

In-depth View on the Construction Contracts¹

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1. Abstract

Construction contracts are one of the most important tools in the construction sector and vital to any project in order to be successfully delivered. This paper provides an overall view on contracts in the construction industry.

Keywords: Contract, Management, construction, standard contract, Traditional contract, choice of contract.

2. Introduction to contracts

Construction contracts are one of the most important tools in the construction sector and vital to any project in order to be successfully delivered. The contract represents the most important document in the construction industry, and it gains this level of importance as it represents the most powerful tool to enforce any decision. It determines the authority and the obligations of each involved party. Simply, a contract represents a formalized tool of communication between at least two parties. We will not exaggerate if we said that the contract is the gate for all project management processes. Contracts define the various aspects, obligations and relations between each party that are necessary to reach a common planned goal.

(Institution of Civil Engineers, 2016) Contracts should also establish:

- A. Who is responsible for design, construction and supporting work
- B. How risks are shared between promoter and contractor.
- C. Entitlement and any formalities relating to the use of sub-contractors.
- D. Programs of work and dates for completion, together with provisions for any agreed extensions of time if the contract specifies an expected completion date, regardless of whether or not there is a requirement for the payment of liquidated damages.
- E. Insurance arrangements.
- F. Terms of payment.
- G. Variations to the works to be carried out.
- H. Grounds for termination of the contract itself and possibly for the termination of the employment of the contractor (in which case, the contract itself will continue, with the promoter being entitled to appoint a replacement contractor to complete the works and contra-charge the original contractor for any additional costs).
- I. The settlement of disputes.

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3. Definition of contract

Construction contracts are normally written and not verbal. The contract is an agreement between two or more parties or persons stating the rights, duties and obligations which are enforceable by law. The contract definition has been discussed by many authors and organizations as following:

(William R. Anson, 1939) has defined the contract as ‘a legally binding agreement made between two or more parties, by which rights are acquired by one or more to acts or forbearances on the part of the other or others’. The essential elements of this definition are as follows:

- A. Legally binding: not all agreements are legally binding; in particular, there are social or domestic arrangements which are made without any intention of creating legal arrangements.
- B. Two or more parties: in order to have an agreement there must be at least two parties; in law one cannot make bargains with oneself.
- C. Rights are acquired: an essential feature of a contract is that legal rights are acquired; one person agrees to complete part of a deal and the other person agrees to do something else in return.
- D. Forbearances: to forbear is to refrain from doing something; there may thus be a benefit to one party to have the other party promise not to do something.

(AACE International, 2018) defined the contract as a formal agreement between the project owner and resource supplier or between project resource suppliers. Contract also include purchase orders, work orders and similar documents that establish working agreements.

(PMI, 2017) stated that contracts, which are legal documents between a buyer and a seller. A contract represents a mutually binding agreement that obligates the seller to provide something of value (e.g., specified products, services, or results) and obligates the buyer to provide monetary or other valuable compensation.

From the above definitions, the valid contract can be described as a written document with some vital points that must be met, as following:

- A. Mutual agreement between the parties must be reached.
- B. An offer and an acceptance must be existed.
- C. There must be considerations which usually is a money.
- D. The offer, acceptance and the whole contract must be according to the law.
- E. Capacity, to be able to perform your scope of work.

4. Elements of contract

From law perspective, a contract is a legally binding deal between two or more parties which, if it consists some elements that ensure a strong legal agreement, will be enforced by law or by any binding arbitration.

(Geoff Powell, 2016) stated that in English law, a valid contract has a number of essential elements. These elements are:

- A. Offer and acceptance (the agreement).
- B. Consideration.
- C. An invitation to create a legal relationship.
- D. Genuine consent (no vitiating factors).
- E. The parties must have capacity.
- F. Legal formalities (where required).

(Allan Ashworth, 2015) pointed some elements that must be in the contract as following:

- A. Capacity
- B. Intention to create legal relations
- C. Offer and acceptance
- D. Form
- E. Consideration

5. Classification of contracts

Contracts can be classified into many categories as following:

5.1 Traditional contracts:

In this category, there three types of contracts as following:

5.1.1 Lump sum contracts

Lump sum contracts have pre-defined price; therefore, the risk of price is assigned to the contractor. However, any change needed by the client and after signing the contract will be translated into a risk which will be definitely allocated to the client. This contract can be priced based on either drawings, specification and BOQ, or only drawings and specifications. The contractor shall not submit invoices more that the project price. To go with this contract, the client shall define the complete project scope.

5.1.2 Measurement contracts

Measurement contracts are not pre-defined price and the project price is determined at the project end. All the payments are based on fixed item prices the submitted by the contractor and accepted by the client before signing the contract. The project price is risk of the client as the price can exceed the expectation of the client extremely unless the scope was approximately defined. The client can request additional works from the contractor and to be priced at the same rates defined on the BOQ.

5.1.3 Cost reimbursement contracts

Cost reimbursement contracts are based on the actual costs plus a fee given to the contractor in front of accomplished works at the project. This fee may be fixed or percentage. Sometimes it is called 'cost plus' and is most used in cases of non-defined scope projects. The project price is not determined until the project end so the client has the risk of the price in this type of contract.

5.2 Design and build contracts

In this category, there three types of contracts as following:

5.2.1 Package deal or turnkey contract

In this contract, (**The Joint Contracts Tribunal Limited, 2017**) the client settles on a complete package, usually to some standard specification from a commercial firm. Such arrangements sometimes result in a specially drafted contract, but they will usually be based on the provider's standard terms.

5.2.2 Design and build contracts:

In this contract, the client assigns the responsibility of design and build as well to the contractor.

5.2.2.3 Contractor's design for specific elements only

(**The Joint Contracts Tribunal Limited, 2017**) These are not design and build contracts, but traditional 'work and materials' contracts which include for limited design provision relating to an identified portion of the work.

6. Factors influence the choice of contract type

Each contract is composed of some clauses that make it suitable for specific circumstances and the decision of the choosing a contract is very important due to its big impact on the project and the relation between the project parties.

(**The Joint Contracts Tribunal Limited, 2017**) pointed some factors that have a great impact on contract selection process as following:

- A. The nature of the project
- B. The scope of work
- C. Measure of control by the client
- D. Accountability
- E. Appointment of a contractor
- F. Certainty of final cost
- G. Start and completion times
- H. Restrictions
- I. Changes during construction
- J. Assessment of risks

K. Building relationships with the supply chain

7. Standard contracts

Standard contracts are sometimes called model form contract. These forms of contracts are internationally recognized as it already published by a variety of institution.

Publishing bodies of the standard forms of contract:

7.1 The Institution of Civil Engineers (ICE)

The Institution of Civil Engineers (ICE) is one of the world's most respected professional engineering associations. Since they were formed 200 years ago, they have attracted some of the most famous and influential civil engineers in history.

They establish the first edition of their form in 1945 and called it ICE conditions of contract (ICE CoC). (**Institution of Civil Engineers, 2016**) In 2011, the ICE ceased endorsement of the Conditions of Contract, but they were subsequently relaunched as the Infrastructure Conditions of Contract, reflecting the prevailing legislation in the Local Democracy, Economic Development and Construction Act 2009.

Since 2011, the ICE has established the New Engineering Contract third edition (NEC3) suite of contracts. At this time, the NEC contract was seen as managerial tool centric in terms of procedures of cost and time management. It was not similar to the other published forms of standard contracts because it used present tense for all clauses even it related to future and also it was written in plain English which is not like the other standard form of contracts. NEC3 suit of contracts focused on pro-active risk management rather than the re-active risk management.

The NEC3 suite has six options to contract. Each option is drafted to provide a specific feature for Civil Engineering Projects. The options of NEC3 are as following:

7.1.1 Option (A) – Priced contract with activity schedule

Option (A) creates a lump-sum form of contract while the activity schedule states the project work that shall be accomplished to deliver the project successfully. The price of the project is allocated in front of the activity schedule which means each activity shall has assigned cost which aggregated to reach the project total price. Moreover, the price of the project under this contract is fixed and no variations will be accepted so the contractor shall estimate the project price accurately considering any probable risk or any hidden costs.

However, the contract is a lump sum, but in case of the client requested any additional works, therefore the contractor will deserve additional money for the additional scope. (**Institution of Civil Engineers, 2016**) Therefore, these contracts include (19) defined compensation events in NEC3; additional compensation events can be incorporated into the contract by way of 'Z clauses'.

7.1.2 Option (B) – Priced contract with bill of quantities

Options (B) is so different from option (A) as the contract here is measurable type. In this type, the client shall provide the drawings, BOQ and any requirements or specification to the contractor. After that, the contractor shall price the items of the BOQ which definitely include all the works of the project based on the drawings and the specifications provided by the client. The substantial point in this contract is that it is flexible with any variation as it's re-measurable. Therefore, any increase or decrease of quantities will be the risk of the client and the client shall pay for the actual executed quantities based on fixed prices for the items of the BOQ.

7.1.3 Option (C) – Target cost contract with activity schedule

Option (C) is commonly used in UK and its concept is based on risk sharing between the client and the contractor. Simply, this type of contracts is lump-sum price but in case of cost saving or cost overruns, the change in cost will be shared between the main parties. The contract is cost-reimbursable based on a priced schedule likes option (A). But in this type, the risk of cost overruns or saving is designed to be shared between the contractor and the client based on a pre-agreed system. This balance of risk in enhancing the relation between the main parties of the contract and push them to collaborate and achieve the optimum cost. Moreover, it decreases the conflicts and disputes during the execution phase.

7.1.4 Option (D) – Target cost contract with bill of quantities

Option (D) is very similar to Option (C), but the prices here will be allocated in front of items of the BOQ rather that activity schedule for the previous type which increase the degree of the project risk for the client.

7.1.5 Option (E) – Cost reimbursable contract

Option (E) is a cost reimbursable contract in which the client pays to the contractor the incurred costs plus a pre-agreed fee. This type of contracts definitely allocated all the risk of the project price to the client. Therefore, the contract is suitable for the small projects specially in case of do not have a defined scope.

7.1.6 Option (F) – Management contract

Option (F) is also a cost reimbursable contract in which the client pays to the contractor a pre-agreed fee. The main and the big difference between this option and option (E) is that option (F) is designed for project management so there are incurred costs and only based on management fees. Therefore, it's suitable for project management and procurement management.

7.2 The Joint Contracts Tribunal (JCT)

The Joint Contracts Tribunal is commonly known as JCT and composed of a number of organizations, representing promoters, contractors, engineers, architects and cost consultants. the current operational structure comprises seven members who approve and authorize publications. It produces producing standard forms of contract to be used in the construction industry and has been producing standard forms of contract since 1931. JCT contracts are complex since JCT

attempted to cover eventuality clogged with procedural rules. They also focused on consequence of breach of contract and liability.

In 2016, JCT released many forms of contracts include but not limited to the following forms:

7.2.1 JCT Lump Sum contract forms

7.2.1.1 Standard Building Contract with Quantities (SBC/Q)

The JCT Standard Building Contract is designed for large or complex construction projects where detailed contract provisions are needed. In this contract, the client is responsible for the design; however, the contract has another option to assign some design tasks to the contractor such as design of specific works.

7.2.1.2 Standard Building Contract Without Quantities (SBC/XQ)

This form of contract is suitable for larger works designed by the client, where detailed contract provisions are necessary and the Employer is to provide the Contractor with drawings; and with either a specification or work schedules to define adequately the scope and quality of the work and where the degree of complexity is not such as to require bills of quantities.

7.2.1.3 Intermediate Building Contract (IC)

This form of contract is suitable for where the proposed building works are simple involving the normal, recognized basic trades and skills, without any complex installations or other complex specialist works; or where the works are designed by client and fairly detailed contract provisions are necessary. Also the employer is to provide the Contractor with all drawings, bill of quantity, and specifications to define properly the quantity and quality of the scope of work. On the contrast, this contract is not suitable for the case where the Contractor is to design discrete part(s) of the works, even though all the other criteria are met – consider using the Intermediate Building Contract with contractor's design (ICD). This contract is more detailed and contains more extensive control procedures than the Minor Works Building Contract (MW) but is less detailed than the Standard Building Contract (SBC).

7.2.1.4 Intermediate Building Contract with contractor's design (ICD)

This contract is very similar to Intermediate Building Contract (IC) but additionally provides for a Contractor's Designed Portion. On the other hand, this form is not suitable as a design and build contract. The form is designed for projects in case of the proposed building works are simple involving the normal basic trades and skills and without any installations of a complex nature or other complex specialist works and where the works are designed by the Employer, and the Contractor is required to design those parts of the work. The Employer is to provide drawings and bills of quantities, a specification or work schedules to define adequately the quantity and quality of the work. This contract is more detailed and contains more extensive control procedures than the Minor Works Building Contract with contractor's design (MWD) but is less detailed than the Standard Building Contract (SBC).

7.2.1.5 Minor Works Building Contract (MW)

This form is appropriate in case of the work involved is simple in character and the work is designed by the Employer. The Employer is to provide drawings and specifications to define adequately the quantity and quality of the work. On the contrast, this form is not appropriate in case of the bills of quantities are required, the provisions are required to govern work carried out by named specialists, the detailed control procedures are needed or the Contractor is to design discrete parts of the works, even though all the other criteria are met.

7.2.1.6 Minor Works Building Contract with contractor's design (MWD)

This contract is similar to the Minor Works Building Contract (MW) but additionally provides for a Contractor's Designed Portion. It suitable in case of the work involved is simple in character, the work is designed and the requirements for the contractor's design of discrete parts are detailed by the Employer, and where the Contractor is required to design those parts of the work. The Employer is to provide drawings and/or a specification and/or work schedules to define adequately the quantity and quality of the work. On the contrast, this form is not appropriate in case of using it as a design and build contract, bills of quantities are required, provisions are required to govern work carried out by named specialists or detailed control procedures are needed.

7.2.1.7 Repair and Maintenance Contract (Commercial) (RM)

This contract is published as a single document, comprising both the Tender (with its accompanying Invitation to Tender and form of acceptance) and the Conditions. This form of contract is flexible in terms of price in that it enables the Employer to seek quotes on the basis of a fixed price or other rates. It is appropriate where the work involves the repair and maintenance of a building, no independent contract administrator is to be appointed. On the contrast, it is not suitable for periodic repair or maintenance over a fixed term or the regular maintenance for work on a dwelling by a residential occupier.

7.2.1.8 Building contract for a homeowner/occupier who has appointed a consultant to oversee the work (HO/C)

This is a consumer contract for use by a residential occupier, drafted in clear simple language to comply with the current consumer legislation. Nevertheless, this contract provides for adjudication in the event of a dispute between the homeowner/occupier and the contractor. It is appropriate for small domestic building work such as extensions and alterations, the proposed works are to be carried out for an agreed lump sum and no consultant acts on behalf of the homeowner/occupier to administer the contract.

7.2.1.9 Building contract for a homeowner/occupier who has not appointed a consultant to oversee the work (HO/B)

This contract is similar to HO/B, as described above, but additionally provides for a contract administrator.

7.2.1.10 Home Repair and Maintenance Contract (HO/RM)

This is a consumer contract for use by a residential occupier, drafted in clear simple language to comply with the current consumer legislation. It is appropriate for small-scale repairs and maintenance of a straightforward nature to domestic buildings and where no consultant acts on behalf of the homeowner/occupier to administer the contract. In this contract, Price may be a lump sum or based on an hourly rate plus the contractor's invoices for materials. The price is to be inclusive of any VAT. This contract only provides for payment on completion of the work; therefore, the proposed duration of the repair and maintenance work should not exceed four weeks and generally would be much shorter.

7.2.2 JCT Measurement contract forms

7.2.2.1 Standard Building Contract with Approximate Quantities (SBC/AQ)

This contract requires the Employer through his consultants to provide at tender stage a set of drawings and approximate quantities. The Contractor is required to quote a tender sum, which is indicative only of the likely price of the works. The contract is broadly as described for the Standard Building Contract with Quantities, except that the work is completely re-measured on the basis of rates set out in the bills of quantities. Price is based on the tender figure which is converted to an Ascertained Final Sum on re-measurement and valuation of all work. Interim payments are monthly unless otherwise stated.

7.2.2.2 Measured Term Contract (MTC)

This contract is based on a priced Schedule of Rates to be followed by a series of Orders for each separate item of work which might include a written description and drawings where relevant. This form of contract is suitable in case of the Employers who have a regular flow of maintenance and minor works, including improvements, to be carried out by a single contractor over a specified period of time and under a single contract and where the work is to be instructed from time to time and measured and valued on the basis of an agreed schedule of rates. Price is based on measurement and valuation for each separate Order, using the figures in the priced Schedule of Rates as adjusted by the contractor and accepted by the Employer. The Measured Term Contract requires the Employer to list the properties to be covered by the contract and state the period and the type of work, estimate the total annual value of the work for the whole contract period, and indicate the minimum and maximum value of any one Order given, appoint a Contract Administrator who will issue the Orders from time to time describing the work to be completed under each Order and the completion date and to pay for each item of work covered by an Order, as certified by the Contract Administrator, following measurement and valuation according to the relevant rates and prices in the priced Schedule of Rates, which are to be adjusted by applying the contractor's quoted percentage addition or deduction.

7.2.3 JCT Cost reimbursement or cost plus contract forms

7.2.3.1 Measured Term Contract (MTC)

This contract is most often used for alteration work and for urgent repair work (e.g. after fire damage) where an early start is necessary and the exact nature and extent of the Works cannot be determined until the work is actually under way. This is a high-risk contract for the Employer in terms of cost, and much depends on the efficiency of the Contractor in carrying out the Works economically. The contract contains various provisions to assist in keeping the expenditure of Prime Cost to the minimum needed to provide the Works required by the completion date.

The work proceeds on the basis of a brief specification, drawings (if any) and an estimate of its cost. Interim payments are monthly unless stated otherwise. The Contractor is paid the Prime Cost of the Works, as certified by the Architect/Contract Administrator. The Employer also pays a Contract Fee in respect of the Contractor's non-site overheads and profit. This fee may be a Lump Sum which can nevertheless be adjusted if the actual Prime Cost is more or less than the estimated Prime Cost by a percentage stated in the contract, or it can be a 'Percentage Fee' calculated on the actual Prime Cost incurred. The Contract Fee can be revised if the Employer changes the nature and scope of the Works described in a Schedule to the contract. After the contract has been entered into, any such change is also subject to a right of reasonable objection by the Contractor.

7.2.4 JCT Management contract forms

7.2.4.1 Management Building Contract (MC)

In this contract, the price is based on Prime Cost of the Project plus a Management Fee for the Management Contractor. Interim payments are monthly unless stated otherwise. The contract is divided into two periods, the Pre-Construction Period and the Construction Period. The Management Contractor should be appointed early so as he can co-operate with the Architect/Contract Administrator, Quantity Surveyor and other members of the Professional Team on such matters as the Project programme; formulating and agreeing construction methods; advising on 'buildability' aspects of the Project; agreeing the Contract Cost Plan; and advising on the works packages for which the Works Contractors will tender. After the Architect/Contract Administrator has notified the Employer that it is practicable to commence construction, the Employer can then decide whether or not to proceed into the Construction Period.

7.2.4.2 Construction Management Appointment (CM/A)

This form of contract is suitable where the Employer is to enter into direct separate trade contract or a Construction Manager engaged under the Construction Management Appointment is to administer the conditions on behalf of the Employer. The price is based on either a lump sum or complete re-measurement and interim payments are either monthly or at pre-determined points.

7.3 Fédération internationale des ingénieurs-conseils (FIDIC)

The International Federation of Consulting Engineers which commonly known as FIDIC, is an international organization publishing engineering and building contracts primarily intended for use in relation to international construction projects. It is Founded in 1913 and is charged with

promoting and implementing the consulting engineering industry's strategic goals on behalf of its Member Associations and to disseminate information and resources of interest to its members. Today, FIDIC membership covers over 100 countries of the world. FIDIC, in the furtherance of its goals, publishes international standard forms of contracts for works and for clients, consultants, sub-consultants, joint ventures and representatives, together with related materials such as standard pre-qualification forms. FIDIC also publishes business practice documents such as policy statements, position papers, guidelines, training manuals and training resource kits in the areas of management systems (quality management, risk management, business integrity management, environment management, sustainability) and business processes (consultant selection, quality based selection, tendering, procurement, insurance, liability, technology transfer, capacity building).

FIDIC establishes five forms of contract as follows:

7.3.1 The Red Book

This form is suitable for the building and engineering works designed by the promoter.

7.3.2 The Yellow Book

This form is used as Conditions of Contract for plant and design-build for electrical and mechanical plant and for building and engineering works designed by the contractor.

7.3.3 The Silver Book

This form is used as Conditions of Contract for EPC and turnkey projects.

7.3.4 The White Book

This form is used as a Client/Consultant Model Services Agreement.

7.3.5 The Green Book

This form is used as a short form of contract for engineering and building work of relatively small capital value.

FIDIC also published some contracts for specific works such as dredging and tunneling.

7.4 The Institution of Chemical Engineers (IChemE) forms of contract

The Institution of Chemical Engineers (IChemE) is a multi-national institution with primary offices in the UK and Australia and was founded in 1922. The IChemE Forms of Contract are well drafted as performance-based contracts for the design and construction of a process plant and other output-based projects. Specifically addressing the liabilities and testing regimes appropriate for a performance plant, they are used extensively across a range of process industries.

It has created two sets of forms of contract, one set for use on international projects and one set for use on UK projects.

These forms of contract are intended for use in the process industries such as food production, chemicals and pharmaceuticals but can be used to procure other infrastructure works. The three main forms of contract are color-coded according to the pricing mechanism as following:

7.4.1 The Red Book (Lump Sum, or Fixed Price Contract)

This form of contract is a fixed price contract in which contractor takes risk of any additional costs over the fixed price save where certain prescribed events occur

7.4.2 The Green Book (Cost Reimbursable Contract)

This form of contract is not fixed price and the project price is to be determined at the project end based on the accomplished works based on the several phases. In this contract, the contractor can claim back costs incurred in carrying out the work.

7.4.3 The Burgundy Book (Target Cost Contract)

This form of contract represents a type of cost reimbursable contract; costs can be claimed up to a fixed (target) level where the final cost is above or below this target, the difference – gain or loss – is shared in an agreed proportion between the employer and the contractor.

7.5 The Institution of Mechanical Engineers (IMechE) and the Institution of Engineering and Technology (IET)

For over 45 years IChemE have partnered with highly experienced legal and industry professionals to publish their acclaimed Forms of Contract. In 2007, the Institution of Chemical Engineers (IChemE) published four forms of contract that structured to ensure fairness and balance the risk between involved parties. (G. H. Bateman, 2009) These forms are:

7.5.1 IChemE International Red Book (lump-sum contracts)

IChemE International Red Book is an international form of the lump sum contract included additional clauses to meet the special requirements of international projects. It was written in user-friendly English language.

7.5.2 IChemE International Green Book (cost-reimbursable contracts)

IChemE International Green Book is an international form of the reimbursable contract. It includes additional clauses in order to meet the special requirements of international projects. Also, it was written in user-friendly English language.

7.5.3 IChemE International Burgundy Book (target-cost contracts)

IChemE International Burgundy Book is an international form of the target cost contract provided additional clauses to meet the special requirements of international projects. It was written in user-friendly English language.

7.5.4 IChemE International Yellow Book (subcontracts)

IChemE International Yellow Book is an international form of the subcontract included additional clauses to meet the special requirements of international projects. It was written in user-friendly English language.

8. Advantage of standard form of contracts

Standard forms of contract are written by professional entities or organizations, and usually passed through many updates aimed to continuous improvement. The standard forms are usually written by very experienced construction professionals. The standard form is a set of terms and conditions to suit different types of projects.

The construction contract may be based on a standard form, more than standard form or a certain clause from standard form. Also, one may be written through the contract parties without using of any standard form.

The advantage of using standard forms are too much as it provides all the following features:

- A. Well prepared & Revised many times from experts.
- B. Recognized from many professional parties.
- C. Well understood by all the project parties.
- D. Fair allocation of the risk.
- E. Applicable to any project.
- F. Examined many times at courts.
- G. Minimize the risk and decrease the uncertainty.
- H. Decrease the conflicts.
- I. Eliminate the ambiguous of the contract.
- J. Make the tender easier.

9. Concluding summary

Contract has a high level of importance in construction industry due to many reasons as it controls and manage most processes between the involved parties. While contracts have many classifications, standard contracts are very helpful and add to much advantages in case of using it. So that, the promoter shall determine the advantages, disadvantages and risk inherent in each form of contract to be able to select the most suitable contract for his project.

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Conflict of Interest

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References

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