

**NEW TRENDS
IN CONSTRUCTION CONTRACTS
TO
SUIT BOT PROJECTS
(EPC / TURNKEY CONDITIONS)**

by
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ABSTRACT

During recent years it has been noticed that much of the construction market requires a new form of contract for turnkey projects, where certainty of final price, and often of completion date, are of extreme importance.

Employers on such turnkey projects are willing to pay more- often much more- for their project if they can be more certain that the agreed final price will not be exceeded.

Projects financed by private funds under concession agreements, where the lenders require greater certainty about a project's costs to the Employer than is allowed for by traditional forms of contracts.

Available Standard conditions of contracts cannot be used for such Concession Agreement nor for the Operation Agreement or for conditions for the Turnkey Contract.

New forms of Conditions of Contract are being developed recently for such cases. Japan developed a model contract condition for the Turnkey contract, ICE and FIDIC followed. FIDIC published its Turnkey Contract in September 1999 known as: '**Conditions of Contract for EPC / Turnkey Projects**', where certainty of final price, and completion date, are pre-assumed. This article explains these new trends as followed by on the publications issued in the FIDIC Seminars in 1998 (Edmonton/ Canada) and 1999 (The Hague/Holland) by the CC.

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1. INTRODUCTION

- i. Traditional Standard Conditions of Contract (e.g. FIDIC, ICE, ...) have been recognised for their principles of balanced risk sharing between the Employer and the Contractor.
- ii. These risk sharing principles have been beneficial for both parties:
 - the Employer signing a contract at a lower price and only having further costs when particular unusual risks actually eventuate,
 - the Contractor avoiding pricing such risks which are hard to evaluate.
- iii. In the last few years it became increasingly apparent that the existing Standard Conditions of Contract currently being used to procure and regulate a great number of projects throughout the world are no more suitable.
- iv. Such Contracts are usually drafted based on a design and tender documents prepared by or on behalf of the Employer. Invited Tenderers / Bidders submit their offers which are evaluated according to processes determined by the Employer and/or the law governing procurement rules. The best offer is then selected and contract is signed with the successful Tenderer /Bidder.
- v. However, during recent years it has been noticed that much of the construction market requires a new form of contract where certainty of final price, and often of completion date, are of extreme importance.
- vi. Employers on such turnkey projects are willing to pay more- often much more- for their project if they can be more certain that the agreed final price will not be exceeded.
- vii. Among such projects can be found many projects financed by private funds under concession agreements, where the lenders require greater certainty about a project's costs to the Employer than is allowed for under the allocation of risks provided for by traditional forms of contracts.
- viii. Available Standard conditions of contracts can not be used for such concession agreement nor for the operation agreement or for conditions for the Turnkey (EPC) contract.
- ix. New forms of conditions of contract are being developed recently for such cases. Japan developed a model contract condition for the Turnkey contract, ICE and FIDIC followed. FIDIC published its Turnkey Contract in September 1999 known as: '**Conditions of Contract for EPC / Turnkey Projects**'.
- x. Infra-structure projects, particularly within the electrical and mechanical field and often for the manufacture and installation of process plants and the like, and often with private sector financing, basically follow a two party approach.

2. TURNKEY PROJECTS APPROACH :

- i. Established modern practice [e.g. as in Orange Book Design/Build –Turnkey Contract Conditions issued by FIDIC in 1995] is for the Employer to prepare '**Employer's Requirements**', which in some cases may perhaps only be a performance specification, and then to invite from suitable established and probably pre-qualified manufacturers, contractors or suppliers.
- ii. After selection of the most attractive offer or offers, or perhaps of the 'preferred bidder(s)', or in the case of two-stage bidding the most attractive technical solutions, clarifications are of necessity invariably conducted between the parties, and may lead to contract award.
- iii. Thus the traditional procedure of receiving of comprehensive tenders from pre-selected tenderers, evaluation of tenders to determine lowest responsive tender and then award of contract to the lowest tenderer by issue of a Letter of Acceptance (LOA), is not followed.
- iv. Instead, and for several very good reasons, the procedure is that the 'proposals' from the various pre-selected companies are examined - the most attractive proposal(s), perhaps only the technical proposal, is identified - final technical and commercial conditions are discussed and agreed the Contract is awarded, i.e. signed by both parties.

3. BACKGROUND TO NEW EPC/TURNKEY CONTRACT

- i. It is clear that privately-financed projects are usually subject to more discussion and adaptation than public-financed ones. Therefore, substantial changes may have to be made in any standard form of contract proposed for projects within a BOT System.
- ii. Among other things, such form will need to be adapted to take account of- the special, if not unique, characteristics of each project, as well as the requirements of lenders and others providing financing.
- iii. Nevertheless, great as these changes may be from contract to contract, they do not do away with the need of having some standard form as starting point, and this is a purpose of this article on EPC/Turnkey Projects.
- iv. There are several reasons, or perhaps, trends that have developed strongly in recent years. One trend is certainly the rapid sophistication and improved education and experience in many of the developing countries, together with the tendency for larger, more complex projects at much higher cost.
- v. The traditional role which the trusted Engineer held under many infrastructure projects in the third world, e.g. road and water supply projects, may still apply in some areas, but in many parts of the world, e.g. the Developing Countries, and of course in most civil law countries, the practice has long been for direct two-party contracts where the engineer plays a less prominent role in the administration of the contract.

- vi. The sophistication and experience of the employers and the large construction costs have also led to more importance being given to the responsibility borne by each of the parties, and the consequent greater involvement of the lawyers and litigation.
- vii. Another most important factor is certainly the development towards privately financed projects.
- viii. The shortage of or the unwillingness by governments to use public funding, together with the belief that the construction and operation of facilities will be more efficiently managed by a private profit-driven entity, has led to the widespread development of privately financed project models, or public/private financed, e.g. the Build-Operate-Transfer 'BOT' model or other total project concepts such as Build-Own-Operate-Transfer 'BOOT', Build-Lease- Transfer 'BLT', etc.....
- ix. These financing techniques are being used on an increasing number of major projects world-wide, and it has meant an enhanced awareness among the project participants of the importance of **risk analysis and risk allocation** when structuring the privately financed projects.
- x. Traditionally the government or its department, knowingly or unknowingly, took most of the risks, apart from the direct construction risks taken by the construction contractor.
- xi. With a privately financed BOT project the picture is very different! The concessionaire is no longer just the construction contractor. He is also the financier and the operator, perhaps for many years, as well as the actual constructor. A concessionaire knowing that he has to construct an efficient facility which he will have to operate satisfactorily for many years, and which will have to be profitable so that his outlay is repaid, and repaid with a good profit margin, will look very carefully at all the risks involved.
- xii. In such projects, the lenders providing the finance for the project have – in view of the risks they will bear – a substantial influence on the drafting of the necessary contract agreements, e.g. the concession agreement, the power purchase agreement and the turnkey facility construction agreement.
- xiii. Their focus is not just on the efficiency of the project process, but also on the certainty of the cash revenue.
- xiv. Consequently, the design and construction phase is generally governed by a turnkey contract, usually known as the EPC (Engineering, Procurement, Construction) contract, which will be on a fixed lump sum basis.
- xv. In search of security and limited exposure, the lenders place the majority of risks (in some cases substantially all the risks) on the construction contractor.
- xvi. While the political risks are mainly covered in the main concession agreement (between the government or owner and the concessionaire group) and the operation and maintenance risks by the operator, the risks associated with the construction of the facility (including technical and market risks) must often be assumed by the construction contractor.

4. RISK SHARING AND THE EPC/TURNKEY BOOK

- i. As mentioned before, traditional conditions of contract are usually based on principles of balanced risk sharing between the Employer and the Contractor. These risk sharing principles have been beneficial for both parties, the Employer signing a contract at a lower price and only having further costs when particular unusual risks actually eventuate, and the Contractor avoiding pricing such risks which are hard to evaluate. These risk sharing principles are continued in the new FIDIC Construction and Plant & Design-Build conditions of contract.
- ii. However, as mentioned, during recent years it has been noticed that much of the construction market requires a form of contract where certainty of final price, and often of completion date, are of extreme importance.
- iii. Employers on such turnkey projects are willing to pay more - often considerably more - for their project if they can be more certain that the agreed final price will not be exceeded.
- iv. Among such projects can be found many projects financed by private funds, where the lenders require greater certainty about a project's costs to the Employer than is allowed for under the allocation of risks provided for by traditional forms of contracts.
- v. Often the construction project, i.e the EPC Contract, is only one part of a complicated commercial venture, and financial or other failure of this construction project will jeopardize the whole venture.
- vi. For such projects it is necessary for the Contractor to assume responsibility for a wider range of risks than under the traditional types of contracts.
- vii. To obtain increased certainty of the final price, the Contractor is often asked to cover such risks as the occurrence of poor or unexpected ground conditions, and that what is set out in the requirements prepared by the Employer actually will result in the desired objective. If the Contractor is to carry such risks, the Employer obviously must give him the time and opportunity to obtain and consider all relevant information before the Contractor is asked to sign on a fixed contract price.
- viii. The Employer must also realize that asking serious contractors to price such risks will increase the construction cost and result in some projects not being commercially viable.
- ix. Thus it is clear that the EPC/Turnkey contract is not suitable for, and not recommended for projects involving complicated and unknown or uncertain ground conditions, such as hydropower or road projects in difficult terrain and relatively unknown ground conditions.
- x. Obviously it would be unrealistic to ask the contractor to guess at and bear the risks of such unforeseen conditions.
- xi. In such cases, where the risks are not possible to evaluate, the Contractor should not be required to take the risk of unforeseen ground conditions.

- xii. The new FIDIC new Plant and Design-Build conditions of contract provisions should therefore be applicable in such cases.
- xiii. Even under other EPC/Turnkey contracts the Employer does carry certain risks such as the risks of war, terrorism and the like and the other risks of Force Majeure, and it is always possible, and sometimes advisable, for the Parties to discuss other risk sharing arrangements before entering into the contract.
- xiv. In the case of BOT (Build - Operate -Transfer) projects, which are normally negotiated as a package, the allocation of risk provided for in the turnkey construction contract negotiated initially between the Sponsors and the EPC Contractor may need to be adjusted in order to take into account the final allocation of all risks between the various contracts forming the BOT package.
- xv. Apart from the more recent and rapid development of privately financed projects demanding contract terms ensuring increased certainty of price and performance, it has long been apparent that many employers, particularly in the public sector, in a wide range of countries have demanded similar contract terms, at least for turnkey contracts.
- xvi. They have often irreverently taken traditional forms of contract conditions and altered the terms so that risks placed on the Employer in the FIDIC Books have been transferred to the Contractor, thus effectively removing traditional principles of balanced risk sharing.
- xvii. This need of many employers has not gone unnoticed, and FIDIC has considered it better for all parties for this need to be openly recognised and regularised.
- xviii. By providing a standard form for use in such contracts, the Employer's requirements for more risk to be taken by the Contractor are clearly stated. Thus the Employer does not have to attempt to alter a standard form intended for another risk arrangement, and the Contractor is fully aware of the increased risks he must bear. Clearly the Contractor will rightly increase his tender price to account for such extra risks.

4. THE EPC/TURNKEY BOOK

The new silver coloured FIDIC contract conditions, Silver Book, for EPC / Turnkey Projects is thus intended to be suitable, not only for EPC Contracts within a BOT or similar type venture, but also for all the many projects, both large and smaller, particularly E & M (Electrical and Mechanical) involving specially engineered plant and equipment and other process plant projects, being carried out around the world by all types of employers, often in a civil law environment, where the government departments or private developers wish to implement their project on a fixed price turnkey basis and with a strictly two party approach, i.e. without adjudication by the 'Engineer',

6. FEATURES OF THE EPC/TURNKEY CONTRACT

- i. Saying that the EPC Contractor must usually assume the majority of the risks associated with the construction of the facility, means that he must take responsibility for completion in time and for completion within the fixed contract price to a much more severe degree than is the case in traditional contracts, i.e. his chances of being granted extra costs or time extension are much more restricted.
- ii. It is to be remembered that the time of taking into operation of the facility is extremely important to the concessionaire, because it is only then that he begins to receive the first return of his outlay.
- iii. Apart from these completion risks, the EPC Contractor must usually take responsibility for defects or errors in the design (including checking parts of the Employer's Requirements), and usually responsibility for site data and sub-surface conditions including unexpected underground obstructions, unless agreed otherwise before Contract signature.
- iv. The Contractor is therefore required to acknowledge that he has examined all aspects of the project prior to commencing the works, thus placing particular importance on the tender phase requiring the Tenderer to have performed any necessary site inspection and analysis as well as verification of any design provided by the Employer.
- v. The Employer, however, retains responsibility for any parts of the Employer's Requirements and any data and information which is stated in the Contract as being the Employer's responsibility, for his definition of the intended purposes of the works, for the criteria for testing and performance of the completed works and for such parts of the Employer's Requirements and such data and information as can not be verified by the Contractor, unless otherwise agreed.
- vi. To avoid future problems for the financiers, all securities, e.g. for performance or for payments, are required to be in the form of on-demand guarantees.
- vii. Additionally, retention moneys may be withheld to ensure performance criteria are actually reached.
- viii. Usually payment will be according to a schedule of payments linked to achievement of clear, easily proven and not arguable milestone events.
- ix. In order to ensure that the EPC/Turnkey Contract reflects in fact the principle of a fixed price contract and to give certainty to the circumstances under which the contract price can be adjusted, the financiers will try to require that any cases or events which can lead to an increase in cost or time extension shall be specifically identified in the contract.
- x. As the traditional principle of balanced risk sharing has been modified, placing more risks on the EPC/Turnkey Contractor, Tenderers will have to carefully assess and evaluate their risk exposure. They will then have to include in their Tender Price adequate allowance for these risks.

- xi. Accordingly, it should be emphasized that developers or other Employers using the EPC/Turnkey Conditions must expect to *pay more* than would be the case under traditional contract conditions.
- xii. Thus under traditional Conditions Employers will only pay **extra** if the risks the Employer bears actually eventuate, whereas under the EPC/Turnkey Employers will **always** have to pay the amount the Contractor has added to cover himself for the extra risks he is taking.

7. OTHER DIFFERENCES FROM TRADITIONAL CONTRACT CONDITIONS:

- i. Employers using this form must realise that the '**Employer's Requirements**' which they prepare should describe the principle and basic design of the plant on a functional basis.
- ii. The Tenderer should then be permitted and required to verify all relevant information and data and make any necessary investigations.
- iii. He shall also carry out any necessary design and detailing of the specific equipment and plant he is offering, allowing him to offer solutions best suited to his equipment and experience.
- iv. Therefore the tendering procedure has to permit some discussions between the Tenderer and the Employer about technical matters and commercial conditions, including alternatives, options, technical aspects, etc., as well as commercial guarantees, maintenance and operation undertakings, training, etc.
- v. However, all basic requirements must have been set out in the Employer's Requirements before tendering.
- vi. All these matters, when agreed, will be collected in a Memorandum or similar which will form part of the Contract Agreement.
- vii. Consequently the traditional tendering procedure ending in a Letter of Acceptance by the Employer of the Tender is not generally suitable for EPC and similar contracts.
- viii. Thereafter the Contractor should be given freedom to carry out the work in his chosen manner, provided the end result meets the performance criteria specified by the Employer.
- ix. Consequently, the Employer should only exercise limited control over and should in general not interfere with the Contractor's work. Clearly the Employer will wish to know and follow progress of the work and be assured that the time programme is being followed. He will also wish to know that the work quality is as specified, that third parties are not being disturbed, that performance tests are met, and otherwise that the '**Employer's Requirements**' are being complied with.
- x. To this end the Employer may appoint a third party, e.g. a Consulting Engineer, as his Representative to control and provide technical expertise, but the term '**Engineer**' is not mentioned in the EPC/Turnkey conditions. The Employer will want to ensure that his Representative has sufficient rights to protect his interests in the project. Since this is a matter between the Employer and his Representative, there is no need

to clearly specify the role of the Employer's Representative within the EPC/Turnkey Contract.

- xi. Under an EPC/Turnkey Contract the Contractor has to prove the reliability and performance of his plant and equipment. Therefore special attention is given to the 'Tests on Completion'. Usually these tests take place over a considerable time period, comprising pre-commissioning and then commissioning tests, followed by the trial operation period. Performance testing and taking over usually take place during the trial operation period.

Finally, to repeat, it should be stressed that the EPC/Turnkey contract conditions is not only for EPC Contracts within a BOT type project.

It is also suitable for all the many projects, particularly E & M involving specially engineered plant and equipment and other process plant projects, but also many civil works projects, which are being carried out around the world by all types of employers, most who probably do not belong to the common law countries, where the government departments or private developers wish to implement their project under the two party approach, with enhanced certainty of final price and time.

This article is based mainly on the publications issued in the FIDIC Seminars following the GAMs in 1998 (Edmonton/Canada) and 1999 (The Hague/Holland) by the CC.

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* أستاذ الإنشاءات وإدارة المشروعات - هندسة عين شمس / مهندس إستشاري / أمين عام الجمعية المصرية للمهندسين الإستشاريين - إسكون : عضو الإتحاد الدولي للمهندسين الإستشاريين "الفيديك" / عضو المكتب التنفيذي للفيديك ومسئول لجان العقود والتحكيم وحل المنازعات بالفيديك (١٩٩٤-١٩٩٨) / عضو زميل محكمة لندن للتحكيم الدولي LCIA / محكم بمركز القاهرة الإقليمي للتحكيم التجاري الدولي / محكم بوزارة العدل

APPENDIX

CONS

Conditions of Contract for CONstruction

P&DB

Conditions of Contract for Plant & Design-Build

EPCT

Conditions of Contract for EPC Turnkey Projects

General Conditions

Guidance for the Preparation of the Particular Conditions

Letter of Tender, Contract Agreement,
and Dispute Adjudication Agreements

GPPC:

- The Conditions of Contract comprise :
the "**General Conditions**", which form part of the "Conditions of Contract for..."
First Edition 1999 published by the Federation Internationale des Inge'nieurs-Conseils
(FIDIC),
- and the "**Particular Conditions**", which include amendments and additions to such
General Conditions
- **User - Friendliness**

CONS + P&DB:

If a General Condition necessitates further data, the subclause makes reference to
this data being contained in the Appendix to Tender

- *EPCT.. data in Particular Conditions: GPPCs checklist.*

All three Books:

If a General Condition deals with a matter on which different terms could apply on
different contracts, the principles applied in writing General Condition were:

- (a) users would find it more convenient if any provision which they did not wish to
apply could be deleted or not invoked, than if they had to write a Particular
Condition; or
- (b) in other cases, where the application of (a) was considered inappropriate,
the General Conditions contain provisions which were considered
applicable to most contracts.

GENERAL CONDITIONS : CONS + P&DB + EPCT

1. General Provisions
2. The Employer
3. The Engineer ----- *CONS + P&DB*
The Employer's Administration ----- *EPCT*
4. The Contractor
5. Nominated Subcontractors ----- *CONS*
Design ----- *P&DB + EPCT*
6. Staff and Labour
7. Plant, Materials and Workmanship
8. Commencement, Delays and Suspension
9. Tests on Completion
10. Employer's Taking Over
11. Defects Liability
12. Measurement and Evaluation ----- *CONS* Tests after
Completion ----- *P&DB + EPCT*
13. Variations and Adjustments
14. Contract Price and Payment
15. Termination by Employer
16. Suspension and Termination by Contractor
17. Risk and Responsibility
18. Insurance
19. Force Majeure
20. Claims, Disputes and Arbitration

Clause 1 - General Provisions

Sub-Clause 1. 1. 1 - The Contract

CONS: Letter of Acceptance, Letter of Tender + Appendix + Conditions of Contract + Specification, Drawings BoQ & other Schedules

P&DB: Letter of Acceptance, Letter of Tender + Appendix Conditions of Contract, Employer's Requirements, Schedules & Proposal

EPCT.. Contract Agreement + Conditions of Contract, Employer's Requirements & Tender

- 1.2 "agreements" shall be written (permanent record)
- 1.3 Approvals, certificates, consents and determinations shall not be unreasonably withheld or delayed
 - 1.5 Priority of Documents
 - 1.9 Delayed Drawings or Instructions *CONS*
 - 1.9 Errors in the Employer's Requirements *P&DB*
 - 1.10 Employer's Use of Contractor's Documents
 - 1.13 Compliance with Laws
 - 1.14 Joint and Several Responsibility

Clause 4 - The Contractor

4.1 General Obligations

CONS: The Contractor shall design: to the extent specified in the Contract *sub-paragraphs (a)-(d) unless otherwise stated* and design Plant & Materials as required for them to be in accordance with the Contract *P&DB + EPCT.* When completed, the Works shall be fit for the purposes for which the Works are intended as defined in the Contract

Securities

example forms for

Parent Company Guarantee, Tender Security,
Performance Security, Advance Payment Guarantee

- 3.1 (a) the Engineer is deemed to act for the Employer
- (b) the Engineer cannot relieve a Party of any duties, ...
- (c) Engineer's approvals, ... or other acts shall not relieve the Contractor of any responsibilities under the Contract

3.4 If the Employer intends to replace the Engineer, the Contractor is to be given 42 days' notice, which is to include replacement's experience. No replacement if the Contractor raises reasonable objection

Clause 3 - The Employer's Representative : EPCT

3.4 Each instruction shall be written and shall state the obligation to which it relates

3.5 Each Party shall give effect to each determination unless the Contractor notifies dissatisfaction within 14 days

Options for the Intermediary

<p><u>CONS + P&DB</u> Payment Certificates issued by Engineer. DAB makes pre-arbitral decisions on disputes <i>C. f. old Orange Book</i></p>	<p><u>EPCT</u> No intermediary, so no Payment Certificates. DAB makes pre-arbitral decisions on disputes</p>
<p><u>CONS + P&DB,</u> <u>with stated Particular Condition</u> Payment Certificates issued by Engineer, who also makes impartial pre-arbitral decisions on disputes <i>old Red & Yellow Supplements</i></p>	<p><u>CONS + P&DB,</u> <u>with another Particular Condition</u> Payment Certificates issued by impartial Engineer, but DAB makes pre-arbitral decisions on disputes <i>old Red & Yellow Supplements</i></p>

Clause 4 - The Contractor

4.1 General Obligations

CONS: The Contractor shall design: to the extent specified in the Contract *sub-paragraphs (a)-(d) unless otherwise stated* and design Plant & Materials as required for them to be in accordance with the Contract
P&DB + EPCT. When completed, the Works shall be fit for the purposes for which the Works are intended as defined in the Contract

Securities

example forms for

Parent Company Guarantee, Tender Security,
Performance Security, Advance Payment Guarantee,
Retention Money Guarantee, Guarantee by Employer
are annexed to each GPPC, taking account of the Parties' conflicting preferences:
Employers wish to have securities which enable them to demand immediate payment:
without preconditions (such as evidence of default) which may be challenged in
arbitration or litigation

Contractors wish to be able to prevent payment until the Employer has substantiated the
entitlement to call the security and the Contractor has been able to challenge such
substantiation

4.2 Performance Security

4.4 Subcontractors

4.10 Site Data

4.12 *CONS* + P&DB: "Unforeseeable"

(1.1.6.8 not reasonably foreseeable by an experienced
contractor by the Tender submission date)

More-favourable physical conditions?

4.19 Electricity, Water and Gas

4.20 "Employer's Equipment" & free-issue material

4.21 Progress Reports

Clause 5 - Nominated Subcontractors *CONS*

Clause 5 - Design *P&DB + EPCT.*

5.1 General Design Obligations

5.2 Contractor's Documents

comprise those specified in Employer's Requirements, those for regulatory approvals, as-built documents and the operation-and-maintenance manuals

5.5 Training

Clause 6 - Staff and Labour

Clause 7 – Testing

Clause 8 - Commencement, Delays and Suspension

8.1 Commencement of Works

8.2 Time for Completion

8.3 Programme *no "approval"*

8.4 The Contractor shall be entitled subject to Sub-Clause 20.1 to an extension of the Time for Completion if and to the extent that completion for the purposes of Sub-Clause 10.1 is or will be delayed by a Variation, a cause of delay under other Sub-Clauses, *CONS + P&DB*: exceptionally adverse weather, Unforeseeable shortages in availability of personnel or Goods due to epidemic or governmental actions or delay attributable to Employer or his Personnel

Clause 9 - Tests on Completion

Clause 10 - Employer's Taking Over

Clause 11 - Defects Liability

CONS: Clause 12 - Measurement and Evaluation

12.3 Evaluation - new rate or price if.

- (a) (i) final quantity is <90%, or is >110%, of BoQ quantity,
(ii) change in quantity x BoQ rate is >0.01% of ACA,
(iii) change in quantity directly changes the Cost per unit quantity by more than 1% &
(iv) the item is not a "fixed rate item"; or
- (b) (i) the work is instructed under Clause 13,
(ii) no rate or price is specified for this item, and
(iii) no BoQ rate or price is appropriate because the work is not of similar character, or is not executed under similar conditions. as any BoQ item

P&DB + EPCT.. Clause 12 - Tests after Completion

P&DB.. by Employer

EPCT.. by Contractor

Clause 13 - Variations and Adjustments

13.1 Right to Vary unless: the Goods are not readily obtainable for the Variation, *P&DB+EPCT..* it affects safety, suitability or performance criteria

13.2 Value Engineering

13.8 Adjustments for Changes in Cost *CONS+P&DB only*;

Particular Conditions for EPCT

Clause 14 - Contract Price and Payment

- 14.1 The Contract Price
- 14.2 Advance Payment
- 14.5 Plant & Materials *shipped or on-Site*
- 14.7 Timing of Payments

Clause 15 - Termination by Employer

Clause 16 - Suspension and Termination by Contractor

Clause 17 - Risk and Responsibility

Clause 18 - Insurance

Contractor is "insuring Party", subject to Particular Conditions
additional joint insured
failure to insure

Clause 19 - Force Majeure

Clause 20 - Claims, Disputes and Arbitration

User-Friendly Flexibility

- Performance Security
 - Employer's Equipment and free-issue material
 - Progress reports
 - Advance payments, Schedule of payments and Currencies of payments
 - Payments upon shipment
 - CONS + P&DB.. Escalation of costs
 - No "Letter of Acceptance"
 - P&DB + EPCT.. Training
 - Tests after Completion
- By adding a Particular Condition..**
Employer to be the "insuring Party"
CONS: Lump sum, or cost-plus
CONS + P&DB: Engineer's Decisions

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- جمال نصار : أستاذ الإنشاءات وإدارة المشروعات - هندسة عين شمس / مهندس إستشاري / أمين عام الجمعية المصرية للمهندسين
ستشاريين- إسكون : عضو الإتحاد الدولي للمهندسين الإستشاريين "الفيديك" / عضو المكتب التنفيذي للفيديك ومسئول لجان العقود
والتحكيم وحل المنازعات بالفيديك (١٩٩٤-١٩٩٨) / عضو زميل محكمة لندن للتحكيم الدولي / LCIA / محكم بمركز القاهرة الإقليمي
للتحكيم التجاري الدولي / محكم بوزارة العدل