability: provision of construction details and materials to simplify construction process; consideration at every stage of the construction process (design, construction, maintenance, alteration, demolition); benefits (lower construction costs, fewer claims, compliance with CDM Regulations) addresses issues raised in the Egan Report

Sustainability: meeting the needs of the present without compromising the ability of future generations to meet their own needs; issues confronting construction design; good practice; impact on Building Regulations; eco-towns

Technical design: planning for buildability before construction; accurate lifelong costings; principles (constructability, maintainability, simplicity in alteration); compliance with Building Regulations and the Egan Report; health and safety requirements

4 Be able to demonstrate effective drawing skills

Drawing techniques: sketching (conceptual and technical); measured drawing; manual drawing techniques; CAD documentation, filing and library retrieval systems; working up initial ideas from sketches to working drawings

Construction drawings: floor plans; elevations; sections; details; landscape layouts; block diagrams

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THIS IS AN ACCREDITED SPECIFICATION AND CAN BE USED FOR TEACHING AND ASSESSMENT