THE KEY ELEMENTS OF QUANTITY SURVEYING WORK

A Presentation to the Institution of Surveyors of Uganda

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1. The following are key elements (divided into components) of work a Quantity Surveying Graduate and Practitioner will need to gain knowledge of and experience in, before applying for professional membership to the ISU.

2. Although candidates might work in only a specific sector or for a particular type of client, what is important is that candidates cover these key elements within their sectors and for their clients, but also have an awareness that things might be done differently in other sectors or in the industry at large. Where their sector or client does things in a specific way, candidates should be aware of the industry norm.

3. Furthermore, where some of the components within the elements, such as value management or life cycle costing, may not be possible to obtain adequate or any experience, candidates will need to undertake additional private study and try to make contact with someone who has experience in the area to lift their knowledge to the required level of competency.

4. The key elements are as follows:

   A. ESTIMATING
   B. COST PLANNING
   C. PROCUREMENT
   D. TENDERING
   E. CONTRACT SELECTION
   F. CONTRACT PROCEDURES
   G. POST CONTRACT COST CONTROL, or COMMERCIAL MANAGEMENT OF CONTRACTS
   H. QUANTIFICATION OF WORKS
   I. CONSTRUCTION TECHNOLOGY

5. Although the elements do not match exactly the core competency titles, reference shall be made to them in the proceeding tables.

ELEMENT	Components	Core Competency
A. ESTIMATING	Covers the preparation and reporting of cost estimates at the different stages of design. It includes an understanding of: • The purpose of cost estimating; • The different types of cost estimates such as feasibility, budget or pre-tender estimates; • The basis of an estimate, such as functional unit rate, elemental, detailed quantities; • The components of an estimate; • Sources, use and adjustment of data; • Benchmarking techniques; • Reporting cost estimates; • The difference between a cost estimate, a cost plan and a cost analysis. It also includes: • Calculating unit rates for items from first principles; • Base dates; • Construction and tender inflation; • Location factors; • Site/location specific conditions (e.g. ground conditions and site constraints); • Work programme; • Sustainability requirements; • Professional and statutory fees; • Preliminaries, overheads and profit; • Risk allowances; • Inclusions and exclusions.	Design Economics & Cost Planning; Quantification & Costing of Construction Works
B. COST PLANNING	Covers the cost planning process from setting the client's budget to design completion. It involves preparing, issuing and presenting cost plans at the different stages of design. It includes an understanding of: • The purpose of cost planning; • Setting a budget; • The components of a cost plan; • The terminology used including cost limit, cost target, functional element, element unity quantity and rate; • Measurement rules relating to cost planning; • Sources of data; • Benchmarking techniques; • Use of value management, value engineering and life cycle costing techniques; • Factors affecting the cost efficiency of a design, e.g. wall/floor ratio and storey heights; • Reporting of cost plans. It also includes: • All items listed under the estimating element; • RIBA or other design stages.	Design Economics & Cost Planning; Quantification & Costing of Construction Works

ELEMENT	Components	Core Competency
C. PROCUREMENT	Covers developing a procurement strategy and includes giving advice on the most appropriate procurement route to be adopted, covering in particular: • Traditional; • Design and Build; • Management contracting and construction management; • Serial/ term contracting; • Partnering. It also includes the detailed consideration of how the following factors influence the selection of the procurement route: • Contractual relationships; • Roles and responsibilities of the parties; • Time certainty, quick start or earlier finish; • Cost certainty, cost control, completion, or demonstration of value for money; • Quality management; • Change management; • Risk allocation and management.	PROCUREMENT AND TENDERING
D. TENDERING	Covers the implementation of a chosen procurement route through to the selection of the contractor/ supplier and the establishment of a basis for contract. It includes: • Single stage tendering; • Two stage tendering; • Negotiated tenders. In particular, it covers: • Compiling a tender list and pre-qualification; • Preparation of tender documentation; • Issuing tender documents; • Management of the process during the tender period; • Tender opening procedures; • Evaluation of tenders; • Dealing with errors and qualifications; • Compiling a tender report. It will also include an understanding of: • Rules of tendering – codes of practice or procedure; • Regulations governing the client; • Public sector regulations, such as PPDA;	PROCUREMENT AND TENDERING
E. CONTRACT SELECTION	Covers the implementation of a chosen form of contract, giving advice on the most appropriate form of contract to be used. It also includes a general knowledge of how the main contracts work in respect of: • Roles and responsibilities of the parties; • Pricing options; • Risk allocation; • Client specific considerations on selection.	CONTRACT PRACTICE; PROCUREMENT & TENDERING

ELEMENT	Components	Core Competency

F. CONTRACT PROCEDURES	Covers the establishment of construction contracts and the mechanisms that are typically found within them. In particular it involves the understanding of these mechanisms and how they impact on the work of a quantity surveyor. It covers:
	• Establishing a contract:
	  • Basic contract law;
	  • Current contract legislation;
	  • Common standard forms of contract and sub-contract in use;
	  • Contract documentation;
	  • Letters of intent;
	  • Third party rights.
	• Contract mechanisms:
	  • Roles of the parties under the contract;
	  • Conflict avoidance and dispute resolution;
	  • Contractor designed works;
	  • Sub-contracting;
	  • Payment provisions;
	  • Change procedures;
	  • Bonds & Guarantees;
	  • Insurances;
	  • Retention – including retention bonds/ guarantees;
	  • Liquidated damages;
	  • Claims – Extension of Time, Acceleration, Loss & Expense;
	  • Early possession and phasing;
	  • Termination of contract and insolvency;
	  • Contract completion;
	  • Final accounts;
	  • Defects/ rectification.
		CONTRACT PRACTICE

G1. POST CONTRACT COST CONTROL (for QSs working in a consulting environment in either the public or private sector)	Covers the financial management of a project during the construction phase (generally the post contract phase). It covers cost control procedures and reporting. In particular: • Forecasting and cash flows; • Valuing change; • Expenditure of provisional and prime cost sums; • Expenditure of contingencies; • Carrying out interim valuations; • Managing risk; • Value engineering; • Dealing with claims; • Authentication of actual costs; • Reporting regimes and protocols; • Final accounts.	CONTRACT PRACTICE; PROJECT FINANCIAL CONTROL & REPORTING; QUANTIFICATION & COSTING OF CONSTRUCTION WORKS

ELEMENT	Components	Core Competency
G2. COMMERCIAL MANAGEMENT OF CONTRACTS (for QSs working in a commercial or contracting environment, and may also apply to QSs working in management contracting and construction management)	Covers the commercial management of contracts where the QS is working on the contracting or sub-contracting side of the profession, or where they are involved in fee based contracting such as construction management or management contracting. It includes: • Handover of estimates and setting up of construction budgets; • Cash flow forecasting; • Financial management of supply chains, including: procurement, interim payments, valuation of change, ascertainment of loss and expense, agreement of final accounts; • Administration of sub-contract and supplier agreements; • Cost evaluation of alternative design and construction processes including value engineering; • Reconciliation of value and cost; • Cost to completion forecasting and reporting; • Managing contingency and risk; • Alternative profit recognition conventions (current/ final margin basis) • Internal and external cost reporting; • Forecasted final account projections.	CONTRACT PRACTICE; PROJECT FINANCIAL CONTROL & REPORTING; QUANTIFICATION & COSTING OF CONSTRUCTION WORKS
H. QUANTIFICATION OF WORKS	Covers the measurement of works for the purposes of: • Preparing estimates and cost plans; • Producing tender and contract documentation, such as elemental sum analyses, schedules of works, bills of quantities; • Valuing works for interim payments, change and final accounts. It includes understanding: • The purpose of measurement; • The need for a standardised approach to measuring; • Measurement rules; • Different ways in which floor areas can be measured and reported; • Build-up of unit rates and prices from first principles, i.e. labour, plant, materials, etc. • Build-up of costs in respect of preliminaries – note that merely applying a percentage addition is not sufficient; • Quantification of overheads and profit; • Quantification of risk and calculation of risk allowance; • Forecasting tender and construction inflation. It also includes an understanding of the importance of the description that accompanies any numeric data and having a knowledge of the different categories of measurement, such as: • Floor Area • Function Unit • Elemental • Composite quantities • Detailed quantities	DESIGN ECONOMICS & COST PLANNING; QUANTIFICATION & COSTING OF CONSTRUCTION WORKS

ELEMENT	Components	Core Competency
I. CONSTRUCTION TECHNOLOGY	Covers an understanding of design and construction technology and methodology. It is considered that an understanding of this is essential in order to appreciate its effect on the cost of a project and to be able to quantify works in order to manage costs. This will typically include the following: • Demolition and site preparation; • Foundation systems and substructures; • Superstructures, such as frames or bridges; • Building envelopes, such as external walls and roofs; • Internal structures, such as partitions and doors; • Finishes, fixtures and fittings; • Services installations, including underground drainage and transportation systems; • External works and landscaping; • Road, pavement and rail track works; • Major earthworks and tunnelling. In respect to all the above, it will also include the particular impact of the following on the methods of construction and materials selected: • Building Regulations or Codes and other related legislation; • Sustainability requirements.	CONSTRUCTION TECHNOLOGY & ENVIRONMENTAL SERVICES

THE END

"You cannot push anyone up the ladder unless he is willing to climb." – Andrew Carnegie

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REFERENCES:

1. RICS (2015), Assessment of Professional Competence Quantity Surveying and Construction, RICS, Parliament Square, London.