

Unit 6: Building Technology in Construction

Unit code: D/600/0309

QCF Level: 3

Credit value: 10

Guided learning hours: 60

Unit aim

This unit aims to give learners the opportunity to gain an understanding of common forms of low-rise construction, including the design and construction of foundations, the techniques used in the construction of superstructures and the implications of issues and constraints on building construction. Learners will develop an understanding of building technology by investigating and evaluating how techniques, materials, plant equipment and resources are used to construct buildings that will satisfy the functional and aesthetic needs of their users.

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 common forms of low-rise construction currently used for domestic and commercial buildings	1.1 Explain the different forms of low-rise construction currently used for domestic and commercial buildings
2 Understand foundation design and construction	2.1 Explain how the procedures used in subsoil investigation provide information for the design of substructures
	2.2 Describe the principles of foundation design
	2.3 Explain the methods used to construct different types of foundation
3 Understand the techniques used in the construction of superstructures for	3.1 Explain the principles of superstructure design

low-rise domestic and commercial buildings	3.2 Describe the techniques used to construct and finish the component elements of a superstructure
4 Understand the implications of issues and constraints on building construction	4.1 Explain the implications of environmental issues and legislative constraints for building construction
	4.2 Explain the purpose of the various parts of the infrastructure required to support the construction process

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Unit content

1 Understand common forms of low-rise construction currently used for domestic and commercial buildings

Forms of low-rise construction: prefabricated including timber frame, steel frame, concrete frame, load bearing, non-load bearing; single storey and low-rise of two to three storeys; detached; terraced; pitched roofs; flat roofs; short span; medium span; differences in construction methods; advantages and limitations of each method

Buildings: houses; flats; warehouses; light industrial units; retail; offices

2 Understand foundation design and construction

Subsoil investigation: site survey and subsoil investigation (regional geology, lithology, ground water); recording and interpretation of results; classification of soils; foundation design

Foundation design: principles of design; factors affecting choice of foundations (strip, pad, raft and pile foundations); structural requirements; effects of and precautions against subsoil shrinkage; ground heave; differential settlement

Methods: excavation; construction

Excavation: excavation up to five metres depth; water elimination; ground improvement; temporary supports in trenches and associated health and safety issues; various types of excavation and earth moving plant

Construction: construction techniques used for strip, pad, raft, pile and beam foundations; selection of materials; economic implications of methods used; plant requirements; health and safety issues; environmental issues; legislative constraints

3 Understand the techniques used in the construction of superstructures for low-rise domestic and commercial buildings

Principles of superstructure design: principles of design and factors affecting choice of primary and secondary elements (floors, walls, roofs, stairs, windows, doors)

Superstructure construction: techniques used for construction of primary and secondary elements (floors, walls, roofs, stairs, windows, and doors); selection of materials; economic implications of methods used; plant and equipment requirements; health and safety issues; environmental issues; legislative constraints to include the code for sustainable homes

Superstructure finishes: factors affecting the choice of internal and external finishes; types of finish available and methods used in their application; economic implications of methods used; plant requirements; health and safety issues; environmental issues; legislative constraints

4 Understand the implications of issues and constraints on building construction

Environmental issues: environmental impact resulting from materials and methods used in the construction of buildings; extraction; manufacture; construction methods; environmental protection; recycling; waste; energy usage; CO₂ emissions; noise; pollution

Legislative constraints: Building Regulations; Health and Safety at Work Act 1974; Construction Health, Safety and Welfare Regulations 1996; Construction Design and Management Regulations 2008; PUWER; COSHH; PPE; RIDDOR; Town and Country Planning legislation

Infrastructure: construction plant (characteristics, uses); supply of building materials for traditional and modern projects; prefabricated components; system building

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