Unit 16: Measuring, Tendering and Estimating for Construction and the Built Environment

Unit code: R/601/1274
QCF level: 4
Credit value: 15

Aim

This unit provides learners with an understanding of the tendering processes and procedures used in construction and the built environment. Learners will also gain skills to estimate for construction operations.

Unit abstract

The principles and techniques of estimating form an integral part of the tender process. The identification and selection of contractors and the available methodology are contrasted in terms of their appropriateness for construction procurement. Learners will gain an understanding of the contract documentation required for the tender process along with the constraints on a tender both in the pre-stages and post-stages of procurement. The factors that affect the level of tenders will be investigated by examining the build up of estimates for construction work, including profit, overheads and on-costs. Learners will also develop the skills needed to formulate estimates for construction operations.

Learning outcomes

On successful completion of this unit a learner will:
1. Understand the information required to produce a tender
2. Be able to apply the principles and techniques of estimating
3. Be able to formulate estimates for construction operations
4. Understand tendering procedures and contractual arrangements.
Unit content

1  **Understand the information required to produce a tender**

*Clients:* government; private; commercial  
*Tender constraints:* client objectives and constraints; financial; design influences  
*Contract documentation:* bills of quantities; drawings; specifications; conditions of contract; information provided (nature, source, validity); collection of additional data

2  **Be able to apply the principles and techniques of estimating**

*Collection of data:* characteristics; labour; labour costs; plant rates data; company data on output levels; cost of materials; terms of supply; delivery costs; handling; wastage; conversion  
*Processes and procedures for estimate:* factors affecting prime costs; method statements (effect on estimating); use of standard reference documents; coverage rules for units of work eg Standard Method of Measurement (SMM) 7, New Rules of Measurement (NRM), Civil Engineering Standard Method of Measurement (CESMM); calculation of unit rates

3  **Be able to formulate an estimate for construction operations**

*Bills of quantities:* format; contents; sections; production; preliminaries  
*Commercial factors:* final estimate; tender price; profit margin; payment terms; on-costs and overheads; competition; capacity; risk; insurance  
*Health, safety and welfare plan:* provision of pre-construction information pack; all items to be included and costed; effect on tender

4  **Understand the tendering procedures and contractual arrangements**

*Tendering stages:* decision to tender; considerations; tender preparation strategy and arrangements; stages in open and select tendering; procedures  
*Contractors invited to tender:* ‘select list’ of contractors; factors involving placement on select list eg quality of workmanship, capacity to carry out the work, ability to work to required deadlines, value for money, prior performance on similar projects  
*Contractual arrangements:* types of contract eg forms and agreements; terms and conditions; schedule of rates; lump sum; design and build; legal responsibilities
# Learning outcomes and assessment criteria

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<tr>
<th>Learning outcomes</th>
<th>Assessment criteria for pass</th>
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<td><strong>On successful completion of this unit a learner will:</strong></td>
<td><strong>The learner can:</strong></td>
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| **LO1** Understand the information required to produce a tender | 1.1 explain the client’s involvement in the tender process  
1.2 analyse the constraints that apply to the tender process  
1.3 discuss the contractual documentation required to support the tender process |
| **LO2** Be able to apply the principles and techniques of estimating | 2.1 collect the data required to build up unit costs  
2.2 make use of standard data documentation and measurement rules  
2.3 produce method statements suitable for compiling unit costs  
2.4 calculate unit costs for identified items |
| **LO3** Be able to formulate an estimate for construction operations | 3.1 demonstrate how the bill of quantities format may be used to build up estimates  
3.2 determine the critical factors that affect profit margin  
3.3 demonstrate how the health, safety and welfare plan affects the tender  
3.4 calculate on-costs and overheads using supplied data |
| **LO4** Understand the tendering procedures and contractual arrangements | 4.1 compare the stages of open and selective tendering  
4.2 analyse the factors that are used to create ‘select lists’ of contractors  
4.3 evaluate the different forms of contract used in the construction process |
**Guidance**

**Links**

This unit links with other Edexcel BTEC HN Construction and the Built Environment units, for example:

- Unit 3: Applied Mathematics for Construction and the Built Environment
- Unit 6: Health, Safety and Welfare for Construction and the Built Environment
- Unit 7: Construction and Maintenance of Buildings
- Unit 11: Contractual Procedures and Procurement for Construction and the Built Environment
- Unit 18: Measurement Processes for Construction
- Unit 57: Project Management for Building Services Engineering.

The content of this unit has been designed and mapped against the current CIC National Occupational Standards and the current NVQs at levels 4 and 5. Completion of the learning outcomes will contribute knowledge, understanding and skills towards the evidence requirements of the NVQs.

- See *Annexe B* for summary of mapping information to NVQs.

This unit has also been mapped to illustrate the links to the NQF units.

- See *Annexe D* for summary of mapping information to NQF units.

**Essential requirements**

Learners require access to computer packages to use in the production of estimates.

It is essential that a culture of health and safety is embedded in all the units to ensure that the learners understand the importance and relevance of health and safety issues. Therefore there should be clearly signposted aspects of current legislation and health, safety and welfare implications throughout the delivery and assessment of this unit.

**Employer engagement and vocational contexts**

Tutors should organise presentations by visiting speakers, for example main contractor estimators presenting on collection of data, output rates and company data.