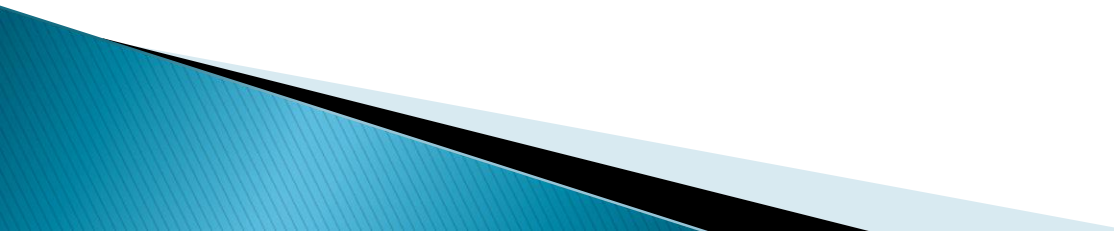


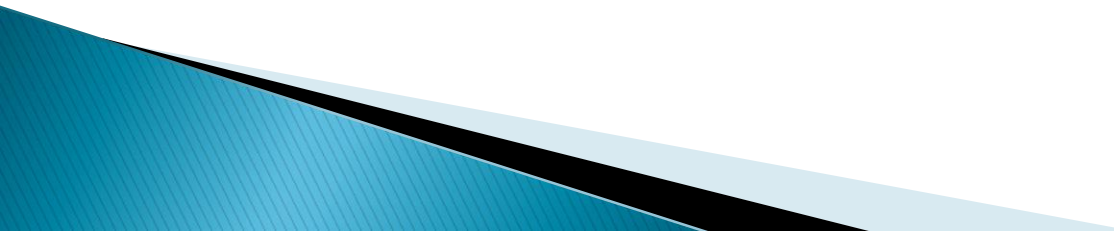
# Procurement

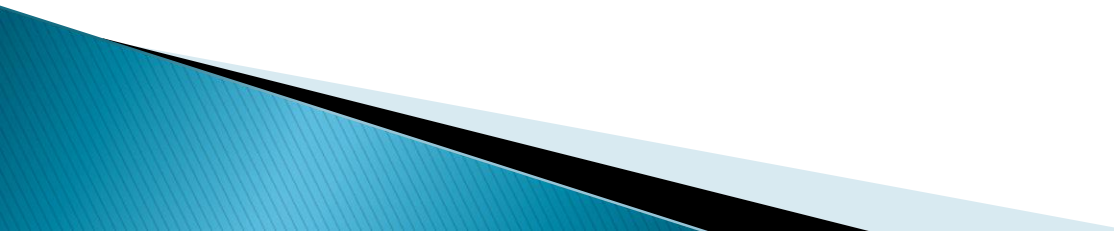
# Purchase procedures

- ▶ Without quotation
  - ▶ Purchase committee
  - ▶ Purchase through Rate contract
  - ▶ Advertised Tender Enquiry (ATI)
  - ▶ Limited Tender Enquiry (LTI)
  - ▶ Single Tender Enquiry (STI)
- 

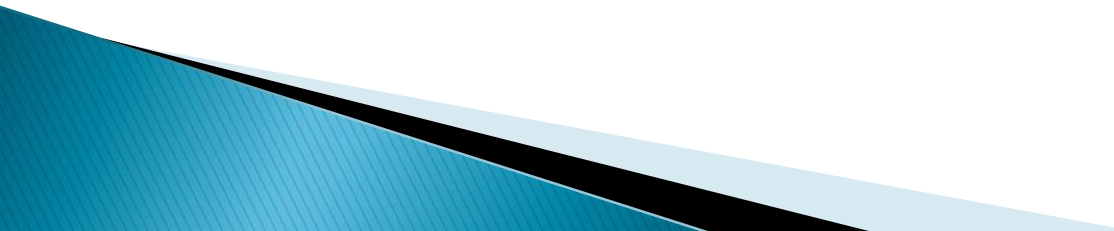
# LTI

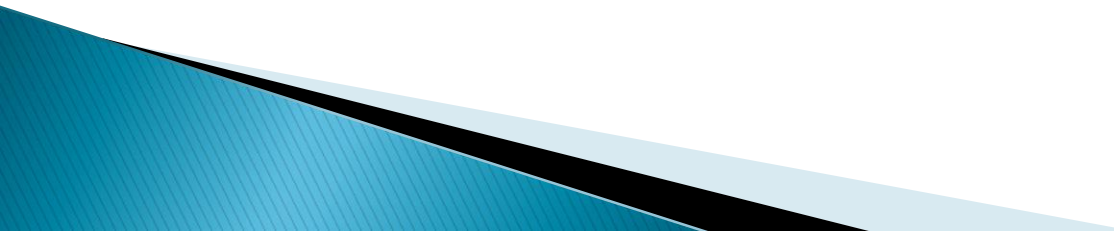
- ▶ Known limited suppliers
- ▶ Urgency
- ▶ Suppliers to be more than three

- ▶ Cost of tender documents
  - ▶ Extension of opening date– Normally three weeks for national and four weeks for international suppliers after the bid doc. Sale
  - ▶ Late tender
- 

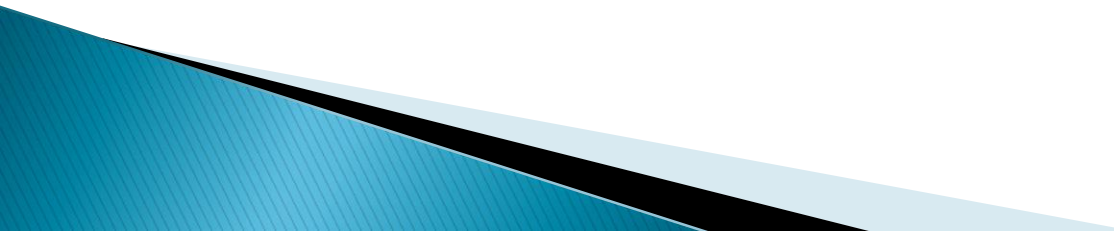
- ▶ Opening of tenders
  - ▶ Discounts in tenders
  - ▶ Conditional discounts
  - ▶ Lots of goods
- 

# EMD

- ▶ 2–5% of estimated value of goods
  - ▶ Whose estimate?
  - ▶ Purpose of EMD
  - ▶ Validity of EMD
  - ▶ Sufficiency of EMD
  - ▶ Extension of validity of EMD
- 

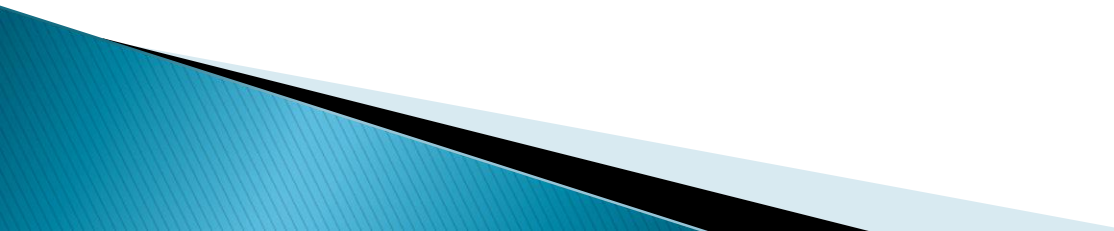
- ▶ Letter of Award and signing of contract
  - ▶ Refund of EMD to other bidders
  - ▶ Refund of EMD to the successful bidder
- 

# Security Deposit

- ▶ 5–10% of contract amount
  - ▶ Up to what date? 60 days beyond the responsibility under contract ends
  - ▶ Verification of bank gurantee
  - ▶ Monitoring of EMD/SD
- 



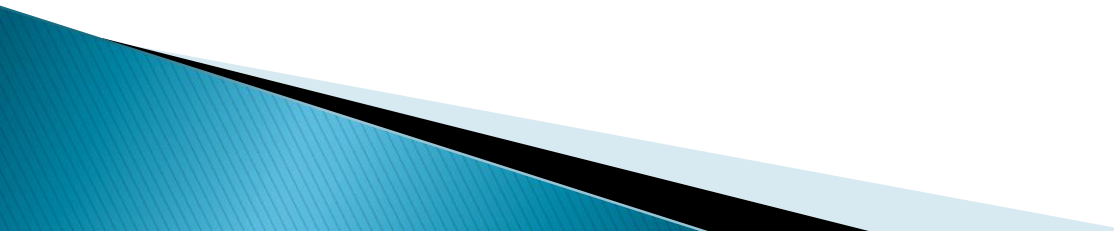
# Delivery

- ▶ Delivery period
  - ▶ Terms of delivery
  - ▶ Installment Delivery
  - ▶ Entire Contract
  - ▶ Severable contract
- 

# EOT

- ▶ Force measure

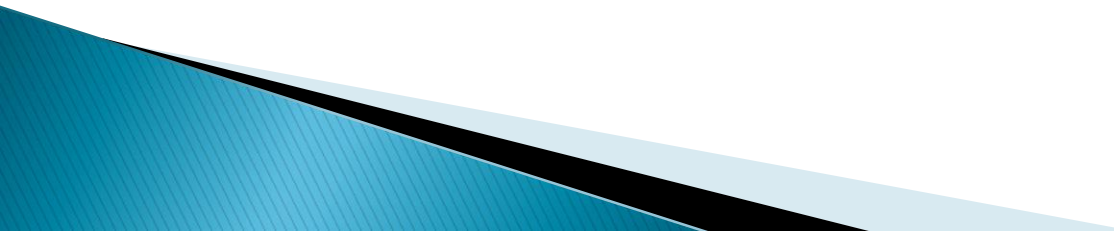
# Remedies for delay

- ▶ Extend the delivery with imposing of liquidated damages and other denial clauses
  - ▶ Forfeit the Security Deposit
  - ▶ Cancel the contract
  - ▶ Impose other available sanctions/penalties
- 

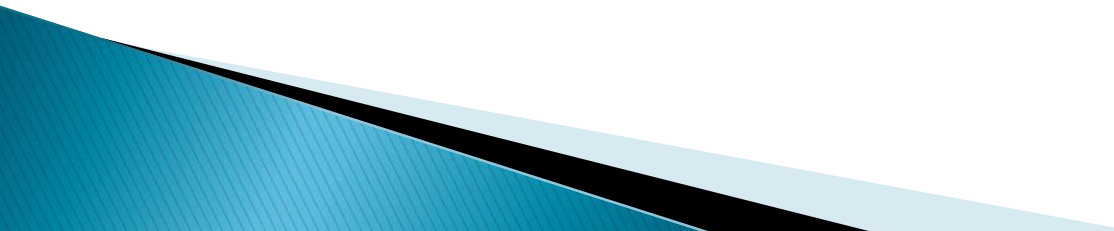
# Damages

- ▶ Liquidated damages
- ▶ Token liquidated damages

# Supplier Banning

- ▶ When to ban?
  - ▶ How much duration?
  - ▶ What happens to existing contracts
  - ▶ What happens to bids submitted
- 

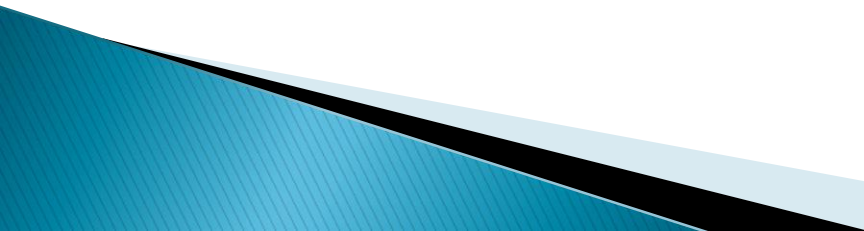
# Errors in bids

- ▶ Unit price– total price
  - ▶ Subtotal– grand total
  - ▶ Words –figures
  - ▶ Original copy– duplicate copies
  - ▶ Omission of items
- 

# Currencies and conversion

- ▶ Date of rate of conversion

# Resonableness

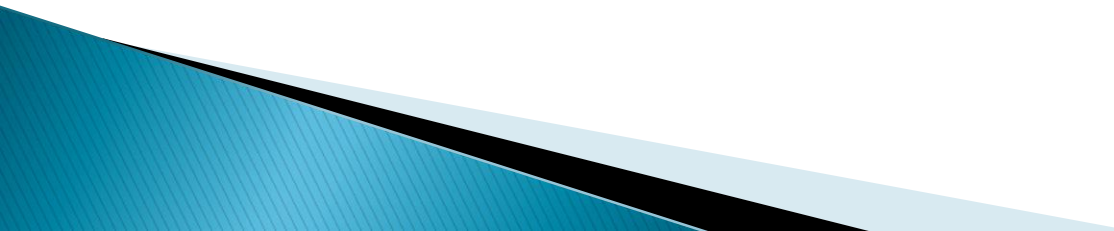
- ▶ (i) Last purchase price of same (or, in its absence, similar) goods
  - ▶ (ii) current market price of same (or, in its absence, similar) goods
  - ▶ (iii) Price of raw materials, which go into the production of the goods
  - ▶ (iv) Receipt of competitive offers from different sources
  - ▶ (v) Quantity involved
  - ▶ (vi) Terms of delivery
  - ▶ (vii) Period of delivery
- 



# Procurement of Works

# Works Contract

# Types of Works Contract for Civil works–Standard

- ▶ ICB–International Competitive Bidding
  - ▶ NCB–National Competitive Bidding
  - ▶ Performance based Contract– for Maintenance  
works
- 

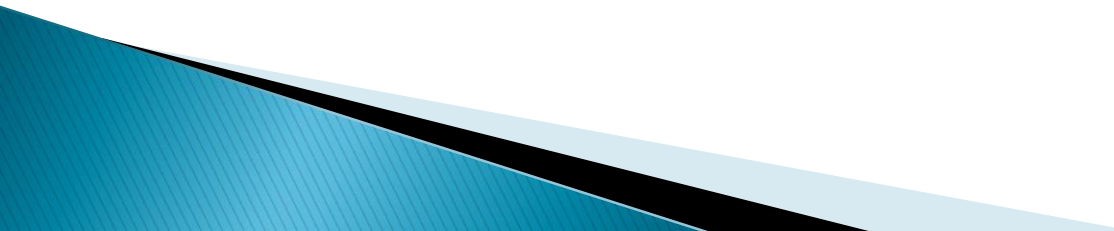
# FIDIC Based Contract

*Federation Internationale Des Ingenieurs Conscils*

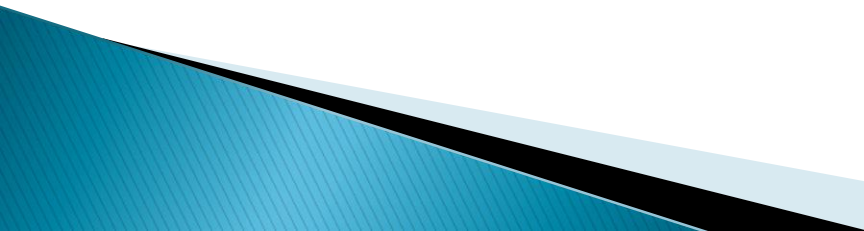
## Types of FIDIC Documents

- » Construction Contracts–Designed by Employer
- » EPC–Turnkey Contracts
- » Plant and Design Build Contract
- » Short form of Contract– for small works

# Advantages of FIDIC document

- ▶ As the package size is large many of the international contractors will participate, leading to good competition.
  - ▶ Favorable Tenders will be received
  - ▶ Equal opportunity to both the parties.
  - ▶ Problems to the Employer will be less
- 

# Disadvantages

- ▶ Takes longer time to ground the work.
  - ▶ Engineer and Employer need to be prompt in replying to the contractors correspondence.
  - ▶ May lead to huge claims, if prompt action is not taken on the contractor's correspondence.
- 

# NCB Contract

- ▶ Contracts having less value.
  - For Domestic funded –
  - Mostly Post Qualification.

# Advantages


- ▶ Works can be grounded within short period
  - ▶▶ Tender notice to receipt of tenders– 30 days



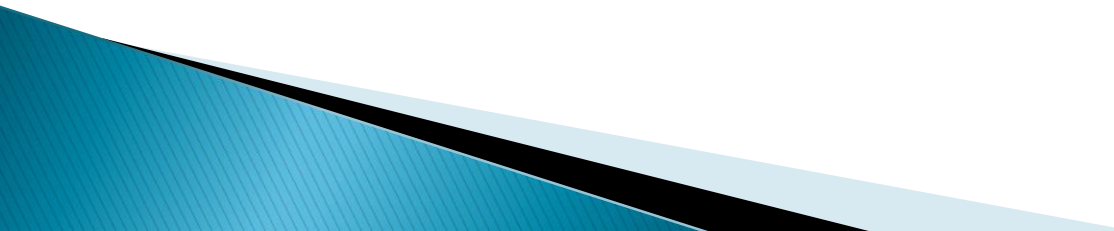
# Disadvantages

- ▶ Local Contractors may not allow outsiders to participate leading to higher TP
  - Employer has to take more responsibility
  - Not recommended for Major Packages

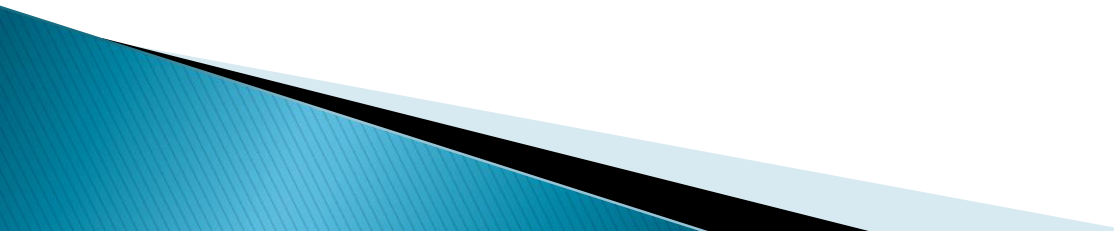
# Suggested

- ▶ To have some ICB and some NCB.
  - ▶ Performance Based Contracts for Maintenance works.
  - ▶ Encourage local construction Industry to have meaningful JV to improve their capacity in Contract management.
  - ▶ Conduct training programs for company Engineers and also Construction Industry representatives.
- 

# Performance Based Contracts

- ▶ These are meant for Maintenance works
  - ▶ Document to be made clear
  - ▶ Intervention levels to clearly specified for each activity
  - ▶ Quality surveillance to be perfect
  - ▶ Initial survey to be perfect to identify sections which are beyond maintainable reach
- 

# Maintenance – Types

- ▶ Routine Maintenance
  - ▶ Periodic Maintenance
- 

# Performance Based Contracts

- ▶ All items included
- ▶ Monthly Payments on Performance
- ▶ Intervention & Rectification Standards to be indicated clearly in the Contract
- ▶ Routine Maintenance Items on Rate per unit per year.
- ▶ Periodic on item rate.
- ▶ Day works provision.

# Periodic Contracts

- ▶ Item rate Contract–All items included
- ▶ Defect Liability period to be specified in advance say 18 months
- ▶ Quality Audit by QC staff
- ▶ Package size varies from Rs.10 mil. to 100 mil,Performance is normally good

# Important items of Bid Document –Attention needed

- ▶ BOQ, Drawings & Specifications
- ▶ Qualification Criteria
- ▶ Price Adjustments /
- ▶ Mile Stones
- ▶ Sectional Handover
- ▶ LD / Bonus
- ▶ Other miscellaneous items such as Dispute resolution, time for payment of bills etc.

# Qualification Criteria

- This is important and hence due attention to be given.
  - Annual Turn over
  - Similar nature of work–
  - Minimum Quantity of items work completed
  - Include only major components of work for qualification criteria– experience
  - Equipment
  - Personnel.
  - Financial/credit facility
- Senior officer to decide the Qualification criteria – without leaving to Junior officers.



# Price Adjustment

- ▶ Weights for individual component to be decided based on the actual quantities.
- ▶ Clearly indicate the indices to be adopted.
- ▶ Various formulas for deciding the price adjustments to be verified twice or thrice.
- ▶ Define clearly base price and current price if specified. If Retail price is mentioned specify the nearest outlet.

# Mile Stones

- ▶ For each Contract it is advisable to provide *at least Two Mile stones*, in order to watch and take action to correct instead of waiting up to the end.
- ▶ Advisable to provide up to completion of Base Course, instead of the entire work in a reach.
- ▶ Consider the working season while fixing the Mile stones.

# Sectional handover

- ▶ Asses the Time required to make available encumbrance free site to the Contractor i.e. completion of LA & shifting of Utilities.
- ▶ Accordingly indicate the sectional handover in the Contract data / Appendix to bid.
- ▶ In one of the project even though it was indicated that some sections will be handed over after one year, it could not hand over even after 3 years.

# Liquidated Damages & Bonus

- ▶ L.D. to be indicated in the Contract data / Bid Document for the delay of completion of mile stone. Bonus if decided to be indicated for early completion.
- ▶ The amount shall be per day for the delay in completion mile stone.
- ▶ It shall be generally fixed at 0.05% per day of the contract value of each mile stone.

# Varied Rate for Changes in Quantities

- ▶ Variation in the quantity more than 25%, provided the change exceeds 1% of the initial contract price.
- ▶ Indicate the intention clearly in the contract data
- ▶ Rate for new item how it is going to be derived.
- ▶ If desired to change the GCC please examine and indicate in Contract data

# Important Issues

- ▶ Contract data – in case of NCB Document
- ▶ Conditions of Particular application (COPA) & Bid Data– in case of ICB document.  
  
each clause has to be seen by the Responsible experienced person.
- ▶ Mile stones and Contract period are to be fixed rationally.
- ▶ Define the Contract price in the document and accordingly notify the contractor while issuing letter of acceptance.

# Bid Opening some experiences

- ▶ No rates in the original Bid document, in addition rebate offered through modification letter.
- ▶ Letter issued by the contractor authorising agent to present at the time of bid opening has signed modification letter.
- ▶ Modification of the rates after opening of the Tender.

- ▶ Bid Security was short by one day.
- ▶ Before Tender closing time, one contractor has complained that his tender was snatched by other contractors personnel.



# Bid Evaluation

- ▶ No rates quoted for some of the items in BOQ.
- ▶ Discount offered after bid opening.
- ▶ Further clarification / information required for evaluating the tenders.

- ▶ Rates quoted were read during the bid opening, but the form of bid was not read. During evaluation it was found that the contractor has offered a discount over quoted rates and indicated the final bid amount, how to proceed.
- ▶ Found that the experience certificate produced is false.

# Contract Implementation

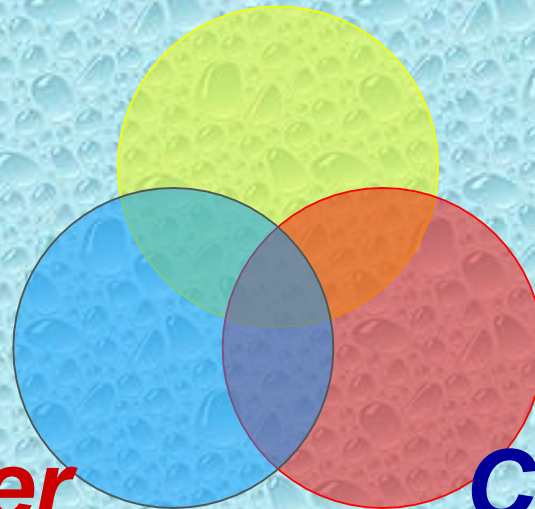
# Actions to be Completed Prior to Commencement of Work

- ▶ Land acquisition to be Completed well before hand over of the Section as per the Contract.
- ▶ Complete Relocation of Services/ Utilities to provide encumbrance free site to the Contractor within the dates specified in the Contract.
- ▶ Complete Resettlement Action plan i.e. to relocate PAP's.
- ▶ Any delay in the above will lead to cost and time overrun.

- ▶ Prepare plan and identify PAP's within Corridor of Impact.
  - Evolve R&R Policy and accordingly RAP
  - Publicize the Policy in local language
  - Conduct Village meetings to educate people. Take the assistance of NGO.
- ▶ Establish implementation cum Tender Committee

# Major Players in the Contract Implementation

***Engineer***



***Employer***

***Contractor***

# Major Role Of Employer

- ▶ To invite Bids and award the Contract.
- ▶ Arrange to Issue Drawings
- ▶ Organize to provide encumbrance free site to the contractor, well before the time indicated in the contract data.
- ▶ Arrange to Remove the utilities coming in the way well before the Contractor commence the work.
- ▶ Position and Notify the Engineer name and address to the Contractor.
- ▶ Approve Extension Of Time based on the recommendation of the Engineer.

# Role Of Engineer

- ▶ Issue drawings to the Contractor
- ▶ Issue notice to commence
- ▶ Approve working drawings
- ▶ Notify to all, the delegations if any
- ▶ Process Interim Payment Certificate and recommend to Employer within the time specified.
- ▶ Conduct Site office meetings
- ▶ Issue instructions on variations
- ▶ Quality Assurance & Progress Monitoring



- ▶ Determine EOT
- ▶ Take over stretches from the Contractor on substantial completion of the work
- ▶ Issue taking over certificate
- ▶ Issue of final Certificate
- ▶ Assessment of Claims
- ▶ Finalise Variation orders expeditiously and issue.
- ▶ Forecast any problems which may crop up in future and advise the Employer well in advance.

# Role Of Contractor

- ▶ Identify the material source and get the tests conducted for their suitability and submit to Engineer for approval.
- ▶ Prepare Job mix and get the tests conducted for submission to engineer for approval.
- ▶ Submit Request For Inspection well in advance.
- ▶ Maintain all the site records as directed by Engineer
- ▶ Submit Construction program to engineer for his consent.

- ▶ *Prepare IPC in the form specified by engineer and submit for payment*
- ▶ *Notify if any problems are there in regard to Utilities which are coming in the way of progress of work, well in advance.*
- ▶ *Notify Engineer on Substantial completion of the project.*
- ▶ *Notify intention to claim varied rate for varied item if he intend to claim within 14 days of instructions issued by the ER.*

# Events Giving Raise to a Claim

- ▶ *Delay in issue/approve of Drawings for Construction.*
- ▶ *Delay in resolving Physical obstruction or conditions.*
- ▶ *Failure to give possession*
- ▶ *Delay in granting EOT*
- ▶ *Issue of Variation orders–delay*
- ▶ *Discrepancy between BOQ, Drawing & Specification*
- ▶ *Delay in Payment of IPC*
- ▶ *Delay in paying Price Adjustment*
- ▶ *Change of Law*

# Quality In Constructions

## issues involved

# Terminology

## ▶ Quality

- The totality characteristics of an entity that bears on its ability to satisfy the standard and implied need.

## ▶ Quality encompass

- Quality Control
- Quality Assurance
- Quality Audit

# Responsibility

- ▶ Quality Control – Contractor
- ▶ Quality Assurance – Engineer
- ▶ Quality Audit – Appointed  
by the Employer

# Variation in the Contract



# Variations

*May arise on the following account:-*

- ▶ Increase or decrease of the quantity indicated in the BOQ
- ▶ Omit any such work
- ▶ Change of specifications
- ▶ Change of levels, lines, position and dimension of any part of the work
- ▶ Additional work
- ▶ Change of sequence of construction.

# Valuation of Variations

- ▶ Whether the varied rate fixed for the varied item or the rate in the contract is adopted, Variation order is needed when ever the Quantity increases beyond the agreement quantity.
- ▶ Within 14 days of instruction, and before commencement of the work, notice shall be given by the contractor to the Engineer or Engineer to the Contractor of his intention to claim/ vary the rate for the variations.

# Variation Order

- ▶ The Contractor shall submit the analysis for the varied item to the Engineer with all supporting data.
- ▶ The Engineer shall in consultation with the Contractor and Employer, agree to a suitable rate.
- ▶ If there is disagreement, Engineer shall fix and notify the contractor with copy to Employer.

# Payment of the Contractor's Bills.

# Payment of IPC's

- ▶ Contractor to submit after the end of each Month, a statement, in such a form as Engineer prescribe showing the amounts entitled to the Engineer
- ▶ Engineer shall verify and deliver within the time specified in the contract to the Employer for arranging payment.

# Review and Monitoring

- ▶ arrange to issue Instructions to CSC, for Conducting regular site meetings and issue Minutes.
- ▶ Review Minutes of Site office Monthly Meetings received from CSC.
- ▶ Monthly Progress Reports.
- ▶ Various Check list received from the EE/ PD.
- ▶ Conduct Monthly Meetings with CSC, PWD staff & the Contractors representatives, to review various aspects and issue Minutes.

# Monthly Progress Report

- ▶ Executive Summary
  - Background
  - Physical Progress to date & Estimate to Complete
  - Progress S curve
  - Major Achievement for month
  - Issues to be resolved
- ▶ Description of the project Work
- ▶ Pre- Construction Activities
- ▶ Contractors Mobilisation, organisation, Equipment and Resources
- ▶ Civil works Activities- Program vs. Progress.

- ▶ Environmental issues and progress
- ▶ Safety Aspects
- ▶ Financial Status
- ▶ Matters requiring Department attention
- ▶ Variation Orders
- ▶ Claims.
- ▶ Status of Disputes refereed if any



- ▶ Quality Assurance Program.
- ▶ Supervision Engineer's Activities
- ▶ Construction Problems and Constraints.
- ▶ Project Review Meetings & Inspections held, along with action taken reports
- ▶ Weather Reports
- ▶ Miscellaneous

## Assessment & Approval of EOT Claims

- ▶ Contractor to submit claim for EOT with all substantiation and with supporting documents like revised work plan.
- ▶ Employer representative examines EOT claim, and if in agreement claim sent to authority.
- ▶ Authority checks and endorses the claim, if in agreement.

- ▶ Authority Examines and Approve EOT Claim.
- ▶ Approval can be in part or full. EOT can be with or without LD depending on reasons for the delay attributable to the Contactor or to Employer.
- ▶ Based on the Authorities approval, Engineer will notify the Contractor accordingly.

# Dispute Adjudication

- ▶ DAB or DRB will be the best alternate dispute resolution mechanism available.
- ▶ This will be effective only if both parties i.e. Employer and the Contractor have positive approach to the DRB recommendations.
- ▶ Cost of Adjudication will be meager when compared to Arbitration which will cost about 0.5 % to 1.0% of the disputed amount.

- ▶ The selection of DRB Members shall be carried out judiciously so that the DRB recommendations are fair and truly as per the Contract conditions.
- ▶ DRB Recommendations of different disputes is kept for information of the participants.
- ▶ Clause is recommended to modify making it mandatory for both the parties to accept DRB's unanimous Recommendations upto an amount of –  
-----
- ▶ If not the clause may be modified that unless the decision is set aside by the Arbitration panel, DRB recommendation is binding and shall be implemented.

# Success factors

- ▶ Parties confidence in personnel / professional qualities of DRB members.
- ▶ Continued impartiality and independence of DRB members.
- ▶ Sound reasoning by the DRB to arrive at recommendations.
- ▶ Written recommendations and reasoning are admissible as evidence in Arbitration.
- ▶ Engineer tends to be more alert.

# Termination

- ▶ Engineer certifies to the Employer for taking action to terminate the contract on the following reasons:
  - Failed to commence the work.
  - Failed to proceed with the works or any section there of within 28days after receiving the notice for slow progress.
  - Failed to rectify the work as instructed or remove the materials not to the specifications.
  - Failed to comply with the Engineer's instructions persistently.
  - Has sublet the work without approval of Engineer / Employer

- ▶ Employer to issue notice to the Contractor citing his failure as notified by the Engineer.
- ▶ After 14 days of issue of notice, Employer may enter upon the site and the works and terminate the employment of Contractor.
- ▶ Engineer shall fix and determine ex parte, or after reference to the parties and certify
  - Amount earned by the contractor at the time of termination on the actual work done
  - Value of unused or partially used materials if any.
  - Contractor's Equipment
  - Temporary works if any



- ▶ The Employer will arrange to pay such sums after deducting
  - the costs of execution of balance work
  - remedying the defects if any,
  - LD's and
  - other expenses incurred by the employer.
- ▶ If the amount due is less than the above amounts, the contractor on demand shall pay to the Employer the amount of such excess.
- ▶ Termination is an extreme action and as far as possible avoided unless it is a must.

# Final Payment

- ▶ Action to be completed before final certificate of claim.
  - When the work is substantially completed, the contractor to give notice to the effect to the Engineer with a copy to the Employer
  - Also a written undertaking to finish any corrective work during the DLP.
  - The Engineer and the Contractor inspect collectively the substantially Completed work (which passed all the tests) and prepare list of balance works to be carried out.

- ▶ Contractor to submit Completion drawings before issue of taking over certificate by the Engineer.
- ▶ The Engineer if satisfied will take over the section/s within 21 days of contractor's notice and accordingly notify the contractor with copy to Employer.
- ▶ DLP start from this date.
- ▶ The Contractor after issue of taking over certificate, submit to the Engineer 6 copies of statement of value at completion with supporting documents showing in detail in the form approved by the Engineer.

- ▶ This is the final value of all work done in accordance with the contract upto the date stated in the taking over certificate. This will take care of any excess or less paid in the IPC's.
- ▶ The Engineer shall verify and certify the payment.
- ▶ The Employer will arrange to pay as per the contract condition after examining the final certificate in detail.
- ▶ The Engineer prepare and submit comprehensive final completion report immediately after taking over of the entire work from the Contractor. This report shall summarize
  - Method of construction

- Construction supervision performed, and recommendations for future projects of similar nature to be undertaken by the Employer.
- Maintenance Manual
- Precautions to be taken during the operation of the asset.
- ▶ After taking over the Contractor is not responsible for any theft, damages etc., except for the defects which have surfaced due to defective work.

# Final Statement and Discharge

- ▶ Before expiry of DLP, the Engineer shall inspect the entire work for any defects along with the Contractor. If no defects are noticed, the Engineer shall issue defect liability certificate duly signed and delivered to the Employer with copy to the Contractor after expiry of DLP.
- ▶ The Contractor shall submit draft final statement in 6 copies to the Engineer along with supporting documents, in the form approved by the Engineer showing
  - The value of work done in accordance with the contract

- Any further sums which the contractor considers to be due to him under the contract.
- ▶ Upon submission of Final statement, the Contractor shall give a written discharge to the Employer with copy to the Engineer.
  - *This will confirm total of the final statement represents full and final settlement of all amounts due to the contractor in respect of the contract.*
- ▶ Engineer will issue within 28 days a final payment certificate to the Employer stating, the amounts due to the contractor after giving credit to the employer for all amounts previously paid . the Employer shall pay within 56 days after receipt of certificate from the Engineer.

# Post Practices

- ▶ Actions to be completed before the end of defective liability period. *Performance Standards of Maintenance.*
- ▶ plan to provide amounts required for Maintenance and operation of the asset.
- ▶ Amount needed will be about 1 to 2% of the capital Cost.



- ▶ If neglected the asset built by spending huge amounts will start deteriorating within a span of 4 to 5 years.
- ▶ If new technology is introduced the asset to be monitor continuously for its performance.

# Consultant's Services

# Various Consultants Services

- ▶ Project Preparation
- ▶ Construction Supervision
- ▶ Monitoring & Evaluation
- ▶ Proof Checking
- ▶ Various Studies and suggest reforms viz. IDS, Maintenance Policy, IT etc.
- ▶ Advising Nature.

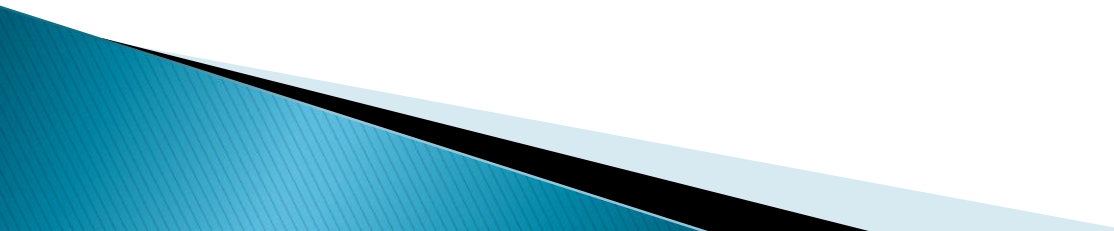
# Types of Consultants Contracts

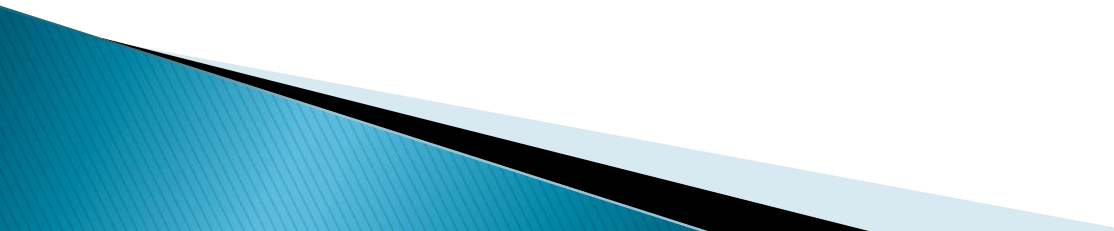
## ▶ Lump Sum

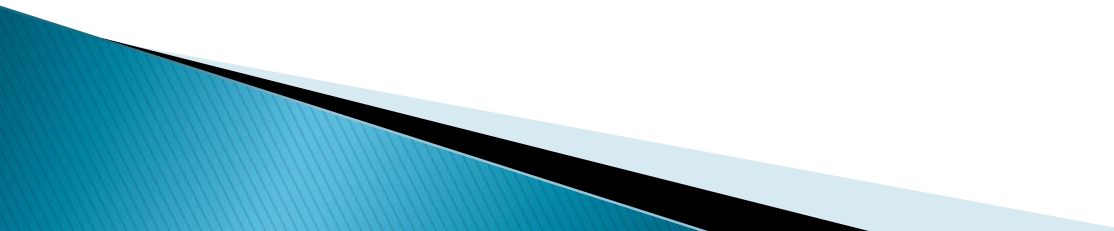
Time Based– Man month rates

Least cost

- This can be good and economical.
  - Need to have Proof Consultant to verify the work carried by the design Consultant.
  - Positioning of the Consultant is faster
- 

- Scope of work may increase
  - Difficulty in Fixing Rates for additional work.
  - Results are good
- 

- Output is low
  - any delay has led to delay in entrustment of works.
  - Lack of Responsibility & Accountability
  - Quality of the Job carried is not as expected
  - Changes are needed – led to Civil Contractor demanding higher rates
- 

- Scope of work may increase
  - Difficulty in Fixing Rates for additional work.
  - Results are good
- 

# Procurement of Consultants

- ▶ Request for proposals
  - LOI
  - Instructions to consultants, Various formats
  - Terms of Reference
  - Form of Contract



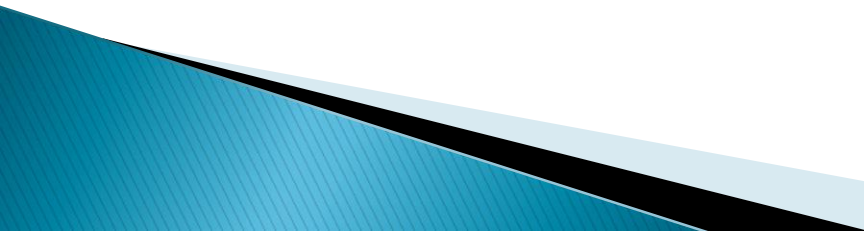
# Instructions to the Consultants

- ▶ Evaluation criteria along with weightages for each criteria to be specified.
- ▶ Suggested to include marks presentation by the team leader covering
  - Methodology
  - Work plan
  - Steps proposed to be taken to achieve quality, progress and monitoring methods of his staff.

# Terms of Reference

- ▶ Important issues to be covered
  - Scope of work
  - Duties and responsibilities of key persons
  - Actions requiring approval of the Employer
  - Reporting Requirements
  - Penal / deterrent action proposed for deficiencies in the services performed.
  - Mention about the review committee if any
  - Mention if any independent Engineer or auditor going to be appointed by the Employer.

- ▶ Active involvement of Organization staff will be useful.
- ▶ Performance of Design consultant to be monitored
- ▶ TOR / agreement should incorporate suitable clauses for
  - *Quality assurance for DPR*
  - *Responsibility for accuracy of design with economy/aesthetic*
  - *Disincentive and deterrent action for deficiency in the services.*
  - *Performance appraisal report.*

- ▶ Before inviting Proposals, Standards to be finalised.
  - ▶ DPR to be examined thoroughly by independent expert/ experienced person of the department.
  - ▶ Responsibility of Design Changes if any, to be given to Supervision consultant.
  - ▶ Time gap between project preparation and project implementation to be minimum.
- 

- ▶ Engage Proof consultant or keep organization Engineers to check at frequent intervals.
- ▶ Evolve project preparation guide lines upfront and direct the consultant to prepare DPR accordingly.
- ▶ Make a clause in the contract if the key personnel is changed there will be reduction of 25% in man month rate.
- ▶ Make it a point to have a sample check for building designs or other designs submitted .

- ▶ Link payment to the deliverables.
- ▶ Make secondment of the organization Engineers to the consultant in order to enhance in-house capabilities.
- ▶ Make a provision in the contract to have a proof checking of Complicated/special structures.
- ▶ Conduct seminars at field level involving expert consultant personnel - technology transfer.

# Preparation of Manuals

- ▶ Insist on standard manuals and procedures to be developed by the Consultants.
- ▶ Training manuals for Procurement, Project management, Quality management etc.
- ▶ Manual on Environmental and Social issues.
- ▶ Quality systems and Procedures.
- ▶ Maintenance Manual.