

Unit 62: Construction in Civil Engineering

Unit code: K/600/0314

QCF Level: 3

Credit value: 10

Guided learning hours: 60

Unit aim

The aim of this unit is to give learners knowledge of the fundamental techniques, processes and materials used in the construction of civil engineering works, and the factors that constrain civil engineering work. Learners will also gain an understanding of the function of civil engineers and of the economics and lifecycle issues associated with infrastructure projects, and develop skills in selecting plant, materials and methods for civil engineering projects.

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 Know about fundamental techniques, processes and materials used in the construction of civil engineering works	1.1 Describe fundamental techniques, processes, plant and materials used in groundworks, foundations and substructures
	1.1 Describe the plant and materials used in groundworks, foundations, substructures and superstructures
2 Know the factors that constrain civil engineering works	2.1 Describe how physical conditions, financial requirements and environmental constraints impact on civil engineering works
3 Be able to select plant, materials and methods for civil engineering projects	3.1 Produce method statements specifying the plant, materials and methods to be used in two separate civil engineering projects
4 Understand civil engineering infrastructure projects	4.1 Explain the roles and responsibilities of civil engineers in civil engineering infrastructure projects

	4.2 Explain the economics associated with civil engineering infrastructure projects
	4.3 Explain lifecycle issues associated with civil engineering infrastructure projects

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

Unit content

1 Know about fundamental techniques, processes and materials used in the construction of civil engineering works

Civil engineering works: groundworks; foundations and substructure; superstructure; external works

Groundworks: site investigation eg site history, site surveys, site geology, ground investigation, potential ground contaminants, water table; earthworks eg general excavation and groundwater control by pumping, embankments, cuttings and retaining walls; relevant techniques, processes, materials and associated construction plant

Foundations and substructure: different types of foundation eg strip, pad, raft, piles in plain or reinforced concrete; basements; relevant techniques, processes, materials and associated construction plant

Superstructures: frames; connections; floors; wall claddings; roof coverings; relevant techniques, processes, materials and associated construction plant

External works: flexible and rigid pavement construction; lorry and car parks; highway drainage details; relevant techniques, processes and associated construction plant

2 Know the factors that constrain civil engineering work

Physical conditions: ground conditions; climatic conditions; timescale

Financial requirements: cost; quality

Environmental constraints: noise; visual impact; pollution factors; environmental impact assessment; legislation

3 Be able to select plant, materials and methods for civil engineering projects

Specification of plant, materials and methods: based on knowledge and understanding; fundamentals of civil engineering construction; constraints applicable to civil engineering projects

Materials: properties and specification of eg aggregates, concrete, bituminous materials, steel, timber

4 Understand civil engineering infrastructure projects

Role and responsibilities of civil engineers: design, development, construction; maintenance infrastructure: eg road, rail, harbour, airports, major services; component parts of infrastructure; project sponsors

Economics: role of infrastructure in economic growth; relationship of public and private sectors; role of civil engineering professionals in assessing demand; construction and financing

Lifecycle issues: eg development, adaptation, maintenance and repair, demolition and sustainability of infrastructure

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