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TENDER DOCUMENTATION FOR CONSTRUCTION PROJECTS

AN OVERVIEW

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Introduction.

The tender documents form the basis of the contractor's offer to construct the works.

The tender documents are the means by which the employer's design and/or works requirements are communicated to the tendering contractors. These inform the contractor of the scope and detail of the project, the conditions under which the work will be executed, and they identify the rights and obligations of the various participants under the proposed contract. The tender documents enable contractors to price the works requirements and submit an offer (bid) which, if accepted by the employer becomes a binding contract. Some of the tender documents will, in turn, become contract documents. Many, if not most, of the financial problems in building originate in inadequate or unclear tender documents, culminating in disputes between employers and builders over what is included in the price for the work. It is important therefore, that quantity surveyors have a clear understanding of the nature and purpose of the various documents used for tendering purposes. This study examines these documents in the context of 'mainstream' Irish procurement approaches.

Tender documentation

The Department of Public Expenditure and Reform (DPER, 2012) states that '*tender documentation consists of technical, administrative and contractual material.*' The chosen procurement route and the form of contract determine the nature of tender documentation to be issued to the tendering contractors. Table 1 identifies three widely-used tender documents: drawings, specifications and bills of quantities and summarises their status/nature under the most frequently used Irish forms of contract. Readers may wish to refer to a separate study '*Choosing an Appropriate Main Contract for Building Work in the Republic of Ireland - an Overview*' (available on-line at <http://arrow.dit.ie/beschreoth/22/>) by the Author for a discussion of the nature of the various forms of contract identified in Table 1.

The Form of Tender and the Preliminary Health and Safety Plan together with instructions to tenderers and 'other' relevant documents are also provided to contractors On public sector

projects the tender documentation comprises: the Invitation to Tender; the Works Requirements; the Form of Tender and Schedule referencing one of the standard forms of contract; any novated design documents; a Suitability Assessment Questionnaire; and ‘other’ background information.

Form of Contract	Drawings	Specifications	Bill of Quantities
Private Sector Procurement			
RIAI ‘Blue’ Form.	Full working drawing.	Full detailed specification.	Unusual A form of contract sum analysis such as a bill of quantities may be issued with the status of a schedule of rates.
RIAI ‘Yellow’ Form	General arrangement drawings Drawings referred to in the bills of quantities.	Not normally issued. Will be issued if the bills of quantities descriptions refer to specification clauses not covered by the bill’s preambles.	Full bill of quantities.
‘Typical’ Design and Build.	Contractor generated. May be based on preliminary drawings provided in employer’s requirements for further contractor development.	Contractor generated. Based on full output/performance specification as part of employer’s requirements.	Not applicable. A form of contract sum analysis may be provided by the employer.
Public Sector Procurement			
PW-CF1 – Traditional.	Fully developed working drawings.	Full detailed specification.	Pricing Document – not necessarily a BQ.
PW-CF2 – Design- Build.	Contractor generated. May be based on preliminary drawings provided in employer’s requirements for further contractor development.	Contractor generated. Based on full output/performance specification as part of employer’s requirements.	Not applicable. A format of contract sum analysis may be provided by the employer.

Table 1 Tender documentation associated with ‘mainstream’ contract arrangements

Tender documentation on ‘Traditional’ procurement routes

The Invitation to Tender

The Invitation to Tender is a formal request made to the tendering contractors to submit bids for the project. The invitation letter is typically a simple ‘one pager’ and contains instructions

to the tendering contractors. The invitation typically informs the contractor which documents have been attached, the arrangements for site and consultant visits, the deadline for the return of tenders and how the tender should be submitted (Brook, 2008). The Liaison Committee (2006) have published a model form of invitation for private sector use. On public sector projects, the particular form of invitation to tender depends on whether the procurement procedure is open or restricted (selective). Open tendering uses Form ITTW 2, restricted tendering uses Form ITTW 1 (DPER, 2012).

The Form of Tender

The form of tender contains the contractor's formal offer to carry out the works identified in the other tender documents for the quoted price(s).

The Form of Tender is a key tender document as it constitutes the contractor's offer to carry out the works requirements. A binding contract, typically, comes into immediate existence if the employer accepts this offer without further qualification.

The Liaison Committee (2006) have issued a model form of tender for private sector use. Typical forms of tender are addressed to the employer and sets out the tender sum and frequently the contract period also. The form is dated, signed (and witnessed where required). The Department of Public Enterprise and Reform have issued a range of forms of tender for use with particular public works contracts. These forms of tender are considerably longer than their private sector counterparts as they contain the Contract Schedule which sets out project specific particulars (DPER, 2014).

The Drawings

The drawings show the nature and scope of the work to be carried out.

The nature of the drawn information included in the tender documents depends on the proposed form of contract. The key classification concerns whether the contracts are let on a 'with quantities basis' (RIAI 'Yellow Form' for example) or on a 'without quantities'/'drawings and specification' basis (RIAI 'Blue Form' for example). This key distinction identifies which party carries the risk for incorrect quantities.

Projects let on a 'without quantities basis' require fully-developed designs consisting of construction-quality drawings and details as part of the tender documentation. These comprise full location, component and detail drawings. In theory, the drawings should be

sufficiently well-developed to enable the contractor to *accurately measure and construct* the works without the need for further information. Schedules may also be supplied in order to provide positional information. ‘Without quantities’ projects are not regulated by standard methods of measurement such as ARM4, nevertheless it may be prudent to provide tenderers with similar types of drawings to those that would otherwise be required by ARM4.

Location drawings include the site location plan (typically 1:200 or 1:500) indicating the position of the site, ideally relating this to a town plan or other context. General arrangement drawings (1:50 or 1:100) typically comprise the individual floor plans, elevations and principal sections through the building. These show the layout of the various spaces in the building, the general construction and location of the principal elements. Component drawings (1:20 1:10 or bigger) show all the information necessary for the assembly of the component. These are in effect fabrication and workshop drawings which detail the necessary parts of the item to allow construction and/or production to proceed.

Projects let on a ‘with quantities basis’, on the other hand, typically require fewer tender drawings. These typically are the location and general arrangement drawings identified above together with any component drawings/details referred to in the bills of quantities. Many of the component and detail drawings can be transcribed into bill descriptions or depicted as ‘Bill Diagrams’ referenced to particular measured items. It is therefore not necessary to issue these drawings. ARM4, nevertheless, requires that all such and ‘*other drawings used in the preparation of the bill of quantities shall be available for inspection by tenderers*’.

Hackett, Robinson and Statham (2006) regard drawings as the most important means by which designers convey their intention to the building team and to statutory authorities. They argue that clear drawings are fundamental to the smooth running of any project. Clear, concise, well-planned, co-ordinated drawings make the information they contain easy to understand and inspire confidence. Conversely, poor drawings may reveal the designer’s lack of knowledge and inability to conduct their affairs effectively. (Hackett *et al.* 2006). A lack of adequately detailed drawings often signals a project where a significant number of variations may be required at post contract stage. These may cause significant delay and disruption on site.

Working drawings should be prepared to a suitable scale and contain sufficient detail and descriptive specification content to enable the contractor to build the work properly. Sufficient figured dimensions should be included to enable accurate setting out and

measurement. Existing and proposed work must be clearly distinguished on the drawings. For instance, old and new drains and other services are often rendered in different colours or by different types of line. For alterations to buildings it is often preferable to prepare separate plans of old and new work.

Certain drawn information is best presented in schedule format. Schedules are normally used where the subject matter is repetitive and numerous and as such are more easily described in a tabular format. March (2009) identifies typical items which may be scheduled including standard and non-standard joinery details, windows, doors, ironmongery, sanitary fittings, partitions, and floor, wall and ceiling finishes.

The Specification.

The Specification sets out the kind and quality of the materials and the standards of workmanship required.

The specification complements and amplifies the information given on the drawings and/or in the bill of quantities. It describes in detail the work to be executed and the nature and quality of the materials and workmanship standards to be achieved (Hore, O’Kelly and Scully 2009). The specification can be said to constitute a schedule of instructions to the contractor on how the work is to be undertaken.

A comprehensive specification is required where a contract is entered into on a ‘without quantities’/‘drawings and specifications’ basis. Under these contracts the contractor’s tender is based on the work shown on the drawings and described in the specification. The specification must therefore contain comprehensive information in order to enable the works to be fully represented.

The specification should be arranged in a logical order. Typically it will commence with a preliminaries section which should set out full preliminary particulars. The requirements of ARM4 would provide an ideal basis for drafting these preliminaries clauses. It is particularly important to inform tendering contractors of the form, type and conditions of contract, including full Appendix/Schedule insertions. The Appendix/Schedule sets out project specific requirements such as retention percentages, liquidated damages and period for completion etc. which are individual to the particular contract. The preliminaries must also set out insurance requirements, and obligations and restrictions imposed by the employer together with details of any special responsibilities to be borne by the contractor, apart from those

listed in the standard printed conditions of contract. It may also contain clauses specifying: the order in which various work sections are to be performed, the methods to be adopted in the execution of the work, and details of any special facilities that are to be afforded to other contractors or sub-contractors. The preliminaries section is typically followed by the various trades and/or work sections relating to the project. These contain detailed clauses covering the materials and components in each case and sets out workmanship standards.

Specifications are not specifically required to be issued as part of the tender documents where a project is let on a 'with quantities' basis. In these cases the bill of quantities replaces the specification as a contract document. Nevertheless, sometimes a specification is supplied as additional background information to supplement the bills of quantities, but it should be noted that in these cases the bills of quantities have precedence over the specifications. Alternatively, the bill of quantities may incorporate the specification as a 'preambles' section to be read in conjunction with the measured works section of the bill.

Hackett *et al* (2006) explain that specifications may be classified into three distinct categories: prescriptive; performance and descriptive specifications. *Prescriptive specifications* are more commonly known as a detailed materials and workmanship specification. These are 'do precisely as I say' specifications and are used on most 'traditional' projects using well-tried and tested technology. *Performance specifications* are described as 'give me something that works' specification. They used for items which the design team have no specific preference/requirements and allow the contractor to propose a suitable solution. Performance specifications seek only to deliver what must be achieved and are sometimes referred to as output specifications. These are often used on design and build projects. *Descriptive specifications* are used in collaborative approaches where the design team and the contractor seek a 'help me find the best solution' approach. These define the scope, design intent, procedures for completing detailed design, quality control, and provide the contractor with an indication of the solutions that are acceptable. The contractor uses his/her specialist expertise to complete the detailed design (in consultation with the design team), manufacture and install the works, and provide the necessary warranties and guarantees. (Hackett *et al*. 2006)

Ramus, Birchall and Griffiths (2006) note that specifications may be presented as priceable schedules of works for certain contracts. These schedules organise the works under appropriate headings. Schedules of works are commonly used for small scale domestic refurbishment projects where the work may be arranged on a room by room basis.

Bills of quantities

Bills of quantities '*fully describe and accurately represent the quality and quantity of work to be carried out.*' (ARM4)

Bills of quantities are provided to tendering contractors when a project is let on a 'with quantities' basis. They are prepared from the project drawings, specifications and queries to the various consultants. Bills consist of a schedule of the work descriptions with quantities entered against each item. They typically comprise preliminaries, measured work, provisional sums, prime cost sums and bill diagrams. In Ireland bills of quantities are usually presented in elemental format. In the UK trade bills are standard.

Bills of quantities are primarily tender documents. They provide a uniform basis on which tenders can be obtained and, when priced, they provide a means of evaluating and comparing the tenders; valuing works on site, and ascertaining costs for variations and claims. The descriptions in bills are concise and contain only the cost significant information required by estimators to price the work accurately. The rates tendered by the contractor for the various measured items include allowances for general overheads and profit. As noted above, the specification may occasionally be incorporated in the bill of quantities in the form of a preamble section.

Bills of quantities provide an accurate quantification of the physical content of the project. When a contract is let on a 'with quantities' basis, incorrect quantities are rectified, and the final account is adjusted. A bill of approximate quantities may be used where the extent of the works is unknown or cannot be established at tender stage. In effect a bill of approximate quantities is a schedule of rates which is used to value the eventual quantity of work. This arrangement necessitates a full remeasurement of the project on completion. Bills of quantities may also contain prime cost sums for specialist elements such as mechanical and electrical installation. These sums are expended by the employer's representative and the contractor is given an opportunity to price for profit and attendances provided to the specialists.

The Liaison Committee (2006) advise that tenderers should be sent two copies of the bills, one for return to the architect or surveyor with the tender, the other for the contractor to keep as a copy of his submitted prices.

The Preliminary Health and Safety Plan

The Construction Regulations (2013) require that *The Preliminary Health and Safety Plan* is provided to tendering contractors to enable them to price the health and safety issues associated with the site and project. It draws the tendering contractor's attention to work involving particular risks which are not immediately obvious from a visual inspection of the site. It is particularly important to identify significant risks relating to existing materials and operational hazards in existing buildings. The Plan also contains general project details such as the identity of the employer; the Project Supervisor for the Design Process, drawings, location of existing services, the project timeframe and information on other work activities on site.

The Works Requirements

On public sector projects the drawings and specifications represent the bulk of what are termed the 'Works Requirements'.

The primary aim of the Public Works Contracts is to achieve cost certainty and this requires design teams to provide comprehensive works requirements as part of the tender documentation. The *Training Manual* (NPPU, 2007) urges employers not to proceed to tender prematurely, before fully detailed works requirements are prepared, despite any pressures to do so.

The Works Requirements define the employer's requirements and the scope of the proposed works. For traditional contracts, these primarily comprise fully developed construction-quality drawings and specifications similar to those discussed above. The Requirements may also list specialists to be included on panels of subcontractors. The Requirements set out contract details including restrictions and obligations, plans and other technical information about the site, and other documents which the employer regards as necessary to define his/her requirements. The documents containing the Work Requirements provided by the Employer are identified in the Contract Schedule. A comprehensive list of such requirements is set out in Appendix B of the *Guidance Note GN 2.3 - Procurement Process for Works Contractors* (DPER, 2012). Most of these requirements would normally be included in the preliminaries section of a bill of quantities produced in accordance with ARM4.

The Pricing Document

A 'Pricing Document' is supplied to contractors tendering for public works contracts. The Pricing Document enables employers to prescribe how contractors should break down their tendered price. The document may be a bill of quantities, contract sum analysis or pricing schedules, and/or other documents in which the contractor provides its detailed pricing proposals. The Pricing Document performs the same functions as a bill of quantities as described above. Where bills of quantities are provided they should be prepared in accordance with ARM4 incorporating any GCCC amendments. It should be noted, however, that public sector projects are intended to be let on a without quantities basis and where this is the case a bill of quantities has the status of a schedule of rates only.

On the small works contracts using PW CF6, (the short form for projects not exceeding €500,000) there is no reference to a pricing document and in these instances the contractor be required to submit a document such as a 'builder's bill' in a format to be agreed which could become one of the contract documents (DPER, 2012).

Other documents

A number of other documents may be provided to the tendering contractors.

Non standard forms of contract

Section B, Preliminaries, of ARM4 requires that: *Where the conditions of contract are not standard or not published for general use the conditions shall be set out in full in the tender documents.* Contracts of a bespoke nature, which have been written especially for the particular contract must therefore be provided to the tendering contractors. Where an international form of contract such as JCT, ECC or FIDIC is proposed, it may be appropriate to provide tenderers with copies of the particular contract.

Site investigation reports and condition surveys.

Section D, Excavation and Earthworks, of ARM4 requires that specific information contained in a ground investigation report should be provided to tendering contractors. This information is most conveniently provided by including a site investigation report in the tender documents. Alternatively these details may be set out as preamble clauses within the substructure and siteworks elements of the bill of quantities. All available information on the topography of the site, the nature of the ground, the groundwater level, archaeological

investigations and nature of contaminated ground should be made available to contractors tendering for the project.

Likewise a condition survey may be provided where work is to be carried out in existing buildings. This report may identify issues such as the need to remove existing asbestos.

Return envelope

Each contractor should be provided with a pre-addressed envelope clearly marked ‘Tender for’ . . . They are to be marked so that they will be easily recognized and not opened too early or by the wrong person (Brook 2008).

Suitability Assessment Questionnaires

On public sector projects using open tendering procedures, the tendering contractors are required to complete a SAQ 2 (Suitability Assessment Questionnaire). This form requires tendering contractors to answer questions about their organisation, financial status and technical competence. The employer then uses this information to determine which tenderers meet the suitability standards and which do not (DPER 2012).

Tender Documentation for Design and Build Projects

Employer’s Requirements

The Employer’s Requirements is the briefing document which forms the basis for the subsequent Contractor’s Proposals.

Where the contract is arranged on a design and build basis or where the contractor has a design input on the project, it will be necessary for the employer to clearly set out his/her requirements to enable the contractor to produce a suitable design. This document is referred to as the Employer’s Requirements.

The purpose of the Employer’s Requirements is to provide tendering contractors with a clear idea of what the employer wants in the way of a building, e.g., type of structure, function, size, accommodation, quality, aesthetics, costs in use requirements, etc. The actual detail provided can vary considerably depending upon how the employer wishes to use the design and build process. The requirements may contain only basic information as to the required function of the building, thereby allowing tenderers a free rein regarding their design proposals. Alternatively an employer may have very clear ideas about his/her requirements,

in which case the form may contain a full scheme design prepared by the employer's architect, and the tenderers would be left with the task of developing the working drawings and being responsible for delivery of the scheme design. The success of the design and build arrangement largely hinges on the ability of the employer to produce a definitive project brief; a process which usually requires the appointment of consultants. This process takes time; incomplete briefing information will result in inadequate proposals being developed.

On public sector design and build contracts the Employer's Requirements are referred to as Works Requirements and these follow the same general principles as those described for 'traditional' procurement above. *Guidance Note GN-2.3* (DPER 2012) requires that: the standards and functional requirements and, on occasions, specimen designs are included as output specifications. These comprise:

- 'a detailed and comprehensive output specification stating the functional requirements;
- details of the expected functional life and maintenance requirements of the facility;
- any other documents the Employer regards as necessary to define the requirements – if a specimen design is to be provided it should be included;
- contract details including Restrictions and Obligations;
- plans and other technical information about the site, and
- planning and other consents obtained by the Contracting Authority.'

The *Guidance Note* further states that '*the evaluation and award process for these contracts can be more complex than traditional contracts, so, the output specification should be as complete as possible*'. Again, reference should be made to Appendix B of the *Guidance Note GN 2.3* (DPER, 2012) for comprehensive guidance on these requirements. It is suggested that these requirements would also form a sound basis for drafting employer's requirements on private sector projects.

Drawings

In employer-led design and build projects it is likely that the design will have been developed to at least outline design stage, and possibly to detailed design stage. In these instances the drawings will be provided to the tendering contractors who will finalise the production drawings. Occasionally the employer may require that the design team's contracts are

novated to the contractor in order to maintain a greater degree of quality control over the evolving and final designs.

Specifications

For design and build contracts the employer provides an output specification. This sets out the functional requirements that the facility should accommodate together with the expected functional life, maintenance requirements. Alternatively it can contain a full specimen design. Prescriptive, detailed and performance specifications will be provided to cover the technological aspects of the project. A full set of preliminaries is also required these should be similar to those required for 'traditional' specifications discussed above.

Contractors Proposals

In design and build arrangements the tender documents are developed and produced as Contractor's Proposals. These should mirror the Employer's Requirements.

In an employer-led design project, the format for the tender submission will invariably be laid down in the enquiry, and contractors generally adhere to these instructions. A contractor may consider that this is a minimum, and that he/she may have a better chance of success by providing further information to enable the proposals to be evaluated more fully. The contractor will certainly highlight any innovative proposals and/or better standard than was specified in the enquiry. (Janssens 1991)

Most contractor-led design proposals are presented as attractively bound documents containing details of the contractor's organisation and experience of similar works. Typically, the proposals, will contain the following information:

- an introduction setting out the title page, with date and reference, contents page, an introduction explaining the background to the enquiry, the basis of proposals, brief overall description, scope of work, floor areas, etc.
- confirmation of the preliminaries and contractual aspects such as the terms, conditions, and details;
- proposal drawings, comprising architectural, structural and services drawings and schematics drawn to suitable scales;

- specifications comprising particular specifications for all trades, by description, product name or by performance and a general specification for workmanship and materials for all trades, and
- a programme and method statements.

Tender Documentation for Management Contracts

There are two types of appointment to be made within the context of management contracting: firstly appointing the overall manager and secondly appointing the various works contractors.

Management procurement is described as '*a method where the overall design is the responsibility of the client's consultants, and the contractor is responsible both for defining packages of work and then for managing the carrying out of the work through separate trade or works contracts*' (JCT, 2011). Management contracts are associated with fast moving contracts on which the design and the construction phases of the project are overlapped. Two particular arrangements are commonly identified with these approaches: Management Contracting and Construction Management.

Appointing the Overall Manager

In both Management Contracting and Construction Management the 'Manager' is appointed at an early stage to provide construction expertise and to coordinate the various Works Contractors. The Manager does not carry out any of the construction works themselves. The approach is often made directly to the Manager without the need to tender, in which case the fee basis will be negotiated often in the absence of any 'formal' tender documentation. Where the appointment of a Management Contractor is made through competition it will be necessary to provide some documentation identifying the scope of the project and the services to be provided. Any 'scope' documents that have been produced at that stage, for example indicative drawings and/or order of magnitude budgets/indicative programmes for the scheme and ideally a set of preliminaries should be issued for this purpose.

In Construction Management, the Manager is often the first appointment on the project and probably no documentation will exist at that point at all.

Appointing the Works Contractors

The documentation on which the various Works Contractors will be appointed depends on whether the packages are let on a ‘with quantities’ or a ‘without quantities’ basis. The principal underpinning these approaches echo those outlined above for traditionally procured main contracts. In management approaches the overall project is broken down into a series of packages each with its own design drawings and specifications or bill of quantities which are compiled and issued by the Manager in conjunction with the Quantity Surveyor to the potential package contractors. It is important to ensure that the interfaces between packages are properly identified and clearly allocated to one package or another. Where there are many packages the number of interfaces increase and so the potential to miss something increases accordingly. (Designing Buildings.com. n.d.)

Conclusion

The tender documents provide the basis for the contractor’s bid to carry out the works. They inform the contractor of the scope and details of the work and the conditions under which the work will be executed. They also identify the employer’s and contractor’s powers, duties, rights and liabilities under the particular contract. This study has examined a range of documents which may be produced for tendering purposes and has commented on their characteristics and use under traditional, design and build and management procurement arrangements. The guiding principle should be to generate a reliable basis on which to proceed to enter into a contract for the proposed construction works.

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