

## FEATURES OF EPC CONTRACT SYSTEM

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- *Suitability of EPC System*
  - *Filing of Bids, Scrutiny and Acceptance*
  - *Responsibilities of The Employers*
  - *The Employer's Administration*
  - *Contractor*
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The Government of Andhra Pradesh have taken up a number of irrigation projects on EPC Turnkey System. This system has come into vogue very recently and many of the Engineers are not very conversant with the nuances of the system.

The term EPC / Turnkey system is first coined by International Federation of Consulting Engineers (FIDIC) an organization based In Switzerland. Before we go into the details of the concepts of EPC system, I would like to give you a brief about FIDIC.

FIDIC was first formed in 1913 with about 6 companies joining together and to day the strength has gone up to 60 in number. Among other things discussed by them is the formulation of a standard form of contract. They had come up with this in 1957 with further editions In later years. In 1983 FIDIC appointed a Committee to update this book based on conditions prevailing. This was released in 1987, which is popularly known as RED BOOK.

This Red Book is to cater for the contracts for which the Employer furnishes the designs and drawings and the contractor has to execute the work based on the above. With the number of works taken up by the Government increasing largely and the contractors also becoming sophisticated, the Governments desired to have the design and drawings also prepared by the contractor and execute the works based on the above. To cater for the above FIDIC released in 1995 what is called "ORANGE BOOK". Excepting the responsibilities in regard to furnishing

of drawings and designs, the other conditions almost remain the same but the risks and responsibilities of the contractors are more in ORANGE BOOK than in RED BOOK. There is also an edition brought out in the name of YELLOW BOOK, which caters principally for Mechanical and Electrical works.

As time proceeded the Governments were not able to provide the requisite funds for the projects and wanted to go to Private Finance Institutions. These institutions while coming forward to finance the projects insisted that the works should be completed by the targeted time and that there shall not be any overrun of the cost on any account. The Governments then began altering the existing clauses of the ORANGE BOOK, to cater for the above. Under these circumstances FIDIC came out with another form of contract EPC / Turnkey project. In the year 1999, along with these, the YELLOW BOOK was revised to provide the contents of the ORANGE BOOK, and termed it Plant Design & Build Contract and called it NEW YELLOW BOOK. A revised edition of the RED BOOK was simultaneously issued. The ORANGE BOOK was however left untouched. These three constitute the Suite of Books of 1999 editions. The significant feature of the three books constituting the suite is that the contract conditions are harmonized and are structured in the same way. All these have the following sections in seriatim, the clauses differing with reference to the type of contract.

- 1) General Provisions
- 2) The Employer
- 3) The Employer's Administration
- 4) The Contractor
- 5) Designs
- 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) Tests after completion
- 13) Variation and Adjustments
- 14) Contractor 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

The main feature of the EPC contract system as envisaged in the Silver Book, is that the contractor furnishes the design and drawings and offers to complete the same by the due date for a definite price. The contractor has to provide for the risks of all unforeseen and unforeseeable events and circumstances in his bid amount. On the other hand the SILVER BOOK mandates the OWNER to make available the land required for the work and also to procure all permissions for permanent works and other requirements of the Employer and above all furnish to the contractor the financial arrangements made for the work and to effect payments by the scheduled date, failing which to pay Interest for the delayed payments. There is provision for cancellation of contract by either party in case of non-fulfillment of their responsibility to the other party. There is provision for the Employer also to make claims on the contractor.

The moment the Silver Book is out, a number of institutions have raised hue and cry, particularly on two aspects. One is the absence of the neutral Engineer, with the result the Government will have unbridled opportunities to exercise control over the contract. The other most Important one is that the contractor IS made responsible for the unforeseen, unforeseeable conditions, which he cannot assess and provide for In his bid once. This criticism is from Engineers and Lawyers alike in Europe and America.

The most severe criticism came from Mr. AH. Grove (Jr.) a famous American Lawyer, Rupert Reece and Agne Sandberg. Mr Grove who was appointed by Hong Kong Government strongly pleaded for the Employer to accept the risks for all unforeseen conditions as the risk is impossible to quantify rendering it difficult to reflect the cost in the contract price, "Under the circumstances", he added "the winning tenderer will either be a gambler or a low guesser". It is interesting to note that C.R. Seppala, the Legal Adviser to FIDIC's CONTRACTS COMMITTEE himself says, as his personal opinion:

"While FIDIC's standard forms of contract have traditionally observed the principle of balanced risk sharing between the Employer and the Contractor, the new Silver Book avowedly and unashamedly, places more risk on the contractor than the traditional forms".

He further states that

"However, as is well known, merely transferring risks blindly from the employer to the contractor will not necessarily better ensure that the works are done on time or at the

agreed price. Instead, this may, at best, cause more claims and disputes and, at worst, bankrupt the contractor, thereby requiring the employer to re-bid the job and, almost inevitably, pay a higher price to get the work done’.

Reacting to the wide spread criticism, Mr. Christopher Wade, Chairman of FIDIC, issued a lengthy statement in defense of the Silver Book. Regarding the responsibility of the contractors for unforeseeable conditions, he stated that Silver Book is not to be applied when substantial underground work is involved, where there is no scope for the contractor to inspect and also when not enough time is provided for verification of the site and other conditions to assess the risks and evaluate. That being the case, the sophisticated contractors should be in a position to reasonably assess the risks and provide for. He had also retaliated stating that all the critics were only against the conditions not in favour of the contractor but are silent to the conditions favouring the contractor. He cited the clauses making the Employer responsible to inform the contractor about the financial arrangement made for payment and also the clause for timely payment or failing which payment with compound interest. He had also referred to the clauses whereby the contractor can terminate the contract, in case of abnormal delays and stoppage of work, for reasons not attributable to him and also in case of delay in payments. This clarification does not seem to have cut ice.

EIC association have presented their views in the Global Construction Super Conference Session 3(a) disagreeing with the various provisions of the Silver Book. They had published a detailed guide which, interestingly, Christopher Wade himself recommends for Consultants.

The institutions like ENAA in Japan, ICE and EIC of Europe, AIA, AGC and DBIA of America refused to toe the line of FIDIC and adopted their own forms of contracts, which are evenly balanced between the Contractor and the Employer.

## **FOR WHAT WORKS THIS SYSTEM IS SUITABLE AND FOR WHAT WORKS NOT APPLICABLE:**

- i In the introductory note itself of the Silver Book, FIDIC have mentioned that EPC Turnkey projects are not suitable for use in the following circumstances.
  - (a) If there is insufficient time or information for tenderer to scrutinize and check the requirements or for them to carry out their designs, risk assessment studies and estimating, and
  - (b) If construction will involve substantial work underground or work in other areas tenderers cannot inspect, and
  - (e) If the amount of each payment is to be determined by an official.

Mr Christopher Wade, Chairman while replying to the criticism on this book stated that the Silver Book is primarily intended for BOT projects where the financing comes from private Institutions. He, however, Indicated that this could be a starting point for other type of works (BOT= Build, Operate & Transfer).

Mr. Peter L. Boover, FIDIC's Principal Drafter and Head of contracts, recommends that

"P&DB book may be adopted for design and execution of Building or Engineering works"

and

"EPC Book may be adopted for process of power plant of a factory or similar facility, or of an infrastructure project".

In fact the Task Group of FIDIC in a News item discusses what form to be used for what type of work.

"Is the Contractor going to do most of design? - choose plant contract"

"Is the project a privately financed (or public / private financed) project of the BOT or Similar type where the concessionaire takes total responsibilities for the financing, construction and operation of the project? If so consider using the EPC contract".

As can be seen from the above only plant D & B contract (Yellow Book) is to be adopted for normal contracts and EPC for BOT type

## 1) GENERAL:

### FILING OF BIDS, SCRUTINY AND ACCEPTANCE

The most crucial part in a Turnkey system of contract is the bid stage which comprises of bid information provided by the Employer, bids presented by the Bidder with design and drawings with all relevant data, examination of the same, discussion and negotiation of lowest bid both on technical and commercial grounds and acceptance thereof.

The Employer is expected to make available all the information he has on hand before and after the base data, result of all investigations [surface and subsurface] and all other reports and also furnish the conceptual design. The tenderer should then be permitted to verify all the relevant information and data and carry out further investigations necessary. The employer shall have no responsibility for the accuracy, sufficiency or completeness of such data except that which cannot be verified by the contractor. 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. Both the employer and the bidders are required to spend more time and money in this regard. The bidder not only has to submit bid price but also the specific design proposal with calculations to satisfy the employer's requirements and for "fitness for purpose". The tender process should be used to identify not simply the lowest priced bid but rather the most competitive and technically appropriate bid, taking into account the experience and ability of the bidders, their financial strength, their design and construction skills and experience. The price comes only next. The World Bank expert, by name G. Westring, advocated for stage wise examination of bids. He states that only after ensuring that the designs furnished are acceptable, the financial bids should be opened and that the prime importance of the employer is to ensure the acceptability of the design. Financial matters come next.

## **2) RESPONSIBILITIES OF THE EMPLOYERS: (Section 2 )**

The Employer shall give the contractor right of access to and possession of all parts of the site within time (or times) stated in the particular condition.

If the contractor suffers delay and/or incurs cost as a result of failure by the employer to give any such right or possession within such time, the contractor shall give notice to the Employer and shall be entitled to extension of time and payment of costs plus reasonable profit, which shall be added to the contract price.

The Employer shall provide reasonable assistance to the contractor at his request

- a) for obtaining copies of the laws of the Country and
- b) for the contractor's applications for any permits, licenses or approvals required by the laws of the Country.

The Employer shall submit, within 28 days after receiving any request from the contractor, reasonable evidence that financial arrangements have been made and are being maintained which shall enable the employer to effect payments to the contractor.

If the Employer considers himself entitled to any payments in accordance with the conditions of the contract, he may deduct this amount by setting it off against the contract price.

The Employer may issue instructions in writing during the course of execution drawing the attention of the contractor to particular clause/s of the agreement. The contractor shall act accordingly and if he does not agree with the instructions, he may approach DAB within fourteen days.

### **3) THE EMPLOYER'S ADMINISTRATION: (Section 3)**

The Employer shall have a representative to oversee the performance of the contractor in executing the work to the plans and drawings, specifications and also to time. He shall pass on the necessary instructions to the contractor in this regard, which shall be in writing.

### **4) CONTRACTOR: (Sections 4, 5 & 6)**

The contractor shall design, execute and complete the works in accordance to the contract, and shall remedy any defects in the work. When completed the work shall be fit for the purpose for which it is intended. The works shall include any work necessary for stability or for completion and proper operation of the work. He shall deploy all themachinery mentioned in the contract documents that are necessary for the execution of the work.

The contractor shall prepare all documents as per the Employer's requirements from time to time including progress reports, alterations in methodologies etc. He shall also submit As-Built documents, operation and maintenance manuals as prescribed.

The contractor shall obtain a Performance Security as mentioned within 28 days of signing the agreement, which shall be valid till the performance certificate is issued to him. The Employer has claim over this security towards the amount due to him or for non-rectification of defects in time and also when the contract is terminated.

The Employer shall indemnify the contractor harmless against any claim other than what the Employer has got as mentioned above. This performance guarantee will be released within 21 days after the performance certificate is issued.

The contractor shall not sub contract the whole of the works and shall be responsible for the defects of the sub contractor. The contractor shall employ the sub contractor duly giving 28 days notice furnishing the credentials of the contractor, details of work estimated, duration etc.

The contractor shall take all safety precautions for the men, material and machinery brought to site and shall observe all local laws including labour laws. He shall also take steps to preserve the environment.

### **5) PLANT, MATERIALS AND WORKMANSHIP: (Section 7)**

The contractor shall carry out the work utilizing machinery as planned and carry out all tests as specified and remedy the defects in time. He shall provide free access for the Employer to inspect the machinery, materials etc. The contractor shall pay all royalties for the material as required by the laws.

## **6) COMMENCEMENT, DELAYS AND SUSPENSIONS: (Section 8)**

The commencement day shall be within 42 days after the date on which the contract comes into full force. Within 7 days from commencement date the contractor shall proceed with the work. The contractor shall submit a programme of work within 28 days of the commencement date; which has to be reviewed and approved by the Employer within 21 days.

The contractor will be eligible for extension of time if there are variations ordered by the employer, or impediments and delays attributable to the employer or for reasons beyond the control of the contractor or conditions of *Force Majeure* and shall apply for the same within 28 days of becoming aware of the event or circumstance.

If however the delay is due to the failure on the part of the contractor, damages shall be paid per day after the agreed date of completion, as specified in the contract, subject to a maximum as mentioned therein.

If the employer orders for suspension of work for any reasons. put in writing other than for which the contractor is not at fault, the contractor is eligible for suitable extension of time and payment of costs which shall be added to the contract price, including the cost of plant ordered at the instance of the employer, if the period of suspension is more than 28 days. If the suspension of work continues for more than 84 days, the contractor may issue 28 days notice upon which, the portion of work under consideration shall be ordered by the Employer as variation. If the suspension affects the entire work, the contractor may give notice of termination.

## **7) TESTS ON COMPLETION, TAKING OVER, DEFECTS LIABILITY AND TESTS AFTER COMPLETION: (Chapters 9 to 12 )**

The tests shall be carried out after the work is completed, as specified. If any component of the work does not pass the tests, the contractor has to remedy the defects, failing which the employer himself does it and order for suitable reduction in contract price. If the entire work is not acceptable, the employer will terminate the contract and make good the loss sustained.

If the contractor is asked carry out tests “for search” which does not reveal anything untoward the contractor has to be paid the costs of tests with reasonable profit.

## **8) VARIATIONS IN ADJUSTMENTS: (Section 13)**

Variations can be ordered by the employer and the contractor is required to respond informing any extension of time required and adjustment of contract price whereupon the employer will determine the adjustment. If the contractor does not agree with the decision of the Employer, he may approach DAB.

The contract price shall be adjusted to provide for changes in laws, statutes of the Country



and if it warrants, extension of time may be granted.

The contract price is to be adjusted for variation in cost of labour, material or other inputs, the same shall be done according to the provisions of the agreement.

The employer may order provisional sums for any proposal he feels desirable and also allow payment on work days basis for minor incidental works.

## **9) CONTRACT PRICE AND PAYMENT: (Clause 14)**

Payments to the work are based on lumpsum contract price, subject to adjustments in accordance with the contract.

An interest free loan can be sanctioned for mobilization and design, the terms of recovery being as specified in the agreement. The first instalment for the work is due within 42 days after the contract comes into force or 21 days after submitting the bill which ever is later. Application for interim payments may be preferred at the end of the periods specified along with details of work executed, including variations if any. The deductions due should also be incorporated.

If the intermediate payments are based as per schedule of time, the same shall be determined by the Employer, duly taking into account the progress of work.

The Employer is empowered to make deductions if he finds any work requiring to be rectified.

If the contractor is entitled for payment for the plant and machinery not brought to site the same can be made when it has already arrived in the Country and is marked as Employer's property after necessary production of BG and Insurance Cover. All the intermediate payments are payable within 56 days of receiving the statement.

If the contractor does not receive payment within the time mentioned above, he shall be entitled to receive financing charges compounded monthly on the amount unpaid during the period of delay at 3% points higher than the discount rate of Central Bank of the Country

When the work is completed and taking over certificate is issued for the work. or parts of the work if provided for, 50% of the retention money is to be released with the balance after the end of the Defects-Notification Period. If there be any amount that is required for rectification, the same shall be withheld till completion. Within 84 days after receipt of Taking Over Certificate, the contractor shall submit a final bill for the work executed with all records which shall be paid by employer within 42 days. Within 56 days after receipt of Performance Certificate. the contractor shall furnish the details of payments due along with a discharge certificate, which shall be settled within 42 days of receipt of the claim. Disputes about the final payment are to

be resolved through DAB.

## **10) TERMINATION BY EMPLOYER OR CONTRACTOR: (Sections 15 & 16)**

The employer may terminate the contract if the contractor fails to discharge his obligations regarding the progress of the works or abandons the works or subcontracts the whole of work or becomes bankrupt or indulges in malpractices like bribery etc. He may take over the machinery and material available at site and all the records available and execute the balance work at the risk and cost of the contractor. Upon completion of the work the accounts of the contractor will be finalized duly taking into account the extra expenditure incurred for completion, remedying the defects and pay him.

The employer has also the right to terminate the contract 28 days after issue of notice or return of the Performance Guarantee whichever is later for reasons other than executing the work himself or by a third agency. Upon such termination, the contractor shall be paid for the work done and the liabilities he has on hand for executing the work further, cost of removal of temporary equipment and clearing up and demobilization cost of men and machinery.

If the employer fails in his obligation to pay the contractor, he shall issue 21 days notice and suspend the work, duly preserving right for financing charges for the delayed payments. If further the contractor receives evidence of payment he may resume the work, duly claiming for loss, if sustained any, during the period of suspension and extension of time. The employer is required to determine this amount with suitable profit and add to the contract price.

The contractor shall also be entitled to terminate the contract with 14 days notice if he does not receive reasonable evidence of financial arrangements made by the Employer even after 42 days notice or prolonged suspense for want of payment affects the whole of work or if the employer fails substantially to discharge his other obligations. No notice is required in case of employer becoming bankrupt or in case of prolonged suspension.

Upon termination of the contract by the contractor the employer shall promptly pay dues on account of the work done together with performance security and also compensate the loss the contractor sustained as a result of this termination.

## **11) RISKS AND RESPONSIBILITIES: (SECTION 17)**

The contractor shall indemnify the employer and all his personnel against claims, damages or losses of any kind consequent to the deficiency and negligence in design and execution of works or remedying the defects. He shall also insure the work against the above odds. Similarly the employer shall indemnify the contractor against all damages consequent to the failure of the employer to discharge his liabilities or from any act of the employer or his personnel.

The contractor shall be fully responsible for the care of works till the issue of taking over certificate, from when the responsibility passes on to the employer. The contractor however is responsible for the damages caused subsequently by any of his actions or due to the events that had taken place earlier to the taking over certificate.

The risks regarding war, hostilities, rebellion etc. or radiation or pressure waves caused by air craft shall be to the account of the employer and if the contractor suffers any damage the same shall be made good by the employer and also sanction extension of time for the time lost in remedying the situation

## **12) INSURANCES: (SECTION 18)**

The works and the personnel of both the Employer and the contractor shall be insured against any damage due to defective work and shall be in the name of both the parties. The contractor may also insure the employer and his personnel against all bodily damages during the course of work till the take over certificate is issued. Similar insurance has to be done by the contractor for his own personnel.

## **13) FORCE MAJEURE: (SECTION 19)**

*Force Majeure* means an exceptional event or circumstances

- (a) which is beyond a party's control
- (b) which such party could not be reasonably provided against before entering into contract
- (c) which, having arisen, such party could not reasonably have avoided or overcome, and
- (d) which is not substantially attributable to the other party

*Force Majeure* apart from the above, includes the natural calamities, rebellions and disorders etc. mentioned earlier as the risks of the Employer.

If the contractor is prevented from complying with his obligations due to *Force Majeure* condition he shall give notice within 14 days of coming to know of it and excuse himself from performance of contractual obligations. Under the above circumstances, the loss sustained by the contractor should be made good and extension of time sanctioned. If the suspension of the work on *Force Majeure* condition lasts for a continuous period of 84 days or 140 days. In multiple periods the contractor can terminate the agreement with 7 days notice and shall be eligible for all payment, as in the case of optional termination by contractor earlier mentioned due to Employer's substantial failure to comply with his obligations.

Further, apart from the above, if the performance of the contract becomes impossible for circumstances and events beyond the control of the parties, they may issue notice and opt out of the contract, with all payments due as per optional termination without prejudice, however, to the rights of the other party to claims in respect of the earlier breaches of the contract.

#### **14) Claims, Disputes and Arbitration: (Section 20 )**

If the contractor has reason to believe that he has claim for extension of time or for additional payment he shall give notice of the same to the employer within 28 days of the contractor becoming aware of the event or circumstances, due to which he thinks he is entitled for a claim. Within 42 days of such event or circumstances the contractor must present the claim with all details and records. The employer may examine this and give his decision. If the dispute still persists, the parties may give notice to other for reference of the matter to DAB(Disputes Arbitration Board), which shall be appointed within 28 days of issue of that notice. The DAB shall be one or three as mentioned in the document. If the parties have no agreement on the person selected in the case of Single Member DAB, the members shall be three. One each will be selected by the parties and the third, the Chairman, will be selected by the two members. If there be any difficulty or disagreement in the final constitution of DAB, then the appointing entity or official named in the particular conditions shall, after due consultations with the parties, appoint the single man DAB. Both the parties shall bear the remuneration to the DAB equally. Upon the constitution of the DAB both the parties will promptly make available all the information to the DAB, who shall give its reasoned decision within 84 days. There upon if any party is dissatisfied with the decision of the DAB, he may issue notice to the other party within 28 days of his dissatisfaction and within 56 days of such issue of notice, the parties may attempt to arrive at an amicable settlement. If this does not materialize the issue shall be decided by Arbitration under the Rules of Arbitration of the International Chamber of Commerce. The Arbitration Tribunal shall be of 3 members. During the period of Arbitration neither party is limited to their presentations made before the DAB.

In case no notice of dissatisfaction is issued within 28 days, the DAB's decision will be final and if a party fails to comply with this decision, the other party shall directly seek Arbitration without the need for any amicable settlement. When there is no provision for DAB in the agreement, the dispute may directly be referred to Arbitration and the question of amicable settlement does not apply.



