



Bharat Coking Coal Limited
(A Subsidiary of Coal India Limited)
Office of The Chief General Manager, Barora Area
Nawagarh:Dhanbad

NOTICE INVITING TENDER

Ref.No. - CGM/AR-1/ Civil /NIT/ Cap. /10/ 167/1869

Date: 14/15.07.2010

Sealed Tenders on percentage basis are invited from the Bonafide, Resourceful and Experienced contractors for the work detailed herein.

Name of work	Estimate cost (Rs.)	Earnest Money (Rs.)	Cost of tender Document (Rs.)	Completi on period
1. Polyethylene Water Reservoir for Water Supply at Muraidih Colony of MOCP.	4,19,912.14	4,196.00	250.00	2 Month

1. Bill of quantities / Documents may be obtained during normal office hours from the office of the Area Civil Engineer, Barora Area from **27/07/2010 to 29/07/2010** (Except Sunday/ Holiday) on production of –
 ``Application requesting issue of tender document with copy of PAN and credentials in support of the eligibility criteria
2. The Documents shall be given on deposition of cost of Tender dcoment in cash with the Sr. Cashier, Barora area
3. Tender must be submitted in **Two-Part system** (Other credentials in Envelope I and Rate part only in Envelope II) in the office of the Area Civil Engineer Barora Area **upto 11.00 AM on 31/07/2010.**
 - > Part I of the tender will be opened **on same day at 11.30 AM** Onwards, in presence of tenderers or their authorized representatives. However, Part II may be opened on same day (Of those tenderers only who qualify for opening of their rate part as per eligibility criteria) / any other day with intimation to the qualified bidders.
4. The minimum eligibility criteria for consideration for award of work of the contract shall include the following.
 - 4.1.(a) The intending tenderer must have in its name as a prime contractor experience of having successfully completed similar works during last 7 (seven) years ending last day of month previous to the one in which bid applications are invited (i.e. eligibility period) should be either of the following-
 - > Three similar completed works each costing not less than the amount equal to 40% of the estimated cost. **Or**
 - > Two similar completed works each costing not less than the amount equal to 50% of the estimated cost. **Or**
 - > One similar completed work costing not less than the amount equal to 80% of the estimated cost.
 - 4.1. b) Average annual financial turnover of civil works during the last 3 (three) years, Ending 31st March of the previous financial year, should be at least 30% of the estimated cost.
 - 4.1. c) **Similar work means:- `` Construction of Water Supply Works / Civil Work ``**

Page-2

- 4.2. Earnest money can be deposited in the form of Cash or BC / DD in favour of Bharat Coking Coal Limited payable at Dhanbad from any nationalised / scheduled bank acceptable to the Company. Tenders not accompanied with earnest money are liable for outright rejection.
- 4.3. Copy of PAN. (Permanent Income Tax Account number).
- 4.4. Sale Tax clearance certificate copy attested by a Gazetted Officer of the Govt. (Central or State) & TIN No. is to be furnished.
- 4.5. Status of firm- Firm registration / or Partnership deed & Power of attorney / affidavit regarding proprietorship / Article of association etc.
- 4.6.a) Declaration regarding genuineness of the documents submitted & non- relationship in BCCL in original as per format given. In the form of affidavit on non judicial stamp paper.
b) Declaration that they have not been banned or de-listed by any Govt. or Quasi- Govt. Agencies or PSU's as per format given.
5. Conditional / Incomplete tenders will not be accepted and shall be outright rejected.
6. Issuance of tender documents does not mean that the parties are considered qualified.
7. The validity of the tender will be 120 days from the date of opening price bid or revised price bid if any.
8. The management of BCCL reserves right to reject any or all tender or split the work among two or more tenderers without assigning any reasons whatsoever.
9. Other details may be obtained from detailed tender notice/tender Documents/website no. <http://bccl.cmpdi.co.in>.

SPECIAL CONDITIONS FOR TENDERERS, DOWNLOADING THE TENDER DOCUMENT FROM BCCL WEB-SITE

10. Tenderers are required to deposit along with their tender, a Bank Draft of any Nationalized / Schedule Commercial Bank payable at Dhanbad exclusively towards the cost of Tender Document for the amount indicated as above, in a separate envelope. Any Bank Draft, prepared after the scheduled closure of sale of Tender Documents i.e. **29/07/2010** may be liable for rejection.
11. The contents of the Tender Documents available for sale in our offices, shall be deemed as authenticated and the responsibility of errors and omissions in the downloaded documents will lie with the tenderer.

**Area Civil Engineer
Barora Area**

Copy to-

1. CGM, Barora Area
2. G M (Constn) / BCCL, Koyala Bhawan
3. C.V.O., BCCL, Koyala Bhawan
4. CGM/GM, Area I to XII/ B-II/ EJ /WJ Area/Ropeway/CCWO
5. G M (Systems)/ Koyala Bhawan- **with a request to display NIT/ Tender Document on web-site on or before 27/07/2010.**
6. Addl. G.M., Barora Area
7. Project Officer, MOCP/SOCP/DMD/PHU/MDH - For unit Notice Board
8. AFM / Dy. CPM / Sr. Cashier / EA(C), Barora Area/ Damoda
9. Area Notice Bord.

Signature of Issuing Officer

TENDER FOR-

“Polyethylene Water reservoir for water supply at Muraidih Colony of MOCP”

PART - I

**TECHNO
COMMERCIAL BID**

(To be submitted with Part-I envelope)

SPECIAL CONDITIONS FOR TENDERERS , DOWNLOADING THE TENDER
DOCUMENT FROM BCCL WEB-SITE

- (1) Tenderers are required to deposit along with their tender, a Bank Draft of any Nationalized / Schedule Commercial Bank payable at Dhanbad exclusively towards the cost of Tender Document for the amount indicated as above, in a separate envelope. Any Bank Draft, prepared after the scheduled closure of sale of Tender Documents i.e 29.07.2010, may be liable for rejection.
- (2) The contents of the Tender Documents available for sale in our offices, shall be deemed as authenticated and the responsibility of errors and omissions in the downloaded documents will lie with the tenderer.

The management of BCCL reserves right to reject any or all tender or split the work among two or more tenderers without assigning any reasons whatsoever.

AREA CIVIL ENGINEER

DETAILED TENDER NOTICE

Sealed tenders in prescribed forms and parts with the name of works superscribed as **“Polyethylene Water reservoir for water supply at Muraidih Colony of MOCP”** vide NIT No. **CGM/Ar-I/Civil/NIT/Cap./10/167/1869 Dated 14/15.07.2010** on each of the envelopes are invited from bonafide and experienced contractors and will be received at the office of the Chief General Manager ,Civil Engineering Department,Barora Area upto **11.00 A.M. on 31-07-10**. All tenders will be opened at **11.30 A.M. on 31.07.10** in the presence of the attending tenderers or their authorised representatives who wish to be present .In case where the tender is in two parts, only Part-I, will be opened on the above day and time.

2 (a) Tenders should be submitted in the prescribed form in time. These forms together with the proposed contract document including specifications and tender drawings (if available) may be obtained from the above office during normal working hours on payment of Rs.250/-(non-refundable) **(Rupees Two hundred Fifty only_)** as Application Fee for each set. The payment may be made either in Cash or by Bank Draft drawn in favour of Bharat Coking Coal Ltd. on Nationalized Bank payable at .Dhanbad. General specification and description of work is enclosed with the tender document.

2 (b) Any Bids received after the deadline prescribed at Clause 1 above due to any reasons whatsoever will not be accepted.

In the event of the specified date for the submission of bids being declared a holiday by the employer, the bids will be received up to the appointed time on the next working day.

2 (c) Tenders thus submitted shall consist of the following:

i) Complete set of tender documents as sold, duly filled in and signed on all pages and at different places as required of the tender documents including Part I & Part II of the tenders as per the tender notice as applicable.

ii) Sales Tax Registration No. (TIN No.).

iii). PAN (Permanent I. Tax Account Number)

iii) Earnest money deposit (as specified hereafter)

iv) Power of Attorney in the case the tender is signed by an authorised representative of the tenderer.

v) Full name and address of the tenderer shall be written on the bottom left hand corner of the sealed covers.

vi) Every Tenderer will have to submit a declaration in support of the authenticity of the credentials submitted by him along with the Tender in the form of an AFFIDAVIT as per the format provided at ANNEXURE VI.

vii) The bidders would give a declaration that they have not been banned or delisted by any Govt. or Quasi Govt. Agencies or PSU's. If a bidder has been banned or delisted by any Govt. or Quasi

Govt. agencies or PSU's this fact must be clearly stated and it may not necessarily be a cause for disqualification. If the declaration is not given, the bid will be rejected as non-responsive.

- 2 (d) The tender document in which the tender is submitted by the tenderer shall become the property of the Company and the Company shall have no obligation to return the same to the tenderer.**
- 2 (e) The Tender shall be submitted, in Two Envelope System with the first envelope containing credentials (duly authenticated by the bidder) in support of his qualifications in accordance with the eligibility criteria along with the EMD in a separate envelope and the second envelope containing the duly filled in Tender Document superscribing Envelope I , II and EMD on the cover**

Part II shall consist of tender documents as sold to the tenderers duly filling in rates, amounts etc. i.e. price bid.

The Earnest Money Deposit is to be submitted in a separate Envelope altogether; super-scribing "Earnest Money Deposit"; and not inside the envelope containing Part I or part II of the Bid.

The bidders, who will download the tender documents from the website of the company, will be required to pay the cost of tender documents (Application Fee) by Bank Draft as per NIT at the time of submission of tenders.

The bidders will be required to submit an undertaking that they will accept the tender documents as available in the website and their tender shall be rejected if any tampering in the tender document is found to be done at the time of opening of tender.

The Bank Draft towards the cost of tender documents (Application Fee) and the undertaking of the tenderer as above shall be submitted in a separate envelope marked "Cost of Tender Documents and the Undertaking" and not with Part- I / EMD.

In case of any discrepancy between the tender documents downloaded from the web site and the master copy available in the office, the latter shall prevail and will be binding on the tenderers. No claim on this account will be entertained.

The Part I & Part II should also be put into separate sealed envelopes superscribed as such. Thereafter all the three envelopes (four envelopes in case of Bidders using downloaded Bid document) should be submitted in a sealed envelope with appropriate superscription.

The date of opening of the Second Envelope or Part II of the tenders shall be communicated in due course after consideration of First Envelope or Part-I.

- 2 (f) Each bidder shall submit only one bid for one package. A bidder who submits or participates in more than one bid (other than as sub-contractor or in case of alternatives that have been permitted or requested) will cause all the proposals with the bidders' participation to be disqualified.**

3. Earnest Money/ Bid Security @1% of the estimated cost (rounded of to nearest hundred rupees subject to maximum of Rs. 50 lakhs) is to be deposited in the form of irrevocable Bank Guarantee (from Scheduled Bank/ Branch acceptable to the owner) with validity 28 days beyond the validity of the Bid in the format given in the Bid Document in a separate envelope alongwith the tender. Certified Cheques and Demand Drafts will also be acceptable as Earnest Money/ Bid Security drawn in favour of Bharat Coking Coal Ltd. on Nationalized Bank payable at .Dhanbad. For works valued upto Rs. 5 lakhs the earnest money may be deposited in cash or in the aforesaid form. In case of earnest money deposit by cash, cash receipt is to be submitted in a separate envelope alongwith the tender. Earnest Money/ Bid Security of the unsuccessful bidder shall be refunded as promptly as possible after opening of Price Bid and finalisation of the tender and shall bear no interest.

4. No tender shall be considered unless accompanied by the said Earnest Money.
5. The earnest money will be retained in the case of successful tenderer and refunded to the unsuccessful tenderer in due course and will not carry any interest. The earnest money deposited by the successful tenderer will be dealt with as provided elsewhere in the tender documents.
- 6 (a) Site Investigation Report: The contractor, in preparing the bid, shall rely on the site investigation report referred to in the bid document, supplemented by any information available to the bidder.
- 6 (b). Every tenderer is expected, before quoting his rates, to go through the requirements of materials/workmanship under specification/requirements and conditions of contract and to inspect the site/area of the proposed work.

In case of item rate tender a schedule of quantities is enclosed with the tender document. He should quote specific rate for each item in the schedule and the rates shall be in rupees and paise. The rates shall be written both in words and figures and the unit in the words and the amount against each item totaled. In the event of any discrepancy between the description in words and figures, the description in words will prevail. The rates for the work should be inclusive of all incidentals, overheads, all taxes, Octroi's, duties, leads, lifts, carriage, tools & plant etc. as required for execution and completion of the work. It shall be deemed that the tenderer has visited the site/area and got fully acquainted with the working conditions and other prevalent conditions and fluctuations thereto whether they actually visited the site/area or not and have taken all the above factors into account while quoting his rates.

- 7 (a) Corrections where unavoidable, shall be made by crossing out and rewriting duly authenticated with full signature and date by the tenderer. Erasing or over-writing in the tender documents may disqualify the tender.
- 7 (b) The tender shall be submitted either in English or in Hindi.
- 7 (c) Cost of Bidding: The bidder shall bear all costs associated with the preparation and submission of his bid and the Employer will in no case be responsible and liable for those cost
8. The tenderer shall closely study all specification in detail, which govern the rates for which he is tendering.
9. Sales-tax clearance certificate for the last financial year or the last assessment whichever is later or proof of filing the returns for the previous financial year should accompany the tender.
10. The work should be completed within **2 months** from expiry of ten (10) days from the issue of letter of acceptance of tender/work order or handing over the site or handing over reasonable number of working drawings to the contractor or the period of mobilisation allowed in the work order for starting the work in special circumstances, whichever is latest.
11. On completion of the work all rubbish, debris, brick bats etc. shall be removed by the contractor(s) at his/their own expense and the site cleaned and handed over to the company and he/they shall intimate officially of having completed the work as per contract.
12. The Company does not bind itself to accept the lowest tender and reserves the right to reject any or all the tenders without assigning any reasons whatsoever and to split up the work between two or more tenderers or accept the tender in part and not in its entirety.
13. The tenderer(s) will indicate the equipment/machinery/ vehicles he/they is/are going to use on this job and also give adequate evidence of experience in doing similar works and financial capacity to complete the work in time.

14. The tenderer(s) should also state what technical/ supervisory personal he/they would be employing for supervising the work.

14 (a). Full information should be given by the tenderer in respect of following:

- | | |
|---------------------------|---|
| i) If an individual: | Full name.
Postal Address.
Place of Business. |
| ii) If proprietary firm: | Name of the Proprietor.
Full postal address of Firm/ Proprietors. |
| iii) If partnership firm: | Full name of partners.
Full postal addresses of the registered office of firm & the partners.
Registered partnership Deed. |
| iv) In case of Company: | Date and place of registration.
Memorandum & Articles of Association.
Name of all the Directors.
Full postal address of the registered office & all Directors. |
| v) Joint Venture | Two or three companies/ contractors participating in the tender as Joint Venture should submit Firm-wise participation details, Banker's name, execution of work with details of contribution of each and all other relevant details. |

Notes: Joint ventures must comply the following requirements:

- i) Following are the minimum qualification requirements for joint ventures:
 - a) The lead partner shall meet not less than 40% of all the qualifying criteria stated in the bid document.
 - b) The other partners shall meet not less than 30% of all the qualifying criteria stated in the bid document.
- ii) The formation of joint venture or change in the joint venture character/ partners after submission of the bid and any change in the bidding regarding joint venture will not be permitted.
- iii) Any bid shall be signed so as to legally bind all partners jointly and severally and any bid shall be submitted with a copy of the Joint Venture Agreement (JV Agreement) providing the joint and several liabilities with respect to the contract.
- iv) The pre-qualification of a joint venture does not necessarily pre-qualify any of its partners individually or as a partner in any other joint venture or association. In case of dissolution of a joint venture, each one of the constituent firms may pre-qualify if they meet all the pre-qualification requirements, subject to written approval of the employer.
- v) The bid submission must include documentary evidence to the relationship between joint venture partners in the form of JV Agreement to legally bind all partners jointly and severally for the proposed agreement which should set out the principles for the constitution, operation, responsibilities regarding work and financial arrangements, participation (percentage share in the total) and liabilities (joint and several) in respect of each

and all of the firms in the joint venture. Such JV Agreement must evidence the commitment of the parties to bid for the facilities applied for (if pre-qualified) and to execute the contract for the facilities if their bid is successful.

vi) One of the partners responsible for performing a key component of the contract shall be designated as Lead Partner. This authorization shall be evidenced by submitting with the bid a Power of Attorney signed by legally authorized signatories of all the partners.

vii) The JV Agreement must provide that the Lead Partner shall be authorized to incur liabilities and receive instructions for and on behalf of any and all partners of the Joint Venture and the entire execution of the contract shall be done with active participation of the Lead Partner.

viii) The contract agreement should be signed jointly by each Joint Venture Partners.

ix) An entity can be a partner in only one Joint Venture. Bid submitted by Joint Ventures including the same entity as partner will be rejected.

14(b) Change in Constitution of the Contracting Agency:

Prior approval in writing of the company shall be obtained before any change is made in the constitution of the contracting agency, otherwise it will be treated as a breach of Contract.

15. Canvassing in connection with the tenders in any shape or form is strictly prohibited and tenders submitted by such tenderers who resort to canvassing shall be liable for rejection.

16 (a) Every Tenderer will have to submit a declaration in support of the authenticity of the credentials submitted by him along with the Tender in the form of an AFFIDAVIT as per the format provided at ANNEXURE VI.

16 (b) If a Tenderer deliberately provides wrong information or submits false credentials in support of his qualifications, the Company reserves the right to terminate/rescind the contract, forfeit the EMD and other dues of the contractor and to take any other action as may be deemed fit.*

17 (a) An intending tenderer, after obtaining tender documents on payment of Application Fee, having doubts as to the meaning of any part of the tender documents may submit to the official inviting tender a written request for interpretation or clarification thereof. Any interpretation or clarification of the tender documents by formal addendum if issued by the official inviting tender, shall be final and valid and binding on the company and the tenderers.

18. Tender Evaluation & Bid Assessment:

The Tenders received will be scrutinised and evaluated by a duly constituted Tender Committee.

The Tender Committee will examine the Comparative Statements prepared by the concerned technical department and will satisfy itself that all aspects/conditions of each offer has been properly evaluated with respect to financial implications etc.

Tenders received without Earnest Money will be rejected.

The deviations from the commercial terms & conditions & the Tender specifications are scrutinised before opening of price bids. Normally no deviations in the commercial terms & conditions will be accepted.

However, the Tender Committee may decide to scrutinise the different conditions given by the tenderers and formulate and freeze the acceptable conditions and intimate all the tenderers about the same and give them an opportunity to revise their price bid if necessary before opening the same.

The Price Bids are opened at the time and place fixed for the same in presence of the tenderers & committee members and due information for opening of Price Bid is to be given to all concerned. In case where the tenderers are given opportunity to revise their Price Bids, only the revised price bids are opened and the original Price Bids are to be kept in tact in the custody of the company.

The Price Bids of the tenderers will have no condition. The Price Bids which are incomplete & not submitted as per instructions given in the Tender Document will be rejected.

No document presented by the bidder after the closing date & time of the bid will be taken into account unless it is of purely technical nature which has no bearing financially on the contract & which does not seek major changes in the technical specifications given in the bid documents. If a bidder offers a rebate unilaterally after the closing date & time of the bid, it will not be taken into account for evaluating purposes by the Tender Committee, but if that bidder emerges as the lowest evaluated, the rebate offered will be taken into account for determination of the total offer.

If the bid of the successful bidder is seriously unbalanced in relation to the estimate of the cost of work to be performed under the contract, the company may require the bidder to produce detailed price analysis for any or all items of the Bill of quantities to demonstrate the internal consistency of these prices with the construction method and the schedule proposed. After evaluation of the price analysis, the company may require that the amount of the performance security/security deposit is increased at the expense of the successful bidder to a level sufficient to protect the company against financial loss in the event of default on the part of the successful bidder under the contract.

19. Negotiations:

Negotiations will be held only if the lowest rate received is not reasonable and the decision of the company regarding reasonableness of rates quoted will be final and binding on the bidders.

Work will be awarded to the lowest bidder (L1) without post tender negotiations if the rates are reasonable. If rates are not reasonable, negotiations with L1 only may be undertaken to arrive at a reasonable rate.

20. Banned or delisted Contractors:

The bidders would give a **declaration** that they have not been banned or delisted by any Govt. or Quasi Govt. agencies or PSU's. If a bidder has been banned or delisted by any Govt. or Quasi Govt. agencies or PSU's this fact must be clearly stated and it may not necessarily be a cause for disqualification. If the declaration is not given, the bid will be rejected as non-responsive.

21. On receipt of letter for acceptance of the tender issued by the Company, the successful tenderer shall execute/accept contract agreement/work order in the company's prescribed form for the due fulfillment of the contract. Failure to enter into the required contract/accept the work order issued by the company within the specified period in the work order shall entail cancellation of letter of acceptance of tender/work order and forfeiture of the earnest money. The written contract/ work order to be entered into between the contractor and the company shall be the foundation of the rights of both the parties and the contract shall not be deemed to be executed until the contract/ work order is signed/ accepted by both the parties i.e. Contractor and the Company.

22(a) The validity period of the tenders shall be 4 (four) months from the date of opening of price bid or revised price bid, if any.

The tenderer shall not, during the said period or within the period extended by mutual consent, revoke or cancel his tender or alter the tender or any terms/conditions thereof without consent in writing of the company. In case the tenderer violates to abide by this, the Company will be entitled to forfeit the Earnest Money and reject the tender.

22 (b) The Company reserves the right to postpone the date of receipt and opening of tenders or to cancel the tenders without assigning any reason whatsoever.

23. The Company reserves its right to allow Public Enterprises purchase preference facility as admissible under prevailing policy.

24. This detailed Tender Notice shall be deemed to be part of the Contract Agreement/Work Order.

25. No subletting of work as a whole by the contractor is permissible. Subletting of work in piece rated jobs is permissible with the prior approval of the department.

The Contract Agreement will specify major items of supply or services for which the contractor proposes to engage sub-contractor/sub-vendor. The contractor may from time to time propose any addition or deletion from any such list and will submit proposals in this regard to the Engineer-in -Charge/Designated Officer in charge for approval well in advance so as not to impede the progress of work. Such approval of the Engineer in Charge / Designated Officer in Charge will not relieve the contractor from any of his obligations, duties and responsibilities under the contract.

26. In case the contractor enters into any litigation, such action should have to be taken in a court of law with jurisdiction over the place where the subject work is to be executed.

27 SECURITY DEPOSIT-

- a) Total security deposit including earnest money shall be 5 % (Five Percent) of the contract amount or the revised contract value if any. The contractor shall deposit immediately within 28 days after receipt of Letter of acceptance of tender, the balance four (4) percent of the awarded value after adjustment of the earnest money already paid as initial security deposit. Failure to do so shall entail cancellation of the LOA and forfeiture of the earnest money deposit. The security deposit amount shall not carry any interest.
- b) All running on account bills shall be paid at 95(Ninety five)% of the work value. The balance five percent so accrued shall be paid along with the final bill.

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GENERAL TERMS AND CONDITIONS

1. Definitions

i) **"Employer"** or "Company" means the Bharat Coking Coal Limited who will employ the contractor represented by the appropriate authority.

ii) **"Principal Employer"** means the Bharat Coking Coal Limited or the officer nominated by the Company to function on its behalf.

iii) The word **"Contractor/ Contractors"** wherever occurs means the successful tenderer/ tenderers who has/have deposited the necessary Earnest money and has/have been given written intimation about the acceptance of tender and shall include legal representative of such individual or persons composing a firm or a company or the successors and permitted assignees of such individual, firm or Company, as the case may be.

iv) **"Site"** means the land and places including any building and erection thereon, over, under, in or through which the Permanent works or Temporary works designed by the Engineer in Charge are to be executed and any other lands and places provided by the Employer for working space or any other purpose as may be specifically designated in the Contract as forming part of the site.

v) The term **"Sub-Contractor"** as employed herein, includes those having a direct contract with Contractor either on piece rate, item rate, time rate or any other basis and it includes one who furnishes work to a special design according to the plans or specifications of this work but does not include one who merely supplies materials.

vi) **"Accepting Authority"** shall mean the management of the company and includes an authorized representative of the company or any other person or body of persons empowered in this behalf by the company.

vii) **"Engineer-in-charge"** shall mean the officer nominated by the company in the Civil Engineering cadre/ discipline who is competent to direct supervisors and authorised to be in charge of the works for the purpose of this contract. The Engineer in Charge /Designated Officer in Charge who is of an appropriate seniority, will be responsible for supervising and administering the contract, certifying payments due to the contractor, valuing variations to the contract, awarding extension of time and valuing compensation events. The Engineer in Charge /Designated Officer in Charge may further appoint his representatives i.e. another person/Project Manager or any other competent person and notify to the contractor who is directly responsible for supervising the work being executed at the site, on his behalf under their Delegation of Powers of the company. However, overall responsibility, as far as the contract is concerned, will be that of the Engineer in Charge/Designated Officer in Charge.

viii) The **"Contract"** shall mean the notice inviting tender, the tender as accepted by the Company, the work order issued to the contractor, and the formal contract agreement executed between the company and the contractor together with the documents referred to therein including general terms and conditions, special conditions, if any, scope of work, frozen terms & conditions/technical parameters/scope of work and revised offer, if any, specifications, drawings, including those to be submitted during progress of work, schedule of quantities with rates and amounts.

ix) A **"Day"** shall mean a day of 24 hours from midnight to midnight.

x) The **"Work"** shall mean the works required to be executed in accordance with the contract/work order or parts thereof as the case may be and shall include all extra or additional, altered or substituted works or any work of emergent nature, which in the opinion of the Engineer-in-charge, become necessary during the progress of the works to obviate any risk or accident or failure or become necessary for security.

- xi) **"Schedule of Rates"** referred to in this conditions shall mean the standard schedule of rates prescribed by the company and the amendments issued from time to time.
- xii) **"Contract amount"** shall mean:
- a) in the case of turnkey contracts the total sum for which tender is accepted by the company.
 - b) in the case of other types of contracts the total sum arrived at based on the individual rates quoted by the tenderer for the various items shown in the "Schedule of Quantities" of the tender document as accepted by the Company with or without any alteration as the case may be.
- xiii) **"Written notice"** shall mean a notice or communication in writing and shall be deemed to have been duly served if delivered in persons to the individual or to a member of the contractors firm or to an office of the company for whom it is intended, or if delivered at or sent by registered mail to the last business address known to him who gives the notice.
- xiv) **"The constructional plant"** means all appliances, tools, plants or machinery or whatsoever nature required in or about the execution, completion or maintenance of the works but does not include materials or other things intended to form part of the permanent work.
- xv) **"Letter of Acceptance of Tender"** means letter giving intimation to the tenderer that his tender has been accepted in accordance with the provisions contained in that letter.
- xvi) **"Department"** means the Civil Engineering Department of Coal India Limited or any of its subsidiary companies/units represented by the appropriate authority.
- xvii) **"Act of insolvency"** means as it is designed by Presidency Town Insolvency Act or Provincial Insolvency Act or any act amending such originals.
- xviii) The words indicating the singular only also include the plural and vice-versa where the context so requires.

2. Contract Documents:

The following documents shall constitute the contract documents :

- i) Notice Inviting Tender/Detailed Tender Notice.
- ii) Articles of Agreement / Letter of Acceptance of Tender/ Work Order.
- iii) General Terms & Conditions of contract/ Commercial Terms & Conditions of contract.
- iv) Additional Terms & Conditions of contract, if any.
- v) Specifications.
- vi) Schedule of quantities (or Bill of Quantities)/ Schedule of work/ Scope of work and schedule of deviation *(to be provided by the contractor.)*
- vii) Frozen terms & conditions / technical parameters/ scope of work and revised offer, if any.
- viii) Contract drawings and work programme.
- ix) Safety Code etc. forming part of the tender.

N.B. Deviations: Deviations sought by the bidders, whether they are technical or commercial deviations, must only be given in the schedules prescribed for them. Any willful attempt by the bidders to camouflage the deviations by giving them in the covering letter or in any other documents than the prescribed schedules may render the bid itself as non-responsive.

2.1 The contractor shall enter into and execute contract agreement in the prescribed form (ref. format at ANNEXURE VII). The cost of the stamp papers for the contract agreement shall be borne by the contractor. Two

sets of contract document/agreements shall be prepared and signed by both the parties. One of the sets shall be stamped "Original" and the other "Duplicate". The duplicate copy will be supplied to the contractor free of cost and the original is to be retained by the company. For any additional copies required by the contractors the price to be charged would be that of the cost of the Tender Document (Application Fee).

All additional copies should be certified by the Engineer in Charge.

The contractor shall keep copy of these documents on the site/place of work in proper manner so that these are available for inspection at all reasonable times by the Engineer-in-charge, his representatives or any other officials authorised by the company for the purpose.

2.2 The contract document shall not be used by the contractor for any purpose other than this contract and the contractor shall ensure that all persons employed for this contract strictly adhere to this and maintain secrecy, as required of such documents.

2.3 Tender Evaluation & Bid Assessment
[Refer clause 18 of Detailed Tender Notice]

2.4. Abnormally High Rate (AHR) & Abnormally Low Rate (ALR) Items.

Abnormally High Rates & Abnormally Low Rates, if quoted by the contractor, in item rate tenders will be identified & dealt with as under:

- i) For identification of AHR & ALR items the ceiling of +/- 20% respectively, when compared with the updated estimated rate ,will be considered.
- ii) Variation in Quantity on quoted rate during execution for AHR & ALR items shall be permitted upto +/- 25%(+25% for AHR & -25% for ALR) of the quantity provided for items of work below plinth level & +/- 5% of the quantity provided for items of work above plinth level respectively.
- iii) Quantity variation beyond the limit mentioned at ii) above shall be dealt by arriving at new rate based on prevalent market rates of materials & labour analysed as per standard analysis of rate of N.B.O./ C.P.W.D. Payment of extra quantity over the permitted quantity of +/-25% and +/-5%(as the case may be) would be made on the basis of the new analysed rate.
- iv) For identified abnormally low rate (ALR) items, the contractor will be required to deposit with the company the difference in amount calculated between the departmental justified rate multiplied by the quantity of a particular ALR item and the ALR rate quoted by the contractor multiplied by the quantity of the same item.

The total amount to be deposited will be the sum total of all the identified ALR items calculated as per the method outlined above.

The amount so retained will be refunded on successful completion of individual ALR items of work.

2.5 Negotiations:
[Refer clause 19 of Detailed Tender Notice]

2.6 Acceptance of Offer :

Letter of Acceptance is an acceptance of offer by the company and it need not be accepted by the tenderer. But the tenderer should acknowledge the receipt of the order within 15 days of mailing of work order and any delay in acknowledging the receipt will be treated as a breach of contract and compensation for the loss caused by such breach will be declared by the company by forfeiting EMD .

2.7 Banned or delisted Contractors: [Refer clause 20 of Detailed Tender Notice]

3. Discrepancies in contract documents & Adjustments thereof

The documents forming part of the contract are to be treated as mutually explanatory of one another and in case of discrepancy between schedule of quantity, the specifications and/or drawing, the following order of preference shall be observed;

- a) Description in Bill of Quantities of work.
- b) Particular specification and special conditions, if any
- c) Drawings.
- d) General specifications.

3.1 In the event of varying or conflicting provision in any of the document(s) forming part of the contract, the Accepting Authority's decision/clarification shall hold good with regard to the intention of the document or contract as the case may be.

3.2 Any error in description, quantity or rate in Bill of Quantities or any omission there from, shall not vitiate the contract or release the contractor from discharging his obligations under the contract including execution of work according to the Drawings and Specifications forming part of the particular contract document.

3.3 Any difference detected in the tender/ tenders submitted resulting from :

- a) discrepancy between description in words and figures, the rate which corresponds to the amount worked out by the contractor shall be taken as correct.
- b) discrepancy in the amount quoted by the contractor due to calculation mistake of the unit rate and quantity, the unit rate shall be regarded as firm and amount corrected.
- c) when the amount of an item is not worked out by the contractor or it does not correspond with the rates written either in figures or words, then the rates quoted by the Contractor in words shall be taken as correct.
- d) in the case of percentage rate tender, the Contractors are required to quote their rates both in amount as well as in the percentage below/above the rates entered in the Schedule. In such cases in the event of Arithmetical error committed in amount by the contractor, the tender percentage and not the amount should be taken into account.
- e) discrepancy in totaling or carry forward in the amount quoted by the contractor shall be corrected.

The tendered sum so corrected and altered shall be substituted for the sum originally tendered and considered for acceptance instead of the original sum quoted by the tenderer alongwith other tender/tenders. Rounding off to the nearest rupee should be done in the final summary of the amount instead of in totals of various sections of the offer.

4. Security Deposit:

4.1.1 Security Deposit shall consist of two parts;

- a) Performance Security to be submitted at award of work and
 - b) Retention Money to be recovered from running bills.
- The security deposit shall bear no interest.

4.1.2 Performance Security should be 5% of contract amount and should be submitted within 28 days of receipt of LOA by the successful bidders in any of the form given below

- a Bank Guarantee in the form given in the bid document
- Govt. Securities, FDR or any other form of deposit stipulated by the owner

- Demand Draft drawn in favour of Bharat Coking Coal Limited on any Scheduled Bank payable at its Branch at Dhanbad.

The Earnest Money/ Bid Security deposited in the form of Bank Guarantee shall be discharged when the Bidder has signed the Agreement and furnished the required Performance Security/ Security Deposit. The bid security deposited in the form of Demand draft/ cash shall be adjusted against the security deposit.

If performance security is provided by the successful bidders in the form of bank guarantee it shall be issued either -

- (a) at Bidder's option by a nationalized/ Scheduled Indian Bank or
- (b) by a foreign bank located in India and acceptable to the employer.
- (c) the validity of the Bank Guarantee shall be for a period of one year or ninety days beyond the period of contract, whichever is more.

Failure of the successful bidder to comply with the requirement as above shall constitute sufficient ground for cancellation of the award of work and forfeiture of the bid security.

4.2.1 All running on account bills shall be paid at 95% (ninety five percent) of work value. This 5% (five percent) deduction towards Retention Money will be the second part of security deposit.

4.2.2 . 5% Performance Security should be refunded within 14 days of the issue of defect liability certificate (taking over certificate with a list of defects). Retention Money should be refunded after issue of No Defect Certificate. Retention Money should be deducted at 5% from running bills.

4.3 The Bank Guarantee towards security deposit shall be acceptable only for values above Rs.50, 000/- and the Bank Guarantee shall also be valid for a minimum period of one year or ninety days beyond the period of contract, whichever is more.. Bank Guarantee is to be submitted in the format prescribed by the company. Bank Guarantee shall be irrevocable and will be from amongst the list of Banks (Scheduled Banks) provided in the bid document.

4.4 The Company shall be at liberty to deduct/appropriate from the security deposit such sums as are due and payable by the contractor to the company as may be determined in terms of the contract, and the amount appropriated from the security deposit shall have to be restored by further deduction from the contractors subsequent on account running bills, if any.

The refund of security deposit shall be subject to company's right to deduct/ appropriate its due against the contractor under this contract or under any other contract.

4.5 On completion of the entire work and issue of defect liability certificate (taking over certificate with a list of defects) by the Engineer-in-charge, one half of the security deposit remaining with the company shall be refunded. The other half shall be refunded to the contractor after issue of No Defect Certificate by the Engineer-in-Charge. on the expiry of Defect Liability Period of six months , subject to the following conditions:

- a) Any defect/defects in the work, if detected after issue of defect liability certificate is/are rectified to the satisfaction of the Engineer-in-Charge within the said period.
- b) In the case of building work or other work of similar nature, the refund shall be made on the expiry of the said six months period or at the end of one full monsoon period i.e. June to September, whichever is later in point of time and any defects such as leakages in roof, effloresces in walls, dampness, defects in drainage etc. should be rectified to the satisfaction of Engineer-in-Charge.

5. Deviations/Variations in Quantities and Pricing

The quantities given in the "Schedule of Quantities" are based on estimates and are meant to indicate the extent of the work and to provide a uniform basis for tendering and any variation either by addition or omission shall not vitiate the contract.

5.1 The company through its Engineer In Charge or his representative shall, without radically changing the original scope and nature of the work, under contract, have power to make any alterations in or additions to or substitution of the original specifications, drawings, designs and instructions that may appear to be necessary or advisable during the progress of the work.

The contractor shall be bound to carry out the works in accordance with the instructions given to him in writing by the Engineer In Charge or his representative on behalf of the company. Such altered or additional or substituted work, which shall form part of the original contract, shall be carried out by the contractor on the same terms and conditions in all respects on which they agreed to do the main work and at the same rate/rates as are specified in the contract/ work-order.

5.2 The right is reserved to cancel any items of work included in the contract agreement or portion thereof in any stage of execution if found necessary to the work and such omission shall not be a waiver of any condition of the contract nor invalidate any of the provisions thereof.

5.3 If the additional, altered or substituted work includes any class of work for which rate/rates is/are not specified in the contract/work order, rates for such items shall be determined by the Engineer In Charge as follows:

- a) In the case of percentage tenders, if the rate for the item of work executed is available in the company's approved SOR, it will be paid at the schedule rate plus or minus the accepted percentage as per contract,
- b) In case of item rate tenders, the rate for extra item shall be derived from the rate for similar item or near similar item of work available in the agreement schedule of work or by analysis of rates as at (c) below and the lower rate out of the above two shall be considered.
- c) In case the rate for extra item is to be derived by analysis of rate, the same shall be done by analysis on prevalent market rate of materials and labour based on standard norms of analysis of rate of N.B.O./C.P.W.D.
- d) In case of combined tender with partly item rate for non-schedule items & partly percentage tenders for SOR items, the rate for extra item shall be derived as at (b) above in case of non-schedule items rates and in case of percentage rates for SOR items the rate for extra item shall be derived as at (a) above.

In case of any difference between the contractor and the Engineer-In Charge as to the fixation of rates, the matter shall be referred to the accepting authority of the company i.e. CGM(C)/GM(C)/CE(C) of the company or Staff Officer(C) for the work awarded at Company Hqrs. level and Area level respectively, whose decision shall be final and binding on the contractor.

5.4 Payment for such deviated items (additional/ altered / substituted items of work or excess quantities of work beyond +/- 25% of the agreement schedule) shall be made in the contractors running on account bills, till the revised estimate regularising these items are sanctioned by the competent authority of the company, at the provisional rates and shall not exceed :

a) 75% of the rate recommended by the Engineer In Charge to the accepting authority of the company i.e. CGM(C)/GM(C)/ CE(C) of the company or SO(C) of the Area , if the rate is directly available in the SOR of the company.

b) 50% of the rate recommended by the Engineer In Charge to the accepting authority of the company, i.e. CGM(C)/ GM(C)/ CE(C) of the company or SO(C) of the Area , if it is analysed item rates based on prevalent market rates of materials and labour following NBO/CPWD norms.

5.5 The time for completion of the originally contracted work shall be extended by the company in the proportion that the additional work (in value) bears to the original contracted work (in value) plus 25% of the time calculated as explained above or such further additional time as may be considered reasonable by the Engineer in Charge.

5.6 The company through its Engineer In Charge or his representative, on behalf of the company, shall have power to omit any part of the work in case of non-availability of a portion of the site or for any other reason and the contractor shall be bound to carry out the rest of the work in accordance with the instructions given by the Engineer In Charge. No claim from the Contractor shall be entertained/ accepted on these grounds.

5.7 In the event of any deviation being ordered which in the opinion of the contractor changes radically the original scope/nature of the contract, the contractor shall under no circumstances suspend the work, either original or altered or substituted, and the dispute/disagreement as to the nature of deviation and the rate/rates to be paid for such deviations shall be resolved separately with the company as per the procedures/ norms laid down hereafter.

6. Time for Completion of Contract, Extension thereof, Defaults and Compensation for Delay

Time is the essence of the contract and as such all works shall be completed within the time stipulated in the contract/ work order.

Immediately after the contract is executed/the work order is issued, the Engineer In Charge and the contractor shall agree upon a detailed time and progress chart prepared based on BAR CHART/ PERT CPM techniques on the basis of a construction schedule submitted by the contractor at the time of executing contract showing the order in which the work is proposed to be carried out within the time specified in the contract document/work order.

For the purpose of this detailed time and progress chart, the work shall be deemed to have commenced on the expiry of 10 (ten) days from the issue of Letter of Acceptance of Tender/Work Order or handing over the site of work or handing over reasonable number of working drawings to the contractor or the period of mobilisation allowed in the work order for starting the work in special circumstances, whichever is later.

6.1 If the contractor, without reasonable cause or valid reasons, commits default in commencing the work within the aforesaid time limit, the company shall without prejudice to any other right or remedy, be at liberty, by giving 15 days notice in writing to the contractor to commence the work, to forfeit the Earnest Money deposited by him and to rescind the Letter of Acceptance of Tender/Work Order.

Additionally, the Company will reserve the right to debar such defaulting Contractors from participating in future Tenders for a minimum period of 1 (One) year.

6.2 If the contractor fails to maintain the required progress in terms of the agreed time and progress chart or to complete the work and clear the site on or before the contract or extended date of completion, he shall without prejudice to any other right or remedy available under the law to the company on account of such breach, pay as compensation (Liquidated Damages) @ half percent (1/2%) of the contract price per week of delay. The aggregate of such compensation/ compensations shall not exceed 10 (ten) percent of the total value as shown in the contract.

This will also apply to items or group of items for which separate period of completion has been specified. The amount of compensation may be adjusted or setoff against any sum payable to the contractor under this or any other contract with the company.

6.2.1 The company, if satisfied, that the works can be completed by the contractor within a reasonable time after the specified time of completion, may allow further extension of time at its discretion with or without the levy of L.D. In the event of extension granted being with L.D, the company will be entitled without prejudice to any other right or remedy available in that behalf, to recover from the contractor as agreed damages equivalent to half percent of the contract value of the works for each week or part of the week subject to a ceiling of 10% of the contract price.

6.2.2 The company, if not satisfied that the works can be completed by the contractor, and in the event of failure on the part of the contractor to complete work within further extension of time allowed as aforesaid, shall be entitled, without prejudice to any other right, or remedy available in that behalf, to rescind the contract.

6.2.3 The company, if not satisfied with the progress of the contract and in the event of failure of the contractor to recoup the delays in the mutually agreed time frame, shall be entitled to terminate the contract.

6.2.4 In the event of such termination of the contract as described in clauses 6.2.2 or 6.2.3 or both, the company, shall be entitled to recover L.D. upto ten percent (10%) of the contract value and forfeit the security deposit made by the contractor besides getting the work completed by other means at the risk and cost of the contractor.

6.3 a) The company may at its sole discretion, waive the payment of compensation on request received from the contractor indicating valid and acceptable reasons if the entire work is completed within the date as specified in the contract/work order or as validly extended date without stipulating any compensation for delay. **or**

b) If the progress of the work or of any portion of the work is unsatisfactory, the Engineer In-charge shall be entitled, after giving the contractor 15 days' notice in writing, to employ another Agency for executing the job or to carry out the work departmentally either wholly or partly debiting the contractor with the cost involved in engaging another Agency or the cost involved in executing the work departmentally, as the case may be. The certificate to be issued by the Engineer In-charge for the cost of the work so done shall be final and conclusive and the extra cost, if any, shall be borne by the contractor.

6.4 Extension of date of completion: On occurrences of any events causing delay as stated here-under, the contractor shall intimate immediately in writing to the Engineer In Charge.

a) Force Majeure :

- i) Natural phenomena, including but not limited to abnormally bad weather, unprecedented flood and draught, earthquakes & epidemics.
- ii) Political upheaval, civil commotion, strikes, lockouts, acts of any Govt. (domestic/foreign) including but not limited to war, proprieties, quarantine embargoes

The successful bidder/ contractor will advise in the event of his having to resort to this clause by a registered letter duly certified by the local chamber of commerce or statutory authorities, the beginning and end of the cause of delay, within fifteen days of the occurrence and cessation of such Force Majeure condition.

In the event of delay due to Force Majeure for more than one month the contract may be terminated at the discretion of the company. Termination under such circumstances will be without any liability on either side.

- b) Serious loss or damage by fire
- c) Non-availability of stores which are the responsibility of the company to supply as per contract
- d) Non-availability of working drawings in time, which are to be made available by the company as per contract during progress of the work
- e) Delay on the part of the contractors or tradesmen engaged by the company not forming part of the contract, holding up further progress of the work
- f) Non-availability or breakdown of tools and plant to be made available or made available by the company
- g) The execution of any modified or additional items of work or excess quantity of work.
- h) Any other causes which, at the sole discretion of the company, is beyond the control of the contractor.

6.4.1 A HINDRANCE REGISTER shall be maintained by both department and the contractor at site to record the various hindrances, as stated above, encountered during the course of execution.

Hindrance register will be signed by both the parties. The contractor may also record his observations in the Hindrance Register. In case the contractor has a different opinion for hindrance and a dispute arises then the matter would be referred to the EIC and or the next higher authority whose decision would be final & binding on the contractor & the decision to be communicated within 15 days.

6.4.2 The contractor shall request the company in writing for extension of time within 15 days of happening of such event causing delay stating also, the period for which extension is required. The company may, considering the genuinity of the request, give a reasonable extension of time for completion of the work. Such extension shall be communicated to the contractor in writing by the company through the Engineer In Charge within 1(one) month of the date of receipt of such request.

6.4.3 The opinion of the Engineer-in-charge, whether the grounds shown for the extension of time are or are not reasonable, is final. If the Engineer-in-charge is of the opinion that the grounds shown by the contractor are not reasonable and declines to the grant of extension to time, the contractor can not challenge the soundness of the opinion by reference to arbitration.

The opinion of the Engineer-in-charge that the period of extension granted by him is proper or necessary is not, however, final. If the contractor feels that the period of extension granted is inadequate he can appeal to the CGM(Civil)/ GM(Civil)/ CE(Civil) of the company for consideration on the question whether the period of extension is or is not proper or necessary.

6.4.4 Provisional extension of time may also be granted by the Engineer In Charge during the course of execution, on written request for extension of time within 15(fifteen) days of happening of such events as stated above, reserving the company's right to impose/ waive penalty at the time of granting final extension of time as per contract agreement.

6.4.5 When the period fixed for the completion of the contract is about to expire, the question of extension of the contract may be considered at the instance of the Contractor or the Department or of both. The extension will have to be by party's agreement, express or implied.

In case the contractor does not apply for grant of extension of time within 15(fifteen) days of the hindrance occurring in execution of the work and the department wants to continue with the work beyond the stipulated date of completion for reason of the work having been unavoidably hindered, the Engineer-in-charge can grant extension of time even in the absence of application from the contractor.

Such extension of time granted by the Engineer In Charge is valid provided the contractor accepts the same either expressly or implied by his actions before and subsequent to the date of completion. Such extension of time shall be without prejudice to Company's right to levy compensation under the relevant clause of the contract.

The contractor shall however use his best efforts to prevent or make good the delay by putting his endeavors constantly as may be reasonably required of him to the satisfaction of the Engineer In Charge.

7. Material Supply & other facilities

7.1* The company does not undertake any responsibility for supply of any materials to the contractor.

7.2 If the steel is issued by the department, the wastage of steel shall be the barest minimum. The wastage allowed from theoretical quantity will be upto a maximum of 5% to cover the wastage due to cutting into pieces, bending and other factors. No cut pieces or scrap less than 2 mtr. in length will be taken by the department. Efforts should be made to use the cut pieces of 2 mtr. or above length as far as possible.

If the wastage of steel is more than the permissible variation mentioned above the cost of excess wastage made by the contractor shall be recovered at double the issue rates indicated above, or 115% of prevailing market rate including sales tax and general tax during the period of work, whichever is more.

No allowances shall be entertained on account of Rolling Margin for the steel either issued by the department or procured by the contractor.

7.3 If the cement is issued by the department, the variation of 5% will be permitted over the theoretical consumption of cement for value of work upto Rs.10.00 lakhs and 3% for value of work above Rs.10.00 lakhs. In the event of cement consumed is more/less than specified above, the recovery for the quantity of cement consumed in excess or less than the specified quantity shall be made at double the issue rate or 115% of prevailing market rate including sales tax and general tax during the period of work, whichever is more.

7.4 In case the department is not able to supply cement/steel as per the provisions of the contract, the Engineer In Charge may allow, with the approval of CGM(Civil)/ GM(Civil)/ CE(Civil) of the company, the contractor in writing for procurement of cement/ steel from the approved sources and the extra on this account including transport charges, if any, over the issue rate shall be reimbursed to the contractor on production of authentic documents. Transportation of cement/ steel from the place of purchase to the site of work and proper storage of cement/steel at site shall be contractor's responsibility. He should maintain proper account of cement/steel issued/procured by him and should allow inspection of his godown and his cement/steel account by the concerned Engineer-in-charge or any other authorised officers of the company. Contractor should draw materials from the company on the basis of actual requirement as assessed by the Engineer In Charge on "as and when required" basis.

7.5 Recovery of cost of materials issued on sale A/c will be made as per actual consumption basis but the Engineer In Charge will have the discretion for making full recovery while processing a particular bill or asking for the return of the balance materials if the work is not progressing satisfactorily.

The contractor shall keep accurate record of materials issued by the company, maintain proper account for the materials received and consumed in the work and shall be open to check by the Engineer In Charge or his authorised representative. The contractor shall ensure that such materials are consumed for the contract works only and the Register for the aforesaid account shall be signed both by the representatives of Engineer In Charge and the contractor.

7.6 All materials, tools and plants brought to site by the contractor including the materials supplied by the company shall be deemed to be held in lien by the company and the contractor shall not have the right to remove the same from the site, without the written permission of the Engineer In Charge. The company shall not however

be liable for any loss, theft or damage due to fire or other cause during this period of lien, the responsibility for which shall lie entirely on the contractor.

7.7 The contractor shall bear the cost of loading, transportation to site, unloading, storing under cover as required etc. as may be necessary for the use and keeping the materials in good condition.

7.8 Any surplus materials issued by the company, remaining after completion or termination of the contract, shall be returned by the contractor at his cost to the place of issue and the Engineer In Charge shall accept the same at the rate not exceeding the rate at which these were originally issued taking into consideration the deterioration or damage, if any, that may have been caused during the custody of the contractor. In the event, the contractor fails to return the surplus materials out of those supplied by the company, the Engineer In Charge may, in addition to any other liability which the contractor would incur in this regard, by giving notice in writing require the contractor to pay the amount at double the issue rate for such unreturned surplus materials or 115% of the prevailing market rate including Sales Tax & General Tax during the period of work, whichever is more.

7.9 On completion or on termination of the contract and on complete recovery of secured advance paid by the company, if any, in respect of materials brought to site, the contractor with due permission of the Engineer In Charge shall be entitled to remove at his expenses all surplus materials originally supplied by him and upon such removal, the same shall become the property of the contractor.

7.10 All charges on account of octroi, terminal or sales tax and other duties on materials obtained for the works from any source (excluding materials supplied by the company) shall be borne by the contractor.

7.11 The contractor shall arrange necessary electricity at his own cost for the work and his own establishment. However, if available and feasible the company may arrange electricity at one point near the work site and necessary recovery of cost of energy consumed will be made at rates prescribed by the company from time to time. Energy meter for this purpose shall be provided by the contractor.

7.12 The contractor shall arrange necessary water for the work and his own establishment. However, if available and feasible the company may arrange water at one point near the work site for which recovery @ 1% of the contract value of work done will be made from the contractor's bills.

7.13 Coal required for manufacturing of bricks to be used in the work will be issued @ 25 tonnes per one lakh of bricks on payment at the rate prevailing on the date of issue. Requirement of coal may vary depending on the quality of coal. Transportation of coal and the charges thereof shall be contractor's responsibility.

7.14 Explosives, detonators and other inflammable materials shall not be used in the execution of the work at site by the contractor without prior written permission of the Engineer In Charge. Transportation and storage of such materials shall be done in specified manner in accordance with the law in force. The contractor shall also obtain licence under such laws for, transportation, storage, use and all other operations, connected with the handling of the same.

8. Quality Assurance - Materials and Workmanship

The contractor shall carry out and complete the work in every respect in accordance with the contract and shall ensure that the work conforms strictly to the drawings, specifications, instructions of the Engineer In Charge. The Engineer In Charge may issue, from time to time, further drawings, detailed instructions/ directions in writing to the contractor. All such drawings, instructions/directions shall be consistent with the contract documents and should be reasonably inferable therefrom, alongwith clarifications/ explanations thereof, if necessary.

8.1 For Quality Assurances of all the Civil Engineering Works the norms/ guidelines laid down by the company herein and elsewhere will form part of the contract for the purpose of quality of works.

8.2 The contractor shall be responsible for correct and complete execution of the work in a workman like manner with the materials as per specification which shall be subject to the approval of the company. All work under execution in pursuance of the contract shall be open to inspection and supervision by the Engineer In Charge or by his authorised representative or any other official of higher rank or any other person authorised by the company in his behalf & the contractor shall allow the same.

8.3 All materials to be provided by the contractor shall be in conformity with the specifications/schedule of work as per the contract and the contractor shall furnish proof, if so required by the Engineer In Charge to his satisfaction that the materials do so comply.

8.4 The contractor shall immediately after the award of work draw up a schedule giving dates for submission of samples as required or necessary as per the specification for approval of Engineer In Charge who shall approve, if found acceptable, promptly so that there is no delay in the progress of the work of the contractor or of the work of any of the sub-contractor.

On receipt of samples as per schedule, the Engineer In Charge shall arrange to examine/test with reasonable promptness ensuring conformity of the samples with the required specification and complying with the requirements as per contract documents keeping in view that the work shall be in accordance with the samples approved by him. The contractor shall not start bringing materials at the site unless the respective samples are approved. Materials conforming to approved samples shall only be brought to site.

Samples are to be supplied by the contractor at his own cost. The cost involved in tests shall be borne by the contractor. If any test is ordered by the Engineer In Charge which is to be carried out by any independent person or agency at any place other than the site even then the cost of materials and testing charge etc. shall be borne by the contractor. If the test shows that the materials are not in accordance with the specifications, the said materials shall not be used in the work and removed from the site at contractors cost.

8.5 The company, through the Engineer In Charge, shall have full powers to reject any materials or work due to a defect therein for not conforming to the required specification, or for materials not being of the required quality and standard or for reasons of poor workmanship or for not being in accordance with the sample approved by him. The contractor shall forthwith remedy the defect/replace the materials at his expense and no further work shall be done pending such rectification/replacement of materials, if so instructed by the Engineer In Charge.

In case of default on the part of the contractor, the Engineer In Charge shall be at liberty to procure the proper materials for replacement and/or to carry out the rectifications in any manner considered advisable under the circumstances and the entire cost & delay for such procurement/rectification shall be borne by the contractor.

8.6 The Engineer In Charge shall be entitled to have tests carried out for any materials, according to the standard practice followed for such tests, other than those for which satisfactory proof has already been furnished by the contractor who shall provide at his expense all facilities which the Engineer In Charge may require for the purpose.

The cost of any other tests, if so required by the Engineer In Charge, shall be borne by the contractor only, if the test shows the workmanship or materials not to be in accordance with the provision of the contract or the instruction of Engineer In Charge, but otherwise by the company.

8.7 Access to the works: The Engineer-in-charge and any person authorised by the company shall at all times have access to the works and to all workshops and places where work is being prepared or from where materials, manufactured articles are being obtained for the works and the contractor shall afford every facility for and every assistance in or in obtaining the right to such access.

8.8 Inspection of works: i) No work shall be covered up or put out of view without the approval of the Engineer-in-charge or the Engineer-in-charge's representative or any other officer nominated by the company for the purpose and the contractor shall afford full opportunity for the EIC or EIC's representative or any other officer nominated by the company for the purpose to examine and measure any work which is about to be covered up or put out of view and to examine foundations before permanent work is placed thereon. the contractor shall give due notice to the Engineer-in-charge's representative whenever any such work or foundations is ready or about to be ready for examination and the Engineer-in-charge's representative shall, without unreasonable delay, unless he considers it unnecessary and advises the contractor accordingly, attend for the purpose of examining and measuring such work or foundations.

ii) The contractor shall uncover any part or parts of the works or making openings in or through the same as the Engineer In Charge may from time to time direct and shall reinstate and make good such part or parts to the satisfaction of Engineer-in-charge.

If any such part or parts have been covered up or put out of view after compliance with the requirement of sub-clause above and are found to be executed in accordance with the contract, the expenses of uncovering, making openings in or through and making good the same shall be borne by the Employer, but in any other cases all costs shall be borne by the contractor.

8.9 Removal of Improper Work and Materials:

i) The Engineer-in-charge shall during the progress of the works have power to order in writing from time to time :

- a) The removal from the site, of any materials which in the opinion of Engineer-in-charge, are not in accordance with the contract/ work order/ approved sample.
- b) The substitution with proper and suitable materials.
- c) The removal and proper re-execution, notwithstanding any previous test thereof or interim payment therefrom, of any work which in respect of materials or workmanship is not in accordance with the contract.

ii) In case of default on the part of the contractor in carrying out such order, the Engineer-in -charge shall be entitled to employ and pay other agency to carry out the same and all expenses consequent thereon shall be recoverable from the contractor or may be deducted from any amount due or which may become due to the contractor.

8.10 Devaluation of Work : In lieu of rejecting work done or materials supplied not in conformity with the contract/work order/approved samples , the Engineer-in-charge or any other officer nominated by the company for the purpose may allow such work or materials to remain, provided the Engineer In Charge/ the officer nominated by the company is satisfied with the quality of any materials, or the strength and structural safety of the work, and in that case shall make such deduction for the difference in value, as in his opinion may be reasonable.

8.11 Final Inspection of Work: The Engineer-in-charge and any other officer nominated by the company for the purpose shall make final inspection of all work included in the contract/work order, or any portion thereof, or any completed structure forming part of the work of the contract, as soon as practicable after notification by the contractor that the work is completed and ready for acceptance. If the work is not acceptable to the Engineer-in-charge at the time of such inspection, he shall inform the contractor in writing as to the particular defects to be remedied before final acceptance can be made.

8.12 Defects appearing after acceptance: Any defects which may appear within the defect liability period and arising, in the opinion of the Engineer-in-charge, from lack of conformance with the drawings and specifications, shall, if so required by the Engineer-in-charge in writing, be remedied by the contractor at his own cost within the time stipulated by the Engineer-in-charge. If the contractor fails to comply, the Engineer-in-charge may employ other persons to remedy the defects and recover the cost thereof from the dues of the contractor.

8.13 Site Order Book : A Site Order Book is a Register duly certified by the Engineer-in-charge regarding number of pages it contains, each page being numbered, name of work, name of contractor, reference of contract/ work order and the aforesaid certificate should be recorded on its first page.

Site Order Books shall be maintained on the sites of works and should never be removed therefrom under any circumstances. It shall be the property of the company. The Engineer In Charge or his authorised representative shall duly record his observations regarding any work which needs action on the part of the contractor like, improvement in the quality of work, failure to adhere to the scheduled programme etc. as per contract/work order. The contractor shall promptly sign the site order book and note the orders given therein by the EIC or his representative and comply with them. The compliance shall be reported by the contractor in writing to EIC in time so that it can be checked.

The Site Order Book will be consulted by the Engineer In Charge at the time of making both running on account and final bills of the contractor. A certificate to this effect should be given in the Measurement books by the Engineer In Charge or his representative.

8.14 Samples and Testing of Materials: All the materials to be procured by the contractor and to be used in work shall be approved by the Engineer In Charge in advance, and shall pass the tests and analysis required by him, which will be as specified in the specifications of the items concerned and or as specified by BIS or the IRC standard specifications acceptable to the Engineer In Charge. The method of sampling and testing shall be as per the relevant BIS, IRC and other relevant standards and practices. Minor minerals like sand, stone chips etc. shall be conforming to relevant BIS standards. All bought out items including Cement and Steel shall be procured from such manufacturers who hold valid license conforming to relevant BIS standards for manufacturing of such items.

8.15 Storage of Materials : Materials shall be so stored as to ensure the preservation of the quality and fitness for the work. When considered necessary by the Engineer-in-charge, they shall be placed on wooden platforms or other hard, clean surfaces and not directly on the ground.

Materials shall be placed under cover when so directed and the contractor shall erect and maintain at his own cost temporary weather-proof sheds at the work site for the purpose. Stored materials shall be so located as to facilitate prompt inspection. All stored materials shall be inspected at the time of use in the work, even though they may have been inspected and approved before being placed in storage or during storage.

8.16 Defective Materials: All materials not conforming to the requirements of the specifications shall be considered as defective, and all such materials, whether in place or not shall be rejected. They shall be removed immediately by the contractor at his expenses and replaced with acceptable material.

No rejected material, the defects of which have been subsequently corrected, shall be used on the work until approval in writing has been given by the Engineer In Charge. Upon failure on the part of the contractor to comply with any instruction of the Engineer-in-charge made under the provisions of this article within the time stipulated by the Engineer-in-charge, the Engineer-in-charge shall have authority to remove and replace defective material and recover the cost of removal and replacement from the contractor.

Further all such defective material lying at site not removed and replaced within 30 days after issue of notice by the Engineer-in-charge, if the Engineer-in-charge so decides, shall dispose off such material in any manner without any further written notice to the contractor.

9. Measurement and Payments

Except where any general or detailed description of the work in the Bill of Quantities or specifications of the contract/ work order provides otherwise, measurement of work done shall be taken in accordance with the relevant standard method of measurement published by the Bureau of Indian Standards(BIS) and if not covered by the above, other relevant Standards/practices shall be followed as per instructions of the Engineer In Charge.

9.1 All items of work carried out by the contractor in accordance with the provision of the contract having a financial value shall be entered in the Measurement Book as prescribed by the company so that a complete record of the measurements is available for all the works executed under the contract and the value of the work executed can be ascertained and determined therefrom. Measurements of completed work / portion of completed work shall be recorded only in the Measurement Books.

9.2 Measurement shall be taken jointly by the Engineer-in-Charge or his authorised representative and by the contractor or his authorised representative.

9.3 Before taking measurements of any work, the Engineer In Charge or the person deputed by him for the purpose shall intimate the contractor to attend or to send his representative to attend the measurement. Every measurement thus taken shall be signed and dated by both the parties on the site on completion of the measurement. If the contractor objects to any measurements, a note to that effect shall be made in the Measurement Book / Log Book and signed and dated by both the parties.

9.4 The measurement of the portion of work/items of work objected to, shall be re-measured by the Engineer In Charge himself or the authority nominated by the company for the purpose in the presence of the contractor or his authorised representative and recorded in the M.B. which shall be signed and dated by both the parties. Measurements so recorded shall be final and binding upon the contractor and no claim whatsoever shall thereafter be entertained.

In case the contractor or his authorised representative does not attend to the joint measurements at the prefixed date and time after due notice, the measurements taken by the Engineer In Charge or his representative shall be final and binding on the contractor.

Measurement of the extra items of work or excess quantities of work duly authorised in writing by the Engineer In Charge shall also be taken and recorded in the M.B. based on the existing items in the SOR of the company and if such items do not exist in the company's SOR, the description of the work shall be as per actual execution. Payment for such extra items will be based on the rates to be derived as described in the relevant clauses of the contract/ work-order

9.5 No work shall be covered up or put out of view without the approval by the Engineer In Charge and recording of measurements and check measurement thereof duly accepted by the contractor. The contractor shall provide full opportunity to the Engineer In Charge or his representative to examine and measure all works to be covered up and to examine the foundations before covering up.

The contractor shall also give notice to Engineer In Charge whenever such works or foundations are ready for examination and the Engineer In Charge shall without unreasonable delay arrange to inspect and to record the measurements, if the work is acceptable and advise the contractor regarding covering of such works or foundations.

9.6 In case of items which are claimed by the contractor but are not admissible according to the department, measurements of such items, will be taken by for record purposes only and without prejudice so that in case it is subsequently decided by the department to admit the contractor's claims, there should be no difficulty in determining the quantities of such work. A suitable remark should, however, be made against such measurements to guard against payment in the ordinary way.

9.7 Payments: The running on account payments may be made once in a month or at intervals stipulated in the work order/ contract agreement.

9.7.01 Running on account bill/bills for the work executed/ materials supplied in accordance with the work order/ contract shall be prepared on the basis of detailed measurements recorded as described hereinbefore and processed for payments.

9.7.02 Payment of on account bill shall be made on the Engineer In Charge's certifying the sum to which the contractor is considered entitled by way of interim payment for the following :

a) The work executed as covered by the bill/bills after deducting the amount already paid, the security deposit and such other amounts as may be deductible or recoverable in terms of the work order/ contract.

b) (i) Payment for excess quantity of work done with the written instructions of the Engineer In Charge for items already appearing in the bill of quantities of work with approved rates, will be made alongwith the on account bills only upto 10% of the quantity provided in the agreement subject to overall value of work not exceeding the agreement value.

(ii) The CGM(Civil)/ GM(Civil)/ CE(Civil) of the company and / or the Staff Officer(C) of the Area may authorise interim payment for excess work done upto 20 % of the quantity of work provided in the Bill of Quantity of the work awarded from Company level and Area level respectively subject to overall value of work done does not exceed the contract value.

c) Extra items of work executed will be paid on specific written authorisation of CGM (Civil)/ GM(C)/ CE(C) of the company or Staff Officer (Civil) of the Area provided that the value of such extra items of work when added together is not more than 10% of the contract value and the total gross payment including excess quantity does not exceed the contract value.

Balance amount on account of excess quantity and extra items of work executed shall be paid after the deviation estimate / revised estimate regularising the extra items and excess quantities of work is sanctioned by the competent authority of the company with the concurrence of the Finance Department of the company.

d) On the Engineer In Charge's certificate of completion in respect of the work covered by the contract / final measurements of the work certified by the Engineer In Charge or his representative.

9.7.03 The measurements shall be entered in the M.B for the work done upto the date of completion and evaluated based on the approved rates for the items in the contract agreement/sanctioned revised estimate. In case of extra items of work, the rates shall be derived as stated in the relevant clause of the contract.

The payments shall be released against the final bill subject to all deductions which may be made on account of materials supplied, water supply for construction, supply of electricity and any other dues payable by the contractor to the company, and further subject to the contractor having given to the Engineer In Charge a no claim certificate.

The contractor shall indemnify the company against proof of depositing royalty on account of minor minerals used in the work before the final bill is processed for payments. The final payment to be made will also be subject to Clause-4.5 of the General Terms & Conditions of the contract.

9.7.04 Any certificate given by the Engineer In Charge for the purpose of payment of interim bill/bills shall not of itself be conclusive evidence that any work/materials to which it relate is/are in accordance with the contract and may be modified or corrected by the Engineer In Charge by any subsequent certificate or by the final certificate.

9.7.05 The company reserve the right to recover/enforce recovery of any over payments detected after the payment as a result of post payment audit or technical examination or by any other means, notwithstanding the fact that the amount of disputed claims, if any, of the contractor exceeds the amount of such overpayment and

irrespective of the facts whether such disputed claims of the contractor are the subject matter of arbitration or not.

The amount of such over payments shall be recovered from subsequent bills under the contract, failing that from contractor's claim under any other contract with the company or from the contractor's security deposit or the contractor shall pay the amount of over payment on demand. In case of contractor's non-payment on such demand, the same should be realised from the contractor's dues, if any, with Coal India Limited or any of its subsidiaries.

9.7.06 The contractors are required to execute all works satisfactorily and according to the specifications laid down in the contract/ work order. If certain items of work, executed by the contractor, are below specifications, the contractor should re-do them according to the specifications and instructions of EIC and if the contractor fails to rectify the defect within the time and in the manner specified by the EIC, the work shall be got re-done or rectified by the department at the risk and cost of the contractor. Engineer In Charge may accept such work of below specifications provided the department is satisfied with the quality of such works and the strength/ structural safety of such works. In that case Engineer In Charge shall make such deductions for the difference in value, as in his opinion is reasonable and is approved by the accepting authority of the company i.e. CGM(C)/ GM(C)/ CE(C) of the company in this case or any other officer nominated by CGM(C)/ GM(C)/ CE(C) for the purpose.

9.7.07 Payment Stage: The payment stage involved will be as under,

- i) Signature of EA(Civil)/ Sr. Overseer(C) / Overseer(C) in MB's both in pages recording measurements, abstract of bill & the duly filled in bill form.
- ii) Signature of Engineer(C)/ EE(C) with appropriate check measurements in the MB's and the bill form.
- iii) Signature of Sr. EE(C)/ SE(C) with appropriate check measurements in MB's and the bill form.
- iv) Signature of Engineer in Charge as per definition as at clause 1(vii) of the General Terms and Conditions, as a token of acceptance for payment of the bill. The EIC may sign in the abstract of the bill in the MB & the bill form. In between stage iii) and iv) accountal checking may be made by the concerned Accounts Officer/ Accountant.

9.7.08 Secured Advance: Secured advance can be paid for items of materials required for execution of the work and covered under categories A & B and supplied by the contractor at work site, supported by necessary vouchers, challans, test certificates etc. after execution of indemnity bond as per prescribed Form of the company on non-judicial stamp paper of prescribed value.

This advance shall be recovered in four equal installments or as per consumption whichever is higher. Engineer In Charge shall recover at his discretion all or any part of secured advance paid, if in his opinion the work is not progressing satisfactorily or the security of these materials at site is not adequately taken care of by the contractor. Secured advance shall be payable for contracts of value above Rs.10.00 lakhs only.

Secured advance for structural steel sections, reinforcement steel and cement, collected at site, will be paid upto 75% of the corresponding stock yard prices of SAIL for the corresponding steel items and Govt. approved/ D.G.S.D. prices for cement, if the same exist.

In case of non-availability of Govt. approved prices of cement & steel and for the materials falling under Category - A and B the secured advance will be paid at the basic rate available in the approved schedule of rates of the company plus or minus the overall percentage on which the work was awarded, provided such rate is not more than 60% of the quoted rate of the contractor for the actual work.

At any point of time the outstanding recoverable secured advance shall not be more than 10% of the contract value.

Items against which secured advance can be granted:

Category-A

Civil:

1. Bricks
2. Stone and brick aggregate
3. Stones
4. Finished products of brass, iron and steel such as doors & windows frames, wire mesh, gate, GI Sheets.
5. Pre-cast R.C.C. products such as pipes, jali, water storage tanks etc.
6. Doors & Window fittings.
7. Pipes and sanitary fittings of CI, SCI & HCI

Electrical :

1. Steel conduits
2. G.I. Pipes
3. I.C. Boards
4. Switchgears (Air circuit breakers and Air break switches)
5. C.I. Boxes.
6. A.C.S.R. Conductors
7. A.C. Plant & Machinery
8. Pumps
9. Generating sets (without oil)

Items against which secured advance can be granted:

Category- B

Civil:

1. Glazed tiles, terrazzo tiles and similar articles.
2. Marble slabs
3. Asbestos cement products
4. Finished timber products such as doors, windows, flush doors, particle boards (subject to mandatory test being satisfactory) etc.
5. Bitumen in sealed drums
6. Bitumen felt
7. Polythene pipes and fittings and tanks
8. Sanitary fittings and pipes of S.W., porcelain and chinaware materials
9. Laminated / Safety, one way vision, and bullet proof glasses.
10. Chemical required for anti-termite treatment (in sealed drums)
11. Paints, varnishes, distempers, pigment, spirits etc.

Electrical:

1. Transformers

2. Oil-filled switch gears.
3. L.T. & H.T.Cables
4. Fans
5. Storage and Dry Batteries
6. Insulation tapes
7. Epoxy cable compounds
8. Electric light fittings
9. Wooden battens, casing & capping and wooden boards
10. Flexible wires
11. PVC materials
12. Oil and lubricants
13. Rubber materials
14. Glass wool, thermocole & other insulating materials
15. Porcelain H.T. and L.T. insulators.

In addition to indemnity bond, for materials listed under Category-B, the contractor shall be required to provide necessary insurance cover of equivalent value of materials.

Items against which no secured advance shall be granted:

Civil:

1. Glass products other than those indicated in Category-B.
2. Sand and moorum
3. Chemical compounds other than those indicated in Category-B.

Electrical:

1. Glass gloves and shades
2. Bulbs and tubes
3. Petrol and diesel
4. Freon and other refrigeration gases.

9.8 Income tax deduction @ 2% (Two percent) of the gross value of each bill or at the rate as amended from time to time, shall be made unless exempted by the competent authority of the Income Tax Department

Sales tax on works contract shall be payable by the contractor. If, however, the company is asked to make deduction from the contractor's bills, the same shall be done and a certificate to this effect shall be issued to the contractor for dealing with the State Govt. and the company does not take any responsibility to do anything further in this regard.

9.9 No interest shall be payable on the amounts withheld, under the terms of the Contract Agreement/Work-order.

10. Termination, Cancellation, Suspension and Foreclosure of Contract

The company shall, in addition to other remedial steps to be taken as provided in the conditions of contract be entitled to cancel the contract in full or in part, if the contractor :-

- a) makes default in proceeding with the works with due diligence and continues to do so even after a notice in writing from the Engineer In Charge, then on the expiry of the period as specified in the notice
- Or**
- b) commits default/breach in complying with any of the terms and conditions of the contract and does not remedy it or fails to take effective steps for the remedy to the satisfaction of the Engineer In Charge, then on the expiry of the period as may be specified by the Engineer In Charge in a notice in writing.

Or

c) obtains a contract with the company as a result of ring tendering or other non-bonafide methods of competitive tendering

Or

d) shall offer or give or agree to give any person in the service of the company or to any other person on his behalf any gift or consideration of any kind as an inducement or reward for act/acts of favour in relation to the obtaining or execution of this or any other contract for his company.

Or

e) fails to complete the work or items of work with individual dates of completion, on or before the date/dates of completion or as extended by the company, then on the expiry of the period as may be specified by the Engineer In Charge in a notice in writing.

Or

f) transfers, sublets, assigns the entire work or any portion thereof without the prior approval in writing from the Engineer In Charge. The Engineer In Charge may by giving a written notice, cancel the whole contract or portion of it in default.

10.1 The contract shall also stand terminated under any of the following circumstances :

a) If the contractor being an individual in the case of proprietary concern or in the case of a partnership firm any of its partners is declared insolvent under the provisions of Insolvency Act for the time being in force, or makes any conveyance or assignment of his effects or composition or arrangement for the benefit of his creditors amounting to proceedings for liquidation or composition under any Insolvency Act.

b) In the case of the contractor being a company, its affairs are under liquidation either by a resolution passed by the contractors company or by an order of court, not being a voluntary liquidation proceedings for the purpose of amalgamation or reorganisation, or a receiver or manager is appointed by the court on the application by the debenture holders of the contractor's company, if any.

c) If the contractor shall suffer an execution being levied on his/their goods, estates and allow it to be continued for a period of 21 (twenty-one) days.

d) On the death of the contractor being a proprietary concern or of any of the partners in the case of a partnership concern and the company is not satisfied that the legal representative of the deceased proprietor or the other surviving partners of the partnership concern are capable of carrying out and completing the contract. The decision of the company in this respect shall be final and binding which is to be intimated in writing to the legal representative or to the partnership concern.

10.2 On cancellation of the contract or on termination of the contract, the Engineer In Charge shall have powers:

a) to take possession of the site and any materials, constructional plant, equipments, stores etc. thereon.

b) to carry out the incomplete work by any means at the risk and cost of the contractor.

c) to determine the amount to be recovered from the contractor for completing the remaining work or in the event the remaining work is not to be completed the loss/damage suffered, if any, by the company after giving credit for the value of the work executed by the contractor upto the time of cancellation less on a/c payments made till date and value of contractor's materials, plant, equipments, etc. taken possession of after cancellation.

d) to recover the amount determined as above, if any, from any money due to the contractor on any account or under any other contract and in the event of any shortfall, the contractor shall be called upon to pay the same on demand. The need for determination of the amount of recovery of any extra cost/expenditure or of any loss/damage suffered by the company shall not however arise in the case of termination of the contract for death/demise of the contractor as stated in clause 10.1(d) of the contract.

e) to give the contractor or his representative of the work 7 (seven) days notice in writing for taking final measurement for the works executed till the date of cancellation or termination of the contract. The Engineer In Charge shall fix the time for taking such final measurement and intimate the contractor in writing. The final measurement shall be carried out at the said appointed time notwithstanding whether the contractor is present or not. Any claim as regards measurement which the contractor is to make shall be made in writing within 7 (seven) days of taking final measurement by Engineer-In-charge as aforesaid and if no such claim is received, the contractor shall be deemed to have waived all claims regarding above measurements and any claim made thereafter shall not be entertained.

10.3 Suspension of Work:

i) The company shall have power to suspend the work or any part thereof and the Engineer In Charge may direct the contractor in writing to suspend the work, for such period and in such manner as may be specified therein, on account of any default on the part of the contractor, or for proper execution of the work for reasons other than any default on part of the contractor, or on ground of safety of the work.

ii) In the event of suspension for reasons other than any default on the part of the contractor, extension of time shall be allowed by the company equal to the period of such suspension and the contractor shall properly protect and secure the works to the extent necessary during such suspension.

The contractor shall carry out the instructions given in this respect by the Engineer-In Charge & if such suspension exceeds 45 (forty five) days, the contractor will be compensated on mutually agreed terms.

10.4 The work shall, throughout the stipulated period of contract, be carried out with all due diligence on the part of the contractor. In the event of termination or suspension of the contract, on account of default on the part of the contractor, as narrated hereinbefore, the security deposit and other dues of this work or any other work done under this company shall be forfeited and brought under the absolute disposal of the company provided, that the amount so forfeited shall not exceed 10 (ten) percent of the contract value.

10.5 Foreclosure of contract:

If at any time after acceptance of the tender the company decides to abandon for any reason whatsoever the company, through its Engineer In Charge, shall give notice in writing to that effect to the contractor. In the event of abandonment the company shall be liable :-

a) to pay reasonable amount assessed and certified by the Engineer In Charge of the expenditure incurred, if any, by the contractor on preliminary works at site e.g. temporary access roads, temporary construction for labour and staff quarters, office accommodation, storage of materials, water storage tanks and water supply for the work including supply to labour/ staff quarters, office etc.

b) to pay the contractor at the contract rates full amount for works executed and measured at site upto the date of such abandonment.

c) to pay for the materials brought to site or to be delivered at site, which the contractor is legally liable to pay, for the purpose of consumption in works carried out or were to be carried out but for the foreclosure, including the cost of purchase and transportation and cost of delivery of such materials. The materials to be taken over by the company should be in good condition and the company may allow at its discretion the contractor to retain the materials in full or in part if so desired by him and to be transported by the contractor from site to his place at his own cost with due permission of the EIC.

d) to take back the materials issued by the company but remaining unused, if any, in the work on the date of abandonment/reduction in the work, at the original issue price less allowance for any deterioration or damage caused while in custody of the contractor.

e) to pay for the transportation of tools and plants of the contractor from site to contractor's place or to any other destination, whichever is less.

10.5.01 The contractor shall, if required by the Engineer In Charge, furnish to him books of accounts, papers, relevant documents as may be necessary to enable the Engineer In Charge to assess the amounts payable in terms of clauses 10.5(b) (c) & (e) of the contract. The contractor shall not have any claim for compensation for abandonment of the work, other than those as specified above.

11. Completion Certificate / Defect Liability Certificate

Except in cases where the contract provides for "Performance Test" before issue of Defect Liability certificate, in which case the issue of Defect Liability certificate shall be in accordance with the procedure specified therein, the contractor shall give notice of completion of work, as soon as the work is completed, to the Engineer In Charge. The Engineer In Charge and or any other Officer, nominated for the purpose by the company, shall within 30 (thirty) days from the receipt thereof, inspect the work and ascertain the defects/deficiencies, if any, to be rectified by the contractor as also the items, if any, for which payment shall be made at reduced rate.

If the defects, according to the Engineer In Charge are of a major nature and the rectification of which is necessary for the satisfactory performance of the contract, he shall intimate in writing the defects and instruct the contractor to rectify the defects/remove deficiencies within the period and in the manner to be specified therein. In such cases Defect Liability Certificate will be issued by the EIC after the above rectifications are carried out/ deficiencies are removed by the contractor to the satisfaction of EIC.

In the event there are no defects or the defects/ deficiencies are of a minor nature and the Engineer In Charge is satisfied that the contractor has already made arrangements for rectification, or in the event of contractor's failure to rectify the defects for any reason whatsoever, the defects can be rectified by the company departmentally or by other means and the 50% of the security deposit of the contractor shall be sufficient to cover the cost thereof, he shall issue the Defect Liability Certificate (Taking Over Certificate with list of defects) indicating the date of completion of the work, defects to be rectified, if any, and the items, if any, for which payment shall be made at reduced rate indicating reasons therefor and with necessary instructions to the contractor to clear the site/place of work or all debris/ waste materials, scaffoldings, sheds, surplus materials etc. making it clean.

11.1 In cases where separate period of completion for certain items or groups of items are specified in the contract, separate Defect Liability certificate for such items or groups of items may be issued by the Engineer In Charge after completion of such items on receipt of notice from the contractor only in the event the work is completed satisfactorily in every respect.

Refund of security deposit and payment of final bill shall, however, be made on completion of the entire contract work, but not on completion of such items of work.

12. Additional Responsibilities of the Contractor(s)

The cost on account of the "Additional Responsibilities of the Contractors" under this clause is deemed to be included in the tendered rates.

i) The company reserves the right to let other contractors also works in connection with the Project and the contractor/contractors shall co-operate in the works for the introduction and stores and materials and execution of his/their works.

ii) The contractor/contractors shall keep on the work site during the progress a competent and experienced Resident Engineer exclusively for the work and necessary assistants who shall represent the contractor(s). The contractor shall employ, on the site in connection with the execution and maintenance of the work, the following technical staff :

For Buildings Roads, Water Supply & Sanitary Works:

- | | |
|---|---|
| 1) For value of work ranging from Rs.10 lakhs to Rs.20 lakhs. | 1 Experienced Diploma holder. |
| 2) For value of work above Rs.20 lakhs and upto Rs.1 crore. | 1 Experienced Graduate Engineer in addition to Diploma holder as per sl.no.4 below. |
| 3) For value of work in excess of Rs.1 crore & for every additional Rs.2 crores or part thereof. | 1 Graduate Engineer extra in addition to Graduate Engineer and Diploma holder as per sl.no.1 & 4. |
| 4) For value of work in excess of Rs.20 lakhs & for every additional Rs.50 lakhs or part thereof. | 1 Diploma holder extra. |

For Industrial Structures :

- | | |
|---|---|
| 1) For value of work ranging from Rs.5 lakhs to Rs.15 lakhs. | 1 Experienced Diploma holder. |
| 2) For value of work above Rs.15 lakhs and upto Rs.75 lakhs. | 1 Experienced Graduate Engineer in addition to Diploma holder as per sl.no.4 below. |
| 3) For value of work in excess of Rs.75 lakhs & for every additional Rs.1.5 crores or part thereof. | 1 Graduate Engineer extra in addition to Graduate Engineer and Diploma holder as per sl.no.1 & 4. |
| 4) For value of work in excess of Rs.15 lakhs & for every additional Rs.50 lakhs or part thereof. | 1 Diploma holder extra. |

The contractor shall intimate the Engineer In Charge in writing the names, qualifications, experience and full postal address of each and every technical personnel employed at site by him.

The contractor(s) shall not be allowed to execute the work unless he/they engage the required technical staff at site as stated above. The delay on this account, if any, shall be the contractor's responsibility.

Important instructions shall be confirmed to the contractor(s) in writing. If the contractor/contractors in course of the works finds/find any discrepancy between the drawing, forming part of the contract documents and the physical conditions of the locality or any errors or omissions in drawings except those prepared by himself / themselves and not approved by the Engineer In Charge. It shall be his/their duty to immediately inform the Engineer In Charge in writing and the Engineer In Charge shall verify the same. Any work done after such discovery and without intimation as indicated above will be done at the risk of the contractor/contractors.

iii) The contractor / contractors shall employ only competent, skillful and orderly men to do the work. The Engineer In Charge shall have the right to ask the contractor/ contractors to remove from the work site any men of the contractor/contractors who in his opinion is undesirable and the contractor/contractors will have to remove him within 3 (three) hours of such orders.

The contractor shall employ apprentices in the execution of the contract work as required under Apprentices Act.

The contractor shall further be responsible for making arrangements at his own cost, or accommodation and social needs of the staff and workers under his employment.

iv) Precautions shall be exercised at all times by the contractor(s) for the protection of persons (including employees) and property. The safety required or recommended by all applicable laws, codes, statutes and regulations shall be observed by the contractor(s). In case of accidents, the contractor(s) shall be responsible for compliance with all the requirements imposed by the Workmen's Compensation Act or any other similar laws in force, and the contractor(s) shall indemnify the company against any claim on this account.

All scaffoldings, ladders and such other structures which the workmen are likely to use shall be examined by the Engineer In Charge or his authorised representative whenever they want and the structure must be strong, durable, and safe and of such design as required by Engineer In Charge.

In no case any structure condemned by the Engineer In Charge or his authorised representatives shall be kept on the work and such structure must be pulled down within three hours of such condemnation and any certificate or instructions, however, shall in no way absolve the contractor/contractors from his/their responsibility, as an employer, as the company shall in no way be responsible for any claim.

The contractor / contractors shall at all times exercises reasonable precautions for the safety of employees in the performance of his/their contract and shall comply with all applicable provisions of the safety laws drawn up by the State Govt. or Central Govt. or Municipalities and other authorities in India. The contractor/contractors shall comply with the provision of the safety hand book as approved and amended from time to time by the Government of India.

v) The contractor / contractors shall familiarise themselves with and be governed by all laws and rules of India and Local statutes and orders and regulations applicable to his/ their work.

vi) The contractor shall maintain all records as per the provision made in the various statutes including Contract Labour (Regulation & Abolition) Act, 1970 and the Contract Labour (Regulation & Abolition) Central Rules, 1971, Minimum Wages Act, Workmen Compensation Act etc. and latest amendment thereof. Such records maintained by the contractor shall be opened for inspection by the Engineer In Charge or by the nominated representative of the Principal Employer.

vii) The contractor/ contractors shall provide facilities for the sanitary necessities of all persons employed on the work shall be constructed and maintained in the number, manner and place approved or ordered by the Engineer In Charge. The contractor/contractors shall vigorously prohibit committing of nuisance at any other place. Cost of all works under this item shall be covered by the contractor/contractor's tendered rates.

viii) The contractor/contractors shall furnish to the Engineer In Charge or his authorised representative with work reports from time to time regarding the contractor / contractors organisation and the progress made by him / them in the execution of the work as per the contract.

ix) All taxes, levies, cess, royalties, whether local, municipal, provincial or central pertaining to the the contract are payable during the entire periods of contract, shall be to the contractor/ contractors account and shall be deemed to have been included in the contracted rate for the work to be executed by the contractor. The Company shall not be liable for any taxes or levies etc. whatsoever in connection with this contract.

The company reserves the right to deduct/ withheld any amount towards taxes, levies, etc. and to deal with such amount in terms of the provisions of the Statute or in terms of the direction of any Statutory authority

and the company shall only provide with certificate towards such deduction and shall not be responsible for any reason whatsoever.

In case the company land is used for manufacture of bricks or extraction of gravels etc. the contractor will have to pay compensation to the company (apart from the liability of the contractor to make the payment of royalty etc. to the State Government) at the same rates or royalty fixed by the State Government or an appropriate deduction may be made in the rate to be paid to the contractors.

x) The contractor / contractors shall make his / their own arrangement for all materials, tools, staff and labourer required for the contract, which shall include cost of lead, lift, loading, unloading, railway freight, recruiting expenses and any other charges for the completion of the work to entire satisfaction of the company.

xi) The contractor / contractors shall make their own arrangement for carriage of all materials to the work site at his/their own cost.

xii) The work shall not be sublet to any other party, unless approved by Engineer In Charge, in writing.

xiii) a) No fruit trees or valuable plants or trees with trunk diameter exceeding 150mm shall be pulled, destroyed or damaged by the contractor/contractors or any of his/their employees without the prior permission of the company, failing which the cost of such trees or plants shall be deducted from the contractor/contractors dues at the rate to be decided by the company. The rates quoted are supposed to include clearance of shrubs and jungles and removal of such trees upto 150 mm dia., as will be permitted by the Engineer In Charge in writing.

b) Anything of historical or other interest or of significant value unexpectedly discovered on the site is the property of the employer. The Contractor is to notify the Nodal Officer or his nominee of such discoveries and carry out the Nodal Officer or his nominee's instructions for dealing with him.

xiv) The contractor / contractors shall not pay less than the minimum wages to the labourers engaged by him/them as per Minimum Wages Act or such other legislation or award of the minimum wage fixed by the respective State Govt. or Central Govt. as may be in force.

xv) All accounts shall be maintained properly and the company shall have the right of access and inspection of all such books of accounts etc., relating to payment of labourer considered necessary and the company may arrange for witnessing the payment to the labourer by its representatives.

xvi) The contractor shall in additions to any indemnity provided by the relevant clauses of the agreement or by law, indemnify and keep indemnified for the following :

a) The company or any agent or employee of the company against any action, claim or proceeding relating to infringement or use of any patent or design right and shall pay any royalties or other charges which may be payable in respect of any article or material included in the contract.

However, the amount so paid shall be reimbursed by the company in the event such infringement has taken place in complying with the specific directions issued by the company or the use of such article or material was the result of any drawing and/or specifications issued by the company after submission of tender by the contractor. The contractor must notify immediately after any claim being made or any action brought against the company, or any agent or employee of company in respect of any such matter.

b) The company against all claims, damages or compensation under the provisions of payment of Wages Act, 1938, Minimum Wages Act, 1948, Employer's Liability Act, 1938, The Workmen's Compensation Act, 1923, Industrial Dispute Act, 1947, Mines Act as applicable, Employees State Insurance Act 1948 and Maternity Benefit Act, 1961, Acts regulating P.F. or any modification thereof or any other law relating thereto and rules made thereunder from time to time, as may be applicable to the contract which may arise out of or in consequence of the construction or maintenance or performance of the work under the contract and also against costs, charges and expenses of any suit, action or proceedings arising out of any accident or injury.

c) The company against all losses and claims for injuries or damages to any third party or to any property belonging to any third party which may arise out of or in consequence of the construction or maintenance or performance of the work under the contract and against all claims/demands proceedings/damages, cost charges and expenses whatsoever in respect of or in relation thereto.

xvii) The contractor is under obligation to hand over to the company the vacant possession of the completed building structures failing which the Engineer In Charge can impose a levy upon the contractor upto 5% of the total contract value for the delay in handing over the vacant possession of the completed works after giving a 15 (fifteen) days notice to the contractor.

xviii) **a) INSURANCE** : The contractor shall take full responsibility to take all precautions to prevent loss or damage to the works or part thereof for any reasons whatsoever (excluding act of God e.g. flood, riots, war, earthquake, etc.) and shall at his own cost repair and make good the loss/damage to the work so that on completion, the work shall be in good order and condition and in conformity with the requirements of the contract and instructions of the Engineer In Charge.

In case of construction works without limiting the obligations and responsibilities under the contract, the contractor shall take insurance policy for the total value of work for the period from commencement to completion including defect liability period against risk of loss/ damage to the extent as permissible under the law of insurance.

The contractor shall arrange necessary insurance and pledge the same in the name of the company and all moneys payable by the insurers shall be recovered by the company which shall be paid to the contractor in installments as may be certified by the Engineer In Charge for the purpose of rebuilding or replacement or repair of the works and/or goods destroyed or damaged for which payment was received from the insurers.

b) Where any company building or part thereof is used, rented or leased by the contractor for the purpose of storing or using materials of combustible nature, the contractor shall take separate insurance policy for the entire building and the policy shall be deposited with the company.

c) The contractor shall at all times during the tenure of the contract indemnify the company against all claims, damages or compensation under the provision of the Workmen's Compensation Act and shall take insurance policy covering all risk, claims, damages, or compensation payable under the Workmen's Compensation Act or under any other law relating thereto.

d) The contractor shall ensure that the insurance policy/ policies is/are kept alive till full expiry of the contract by timely payment of premiums and it/they shall not be cancelled without the approval of the company and a provision is made to this effect in all policies, and similar insurance policies are also taken by his sub-contractors if any. The cost of premium shall be borne by the contractor and it shall be deemed to have been included in the tendered rate.

e) In the event of contractor's failure to effect or to keep in force the insurance referred to above or any other insurance which the contractor is required to effect under the terms of the contract, the company may effect and keep in force any such insurance and pay such premium/premiums as may be necessary for that purpose from time to time and recover the amount thus paid from any moneys due to the contractor.

THE CLAUSE 12 xviii SHALL BE APPLICABLE FOR WORKS OF ESTIMATED VALUE OF OVER Rs. 50 LAKHS.

xix) **Setting Out:** The contractor shall be responsible for the contract and proper setting out of the works and correctness of the position, reduced levels, dimensions and alignment of all parts of the work including

marking out the correct lay out in reference to the permanent bench mark and reference points. Only one permanent bench mark and basic reference lines shall be marked and shown to the contractor as basic data.

The contractor shall have all necessary instruments, appliances and labour in connection therewith. If at any time during the progress of work any error is detected in respect of the position, levels, dimensions or alignment of any part of the work, the contractor on being required to do so by the Engineer In Charge or his representative shall at the expenses of the contractor rectify such errors to the satisfaction of Engineer In Charge unless such error is due to incorrect data supplied by the Engineer In Charge.

xx) On receipt of Letter of Acceptance of Tender / Work Order the contractor shall forthwith Register and obtain License from the competent authority under the Contract Labour (Regulation & Abolition) Act 1970, the Contract Labour (Regulation & Abolition) Central Rules, 1971 and submit certified copies of the same to the Engineer In Charge and the Principal Employer.

xxi) The contractor shall be registered with the concerned State Govt. and the Central Govt. in respect of Sales Tax Act and the certificate having details of Registration No., period of validity etc. should be submitted to the Engineer In Charge.

xxii) The contractor shall, in connection with works, provide and maintain, at his own cost, all lights, security guards, fencing when and where necessary as required by the Engineer In Charge for the purpose of protection of the works, materials at site, safety of workmen and convenience of the public.

xxiii) All materials (e.g. stone, moorum and other materials) obtained in the course of execution of the work during excavation and dismantling etc. shall be the property of the company and the same may be issued to the contractors, if required for use in the works at the rates to be fixed by the Engineer In Charge.

xxiv) Unless otherwise specifically provided for, dewatering of excavation pits, working areas etc. shall be the contractor's responsibility and is to be carried out at his own cost as per instructions of EIC. The rates quoted by the contractor shall be deemed to include the dewatering costs.

xxv) Approval by the Nodal Officer/Engineer in Charge or his nominee: The contractor shall submit specifications and drawings showing the proposed temporary work to the Nodal Officer/Engineer-in-Charge or his nominee, who is to approve them if they comply with the specifications and drawings.

The contractor shall be responsible for design of Temporary Works.

The Nodal Officer/Engineer-in-charge or his nominee's approval shall not alter the contractor's responsibility for design of the Temporary Works.

13. Defects Liability Period:

In addition to the defect/s to be rectified by the contractor as per terms of the contract/ work order, the contractor shall be responsible to make good and remedy at his own expense the defect/s mentioned hereunder within such period as may be stipulated by the Engineer In Charge in writing :

a) Any defect/defects in the work detected by the Engineer In Charge within a period of 6 (six) months from the date of issue of Defect Liability certificate / completion certificate.

b) In the case of building works or other works of similar nature any defect in the work detected by the Engineer In Charge within a period of 6 (six) months from the date of issue of Defect Liability certificate/ completion certificate or before the expiry of one full monsoon period i.e. June to October whichever is later in point of time.

13.1 A programme shall be drawn by the contractor and the Engineer In Charge for carrying out the defects by the contractor detected within the defect liability period and if the contractor fails to adhere to this programme, the Engineer In Charge shall be at liberty to procure proper materials and carry out the rectifications in any manner considered advisable under the circumstances and the cost of such procurement of materials and rectification work shall be chargeable to the contractor and recoverable from any of the pending dues of the contractors.

The defect liability period can be extended by the company on getting request from the contractor only for valid reasons.

There will be no defect liability period for works like Grass Cutting, Jungle Cutting, Surface Dressing & any other work of similar nature to be decided by the Engineer in Charge.

14. Operating and Maintenance Manual:

If "as built" drawings and/or Operating and Maintenance Manual are required the contractor shall supply them by the dates as per instruction of the Engineer-in-charge.

If the contractor does not supply the drawings and/or Manual by the dates as stated above, or they do not receive the Nodal Officer or his nominee's approval, the Nodal Officer or his nominee shall withhold the amount as stated in the agreement.

15. Settlement of Disputes/ Arbitration

15.1 It is incumbent upon the contractor to avoid litigation and disputes during the course of execution. However, if such disputes take place between the contractor and the department, effort shall be made first to settle the disputes at the company level.

The contractor should make request in writing to the Engineer-in-charge for settlement of such disputes/ claims within 30 (thirty) days of arising of the cause of dispute/ claim failing which no disputes/ claims of the contractor shall be entertained by the company.

15.2 If differences still persist, the settlement of the dispute with Govt. Agencies shall be dealt with as per the Guidelines issued by the Ministry of Finance, Govt. of India in this regard. In case of parties other than Govt. Agencies, the redressal of the dispute may be sought in the Court of Law.

ADDITIONAL TERMS AND CONDITIONS

The following additional terms and conditions are also acceptable to the company. The tenderers are requested not to quote any further additional conditions in the tender.

1. Mobilisation Advance

- i) No mobilisation advance is payable for works whose estimated value is less than Rs.100.00 lakhs.
- ii) In the case of turn key work whose estimated value is more than Rs.100 lakhs a maximum of 10 % of the total contract value of work will be paid as mobilisation advance subject to submission of Bank Guarantee for equal amount.

iii) In case of other civil works valued more than Rs.100 lakhs mobilisation advance will be paid upto 5% of the contract value subject to submission of Bank Guarantee for equal amount.

iv) However, such mobilisation advance will carry interest on the basis of CIL's borrowing rate under cash credit arrangement as varying from time to time.

v) The mobilisation advance shall be recovered from the bills of the contractor from the 2nd running account bill onwards @ 20% of the advance amount paid and full recovery would be ensured before or with the Final Bill.

vi) The value of Bank Guarantee may be reduced to the extent such advance is recovered by the company subject to the conditions that the value of Bank Guarantee amount at any time is more than the recoverable outstanding advance. Bank Guarantee shall be irrevocable and from a Bank as per the list provided with the document.

2. **Application of Price Variation Cause.**

If the prices of materials (not being the materials supplied at fixed issue rates by the company) and wages of labour required for execution of the work increase or decrease, the contractor shall be compensated for such increase or recoveries will be made from the bills for such decrease as per provisions detailed hereafter:

a) The amount of the contract shall accordingly be varied subject to the condition that such compensation for escalation/ de-escalation in price shall be available only for the work done during the stipulated period of the contract including such period for which the contract is validly extended under the provisions of the contract without any penal action. The Price Variation Clause shall not be applicable for works for which stipulated period of completion is six months or less.

b) The base date for working out such escalation/de-escalation shall be the last date on which the price bids or revised price bids were stipulated to be received.

c) The compensation for escalation or recoveries to be made shall be worked out at quarterly intervals and shall be with respect to the cost of work done during the previous three months. The first such payment will be made at the end of three months after the month (excluding) in which the tender was accepted and there after at three months' interval.

2.1 Escalation/ De-escalation for Labour: The amount paid to the contractor for the work done shall be adjusted for increase or decrease in the cost of labour and the cost shall be calculated quarterly in accordance with the following formula :

$$VL = W \times \frac{A}{100} \times \frac{L - L_o}{L_o}$$

Where :

VL= Variation in labour cost i.e., increase or decrease in the amount in rupees to be paid or recovered.

W = Value of work done during the period under reckoning to which the escalation/de-escalation relates as indicated in clause-2.4 of the Additional Terms & Conditions of the contract.

A = Component of labour expressed as percentage of the total value of the work adopted from the Table-1.

L_o = Minimum wages for unskilled workers payable as per the Minimum Wages Act / Rules of the State or Central Govt., whichever is more, applicable to the place of work as on the last date stipulated for receipt of the price bids or revised price bids whichever is later.

L = Revised minimum wages of unskilled worker corresponding to L_o during the period to which the escalation/de-escalation relates.

2.2 Escalation /De-escalation on Materials: The amount to be paid to the contractor for the work done will be adjusted for increase or decrease in the cost of materials and the cost shall be calculated quarterly in accordance with the following formula :

$$V_m = W \times \frac{B}{100} \times \frac{M - M_o}{M_o}$$

Where :

V_m = Variation in the material cost i.e. increase or decrease in the amount in rupees to be paid or recovered.

W = Cost of work done during the period under reckoning to which the escalation / de-escalation relates as indicated in clause-2.4 of the Additional Terms & Conditions of the contract.

B = Component of material expressed as percentage of the total value of the work adopted from the Table -1.

M = Average All India Wholesale Price Index for all commodities for the period to which escalation/de-escalation relates as published by the RBI Bulletin, Ministry of Industry & Commerce, Govt. of India.

M_o = All India Wholesale Price Index for all commodities as published by the RBI Bulletin, Ministry of Industry & Commerce, Govt. of India, relating to the last date on which the price bids or revised price bids whichever is later were stipulated to be received.

2.3 Escalation/ De-escalation on POL : The amount to be paid to the contractor for the work done shall be adjusted for the increase or decrease in the cost of POL and the cost shall be calculated quarterly in accordance with the formula given below :

$$V_f = W \times \frac{C}{100} \times \frac{F - F_o}{F_o}$$

Where :

V_f = Variation in the cost of fuel, oil and lubricants increase or decrease in the rupees to be paid or recovered.

W = Value of work done during the period under reckoning to which the escalation/ de-escalation relates as indicated in clause 2.4 of the Additional terms & Conditions of the contract.

C = Component of POL expressed as percentage of the total cost of the work taken from Table -1.

F = Average Index Number for wholesale price for the group of 'Fuel, Power, Light & Lubricants' as published by the Economic Adviser, Ministry of Industry, Govt. of India for the period to which the escalation/de-escalation relates.

F₀ = Index number of wholesale price for the group, Fuel, Power, light & lubricants as published by the Economic Adviser, Ministry of Industry, Govt. of India prevalent on the last date of receipt of price bids or revised price bids whichever is later.

2.4 While calculating the value of "W" the following may be noted : The cost on which the escalation will be payable shall be reckoned as 85 % of the cost of work as per the bills to which escalation relates, and from this amount the value of materials supplied or services rendered at the prescribed charges under the relevant provisions of the contract, and proposed to be recovered in the particular bill, shall be deducted before the amount of compensation for escalation or de-escalation is worked out. In the case of materials brought to site for which any secured advance is included in the bill, the full value of such materials as assessed by the Engineer In Charge (and not the reduced amount for which secured advance has been paid) shall be included in the cost of work done for operation of this clause. Similarly, when such materials are incorporated in the work and the secured advance is deducted from the bill, the full assessed value of the materials originally considered for operation of this clause should be deducted from the cost of the work shown in the bill, running or final. Further the cost of work shall not include any work for which payment is made at prevailing market rates.

2.5 In the event the price of materials and/ or wages of labour required for execution of the work decreases, there shall be downward adjustment of the cost of work so that such price of materials and/or wages of labour shall be deductible from the cost of work under this contract and in this regard the formulae herein before stated under this clause shall mutatis/mutandis apply provided that no such adjustment for the decrease in material price and/ or wages of labour before mentioned would be made in case of contracts in which the stipulated period of completion of the work is less than six (6) months.

2.6 Application of Price Variation Clause during extended period of Contracts.

The Price Variation Clause as stated above will be applied for extended time frame of a contract by following the principle stated as under,

i) Normally, if and when it is understood that a contract is not going to be completed within the scheduled time period, the contract is kept operative by extending the time of completion provisionally. During this provisional extended period the operation of the Price Variation Clause will remain suspended.

ii) If and when it is decided at the end of successful completion of the work that the delay was due to causes NOT attributable to the Contractor, then the Price Variation Clause will be revived and applied as if the scheduled date of completion has been shifted to the approved extended date.

iii) If it is decided at the end of completion of the work that the delay was due to the fault of the Contractor, then the Price Variation Clause will not be revived and NO PAYMENT will be made to the Contractor on this account. Additionally the Clause related to Compensation for Delay will be applied.

No payment will be made by applying "FROZEN INDICES "under any circumstances.

===== X =====

Table – 1

Value of A, B & C in the escalation formula in the additional terms & conditions for Civil Works :

Sl. No.	Particulars	A % (Labour component)	B % (Material component)	C % (POL component)	REMARKS
1.	For building works	25	75	Nil	
2.	For Road works	15	80	05	
3.	For external sewerage, external water supply, and external electrification	10	90	Nil	
4.	For external water supply, external sanitary and external electrification (through labour rate contract)	75	25	Nil	
5.	For steel structural works	15	85	Nil	
6.	For steel structural works with Deptt. free supply of rolled steel sections (through labour rate contract)	75	25	Nil	
7.	For Coal Handling Plant Civil Works	25	75	Nil	
8.	For under-ground civil works such as Incline Drivage, Shaft Sinking etc.	35	65	Nil	

For all other works not listed above, the component of labour, material and POL of the total cost of work shall be as specifically indicated in the tender document.

=====

ANNEXURES.

ANNEXURE - I**SPECIMEN OF LETTER OF CONTRACTOR'S ACCEPTANCE OF PROVISIONAL
REDUCTION OF RATE FOR SUBSTANDARD WORK.**

No.

dt.

To

.....
.....

Sir,

Subject: (Complete name of work).....

Reference: Your letter No.....

I/We have carefully read the terms and conditions offered in your letter dated.....
and they are acceptable to me/us.

Pending the decision of the Engineer in Charge of the final rates of payment against the
items of work specified in the statement attached to your above letter, which will be final and binding, I/ We
agree to the same being paid at the provisional rates indicated against each of the said item of work for the
above work as mentioned in your statement.

Yours faithfully,

Contractor(s)

PROFORMA OF BANK GUARANTEE FOR REMOVAL OF PLANT & EQUIPMENT FROM THE SITE OF COAL INDIA LIMITED/ SUBSIDIARY COMPANY.

In consideration of Coal India Limited/Subsidiary Company (hereafter called "the Company" which expression shall repugnant to the subject or context includes its successors and assigns) having agreed to under the terms & conditions of the Contract No..... dated..... entered into between the company and M/s..... having its Office at..... (hereinafter called "the Contractor") to permit the Contractor to remove the plant & equipment as fully described in the Schedule of the Hypothecation Deed dated..... executed by the Contractor in favour of the Company from the site to any other works of the Contractor on its furnishing the Bank Guarantee for Rs..... we, the Bank (hereinafter referred to as the said Bank) having its Registered Office at do hereby undertake and agree to pay the Company to the extent of Rs. on demand stating that the amount claimed by the Company is due and payable by the contractor for its failure in bringing back the said plant & equipment or any part thereof to the site and to unconditionally pay the amount claimed by the company on such demand without any demur to the extent aforesaid.

We, the Bank agree that the Company shall be the sole judge as to whether the said contractor has failed/neglected in bringing back the plant & equipment to the site and the amount has become due for such failure and the decision of the company in this behalf shall be final and binding on us.

We, the said Bank further agree that the Guarantee herein contained shall remain in full force and effect upto..... and any claim received after the said date shall in no case be bind the Bank.

Notwithstanding anything contained herein the liabilities of the said Bank under this Guarantee are restricted to Rs..... and this Guarantee shall come into force from the date thereof and shall remain in full force and effect till unless the written demand or claim under this guarantee is made by the company with us on or before..... all the rights of the Company under this guarantee shall cease to have any effect and we shall be retrieved and discharged our liabilities hereunder.

We, the said Bank lastly undertake not to revoke this guarantee under its currency except with the previous consent of the Company in writing and agree that any change in the constitution of the said Contractor or the said Bank shall not discharge the liabilities hereunder.

This Guarantee is issued by Sri..... who is authorized by the Bank.

Under jurisdiction of Court only.

ANNEXURE III**PROFORMA OF BANK GUARANTEE IN LIEU OF SECURITY DEPOSIT.**

M/s. Coal India Limited,
10, Netaji Subhas Road,
Kolkata

Or

(Name of the Subsidiary Company with address).

Dear Sir,

In consideration of M/s. Coal India Limited/Subsidiary Company having its Registered Office at (hereinafter called "the Company" which expression shall unless repugnant to the subject or context includes its successors and assigns) having agreed under the terms and conditions contained in letter No..... dated..... issued in favour of M/s. for (hereinafter referred to as "the contract") to accept the Deed of guarantee as herein provided for Rs..... from the Schedule/ Nationalised Bank in lieu of security deposit to be made by M/s..... (hereinafter called "the Contractor") or in lieu of deduction to be made from the contractor's bill, for the due fulfillment of the terms and conditions contained in the said contract by the contractor, we the Bank (hereinafter referred to as the said Bank) having its Registered Office at..... do hereby undertake and agreed to pay the company to the extent of Rs..... on demand stating that the amount claimed by the company is due and payable by the contractor for the reasons of failure/negligence in performing the terms and conditions contained in the contract by the buyer and to unconditionally pay the amount claimed by the company on demand without any demur to the extent aforesaid.

We, the..... Bank agree that the company shall be the sole judge as to whether the said contractor has failed/neglected in performing any of the terms and conditions of the said contract and the decision of the company in this behalf shall be final and binding on us.

We, the said Bank further agree that the Guarantee herein contained shall remain in full force and effect upto and any claim received after the said date shall in no case bind the Bank.

The Company shall have the fullest liberty without affecting in any way the liability of the Bank under this guarantee or indemnity from time to time vary any of the terms and conditions of the said contract or to extend the time of performance by the said contractor or to postpone any time and from time to time any of the powers exercisable by it against the said contractor and either to enforce or to forbear from enforcing any of the terms and conditions governing the said contract or securities available to the company and the said Bank shall not be released from its liability under these presents.

contd. p/2

p/2

Notwithstanding anything contained herein the liability of the said Bank under this guarantee is restricted to Rs..... and this Guarantee shall come into force from the date hereof and shall remain in full force and effect till Unless the written demand or claim under this guarantee is made by the Company with us on or before all rights of the company under this guarantee shall cease to have any effect and we shall be relieved and discharged from our liabilities hereunder.

We the said Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of the company in writing and agree that any change in the constitution of the said contractor or the said bank shall not discharge our liability hereunder.

This guarantee issued by Sri who is authorised by the Bank.

Under jurisdiction of court only.

PROFORMA OF BANK GUARANTEE FOR PERFORMANCE
SECURITY OF THE CONTRACT

To

.....

Re: Bank Guarantee in respect of Contract No.....
 Dated..... Between (name of the)
 and (name of the Contractor)

M/s. (Name and address of the Contractor) (hereinafter called "the Contractor" with M/S. (name of the Company) (hereinafter called "the Company") to execute (name of the contract and brief description of work) on the terms and conditions contained in the said contract.

It has been agreed that the Contractor shall furnish the Bank Guarantee from a Nationalised/ Schedule bank for a sum of Rs..... as security for due compliance and performance of the terms and conditions of the said contract.

The (name of the Bank) having its Office at..... has at the request of the Contractor agreed to give the Guarantor hereinafter contained.

We, the Bank (hereinafter called "the Bank" do hereby unconditionally agreed with the Company that if the contractor shall in any way fail to observe or perform the terms and conditions of the said contract or shall commit any breach of its obligation thereunder, the Bank shall on demand and without any objection or demur to pay to the company the said sum of Rs..... or such portion as shall then remain due with interest without requiring the Company to have recourse to any legal remedy that may be available to it to compel the Bank to pay the sum, or failing on the company to compel such payment by the contractor.

Any such demand shall be conclusive as regards the liability of the Contractor to the company and as regards the amount payable by the Bank under this Guarantee. The Bank shall not be entitled to withhold payment on the ground that the Contractor has disputed its liability to pay or has disputed the quantum of the amount or that any arbitration proceeding or legal proceeding is pending between the company and the Contractor regarding the claim.

We, the Bank further agree that the Guarantee shall come into force from the date hereof and shall remain in force and effect till the period that will be taken for the performance of the said Contract which is likely to be day of but if the period of Contract is extended either pursuant to the provisions in the said contract or by mutual agreement between the contractor and the company the Bank shall renew the period of the Bank Guarantee failing which it shall pay to the company the said sum of Rs..... or such lesser amount of the said sum of Rs..... as may be due to the company and as the company may demand.

contd. p/2

This Guarantee shall remain in force until the dues of the company in respect of the said sum of Rs..... and interest are fully satisfied and the Company certifies that the Contract has been fully carried out by the Contractor and discharged the guarantee.

The Bank further agrees with the company that the company shall have the fullest liberty without consent of the Bank and without affecting in any way the obligations hereunder to vary any of the terms and conditions of the said contract or to extend time for performance of the said contract from time to time or to postpone for any time or from time to time any of the powers exercisable by the Company against the contractor and to forebear to enforce any of the terms and conditions relating to the said Contract and the Bank shall not be relieved from its liability by reason of such failure or extension being granted to the Contractor or to any forbearance, act or omissions on the part of the company or any indulgence by the Company to the Contractor or any other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of relieving or discharging the Guarantor.

The Bank further agrees that in case this Guarantee is required for a longer period and it is not extended by the Bank beyond the period specified above the Bank shall pay to the company the said sum of Rs..... or such lesser sum as may then be deemed to the Company and as the Company may require.

Notwithstanding anything contained herein the liability of the Bank under this Guarantee is restricted to Rs..... the guarantee shall remain in force till the day of and unless the guarantee is renewed or claim is preferred against the bank within six months from the said date all rights of the Company under this guarantee shall cease and the Bank shall be relieved and discharged from all liabilities hereunder except as provided in the preceding Clause.

This guarantee will not be discharged due to the change in the constitution of the Bank or the Contractor.

The Bank has under its constitution power to give this Guarantee and Sri..... who has signed it on behalf of the Bank has authority to do so.

Dated., this day of

Signature of the authorized person

For and on behalf of the Bank

Place

Under jurisdiction of court only.

(This is applicable for Turn Key Contracts Only)

ANNEXURE V**PROFORMA OF BANK GUARANTEE FOR MOBILISATION /
LUMP -SUM ADVANCE.**

M/S. Coal India Limited,
10, Netaji Subhas Road,
Calcutta

Or

(Name of the Subsidiary Company with address).

Dear Sir,

In consideration of M/S. Coal India Limited/Subsidiary Company having its Registered Office at (hereinafter called "the Company" which expression shall unless repugnant to the subject or context includes its successors and assigns) having agreed under the terms and conditions of the contract no..... dated..... entered into between Coal India Limited/Subsidiary Company and M/s..... having its Registered Office at (hereinafter called "the Contractor" to make mobilization advance lump-sum advance to the tune of Rs..... subject to submission of the Bank Guarantee for equal amount from any Nationalised Schedule Bank(referred to as the said Bank) having its registered Office at do hereby undertake and agree to pay the company to the extent of Rs..... on demand stating that the amount claimed by the Company is due and payable by the contractor for the reasons of non refund and or non-recovery of the amount with interest thereon and to unconditionally pay the amount claimed by the company on such demand without any demur to the extent aforesaid.

We, the..... Bank agree that the company shall be the sole judge as to whether the said contractor has failed/neglected in performing any of the terms and conditions of the said contract and the decision of the company in this behalf shall be final and binding on us.

We the said Bank further agree that the Guarantee herein contained shall remain in full force and effect upto and any claim received after the said date shall in no case bind the Bank.

The Company shall have the fullest liberty without affecting in any way the liability of the Bank under this guarantee or indemnity from time to time vary any of the terms and conditions of the said contract or to extend the time of performance by the said contractor or to postpone any time and from time to time any of the powers exercisable by it against the said contractor and either to enforce or to forbear from enforcing any of the terms and conditions governing the said contract or securities available to the company and the said Bank shall not be released from its liability under these presents.

contd. p/2

p/2

Notwithstanding anything contained herein the liability of the said Bank under this guarantee is restricted to Rs..... and this Guarantee shall come into force from the date hereof and shall remain in full force and effect till Unless the written demand or claim under this guarantee is made by the Company with us on or before all rights of the company under this guarantee shall cease to have any effect and we shall be relieved and discharged from our liabilities hereunder.

We the said Bank lastly undertake not to revoke this guarantee during its currency except with the previous consent of the company in writing and agree that any change in the constitution of the said contractor or the said bank shall not discharge our liability hereunder.

This guarantee issued by Sri who is authorised by the Bank.

Under jurisdiction of Court only.

ANNEXURE. VI**PROFORMA FOR AFFIDAVIT TO BE SUBMITTED BY THE TENDERER****Non Judicial Stamp Paper.****AFFIDAVIT**

I, -----, Partner/Legal Attorney/ Accredited Representative of M/S -----
 -----, solemnly declare that :

1. We are submitting Tender for the Work -----
 ----- against Tender
 Notice No.----- dt -----
2. None of the Partners of our firm is relative of employee of -----(Name of the Company)
3. All information furnished by us in respect of fulfillment of eligibility criteria and qualification information of this Tender is complete, correct and true.
4. All documents/ credentials submitted alongwith this Tender are genuine, authentic, true and valid.
5. If any information and document submitted is found to be false/ incorrect any time, department may cancel my Tender and action as deemed fit may be taken against us, including termination of the contract, forfeiture of all dues including Earnest Money and banning / delisting of our firm and all partners of the firm etc.

Signature of the Tenderer

Dated-----

Seal of Notary

ANNEXURE-VII.**PROFORMA FOR EXECUTION OF AGREEMENT.**
(Specimen to be vetted by Legal Department))**STAMP PAPER.**

This agreement is made on day of between (Name of Company) having its registered office at (hereinafter called the 'COMPANY' which expression shall, unless repugnant to the subject or context, include its successors and assignees) of the one part and (Name of the Contractor) carrying on business as a (partnership/ proprietorship/ Ltd. Co. etc.) firm under the name and style (hereinafter called the 'said Contractor' which expression shall, unless the context requires otherwise include them and their respective heirs, executors, administrators and legal representatives) of the other part.

Whereas the Company invited tenders for the work of "....." and whereas the said Contractor/ Firm submitted tender for the said work and deposited a sum of Rs..... as Earnest Money and whereas the tender of the said contract has been accepted by the Company for execution of the said work.

NOW THIS AGREEMENT WITNESSETH AS FOLLOWS:

- 1) In this agreement words and expressions shall have the same meaning as are respectively assigned to them in the tender papers hereinafter referred to.
- 2) The following documents which are annexed to this agreement should be deemed to form and be read and construed as part of this agreement viz.
 - i) Annexure-A Tender Notice (Page .. to ..)
 - ii) Schedule –A General Terms & Conditions, Special Conditions and General Technical Specification (Page to ...)
 - iii) Schedule-B The probable Quantities and Amount (Page ... to ...)
 - iv) Schedule-C Negotiation letters –
 - iv) Schedule-D Letter of Acceptance/Work Order (Page .. to ..)
 - v) Schedule-E Drawings (Page .. to ..)

contd. p/2

p/2

3) In consideration for the payment of the sum of Rs.....(W/O Value; both in words and figures) or such other sum as may be arrived at under the clause of the specification relating to Payment by items measurements at unit prices by the Company, the said Contractor shall, subject to the terms & condition contained herein execute and complete the work as described and to the extent of probable quantities as indicated in Schedule B with such variations by way of alteration, addition to or reduction from the said works.

4) The company has received a sum of Rs..... towards Performance Security Deposit (1st part of Security Deposit) in the form of Demand Draft / Certified Cheque/ B.G./ *other form (details to be furnished)* .

5) The said contractor hereby covenants with the company that the company shall deduct at 5% of R/A Bills as Retention Money (2nd part of security deposit) to make the total Security as 10%(ten percent) of contract value, as per the terms & condition of the tender/ contract.

IN WITNESS WHEREOF THE parties herein have set their hands and seals the date and year above written.

1 Partner. Signature

2 Partner Signature

On behalf of M/S.....
The Contractor, as one of the constituted attorney,
In the presence of –

1. Name _____ Signature

Address :

Occupation :

Signed by Srion behalf of Signature
(Name of Company) in presence of -

1. Name : Signature

2. Address: .

1. Bricks: (Ref. 1. S. : 1077 - 1976)

- a) Brick manufactured in Bull's patent Kiln Trench only shall be used unless otherwise specified. Bricks shall be hand-or machine molded and shall be made from suitable soils, They shall be clean. Free from cracks and flaws and nodules *of* free lime.
The common burnt clay bricks shall be classified on the basis of average compressive strength as given below:

Class Designation	<u>Average Compressive Strength</u>	
	<u>Not less than</u> <u>(Kg/cm2)</u>	<u>Less than</u> <u>(Kg/cm2)</u>
75	75	100
50	50	75
35	35	50

- c) The normal size of burnt bricks shall be 9" x 4.5" x 2.75" with usual variation of 1/8" on either side.

Each class of bricks shall be further divided into two sub-class A & B based on tolerance and shape.

The bricks sub-class A shall have smooth rectangular faces with sharp comers and shall be uniform in colour. The bricks of sub class B may be permitted to have slight distorted and rounded edges provided no difficulty shall arise on this account in laying of uniform courses.

- b) The average water absorption for above class designation of bricks, after immersion in cold water for 24 hours, shall not be more than 20 percent by weight. *if*

2. **Bricks Aggregate for Lime Concrete.**

The brick aggregate shall be from well burnt bricks bats and shall not exceed 1.5" in size and shall be free from dust, clay, grass or any other foreign matter.

3. **Surkhi**

Surkhi shall be made from well burnt bricks and should pass through a sieve of 1/12" mesh. In no case over brunt bricks to be used for the manufacture of surkhi.

4. **Sand**

Sand shall be clean, sharp and course and free from all impurities and organic matter and be such as to pass through 64 mesh sieve.

5. **Lime:**

Lime stone shall be used in the work. It shall be slaked just before use. All impurities, ashes or pieces improperly or carelessly burnt shall be screened or pricked out before slaking and removed at once from the work. Lime should pass through a screen 12x12 mesh to the square inch and stored in a dry place.

6. **Aggregate for cement concrete:**

Aggregate for cement concrete shall be from trap, quartzite or hard quartzite stone which shall pass through 20mm sieve and rest on 4.75mm sieve. The aggregate shall be washed before use and shall be free from foreign matter.

7. **Cement. mortar:**

The mortar shall consist of cement and sand mixed in the proportion defined in the relevant schedule item for the various items of work. Only measured quantity shall be used. Sallid cement shall be spread on a clean dry platform in layers one over the other and mix only when the mortar is required for use, and then only water should be added in sufficient quantity to make the materials moist.

8. **Lime Concrete:**

The mixture shall have slaked lime surkhi and sand in the proportion defined in the relevant schedule item for the various items of work. Ground cinders may be used when directed by the Engineer-in-charge. Lime surkhi and sand are to be mixed dry on a platform of masonry and then sprinkled with necessary quantity of water and ground in a mortar mill.

9. **Aggregate for Reinforced Cement Concrete:**

Aggregate for RCC shall be from trap, quartzite or hard quartzite stone. The aggregate shall pass through shall %" mesh and rest on W' mesh screens. It shall be screened and washed before use and contain no foreign matter.

Earth work in Excavation:

Excavation shall be strictly as shown in the plans. Bottom of trenches shall be dressed level. All excavation earth will be placed not less than 5 feet from the edge of the foundation trench or as directed by the Executive Engineer.

All earth fillings in the plinth or foundation basements will be done in not more than 6" layers Well watered and rammed.

11. **Lime Concrete:**

The concrete shall consist of an aggregate of the proportion mentioned in the schedule of items of approved qualities 1.5" gauge and down mixed with lime mortar, The concrete shall be mixed on a level platform. The aggregate shall be first washed clean, thoroughly wetted and placed to an even thickness on a platform. Dry mortar mixed in proper proportion as specified in the schedule of quantities shall then be evenly spread over the aggregate and mixed thoroughly using sufficient water to make the mortar adhere to each piece of the aggregate. When the bed for the concrete is properly wetted, rammed and prepared, the concrete shall be laid carefully in position in layers not exceeding 6 inches. The basked etc. shall never be thrown from a height but gently laid with the basket. Each layer shall be well rammed with a heavy wooden rammer or iron rammer till the mortar comes to the surface. No water shall be added during ramming but the surface of each complete layer shall be watered and roughened before the next layer is added. The concrete shall be well rammed and kept wet after the days

works for such time till it is set and gives no impression of the rammer when dropped over it.

When concrete is to be laid under water or in wet locations hydraulic or lime rendered hydraulic shall be used.

12. **Cement. Concrete:**

The proportion of the concrete will be the same as specified in the schedule of quantities and will be strictly adhered to. The concrete shall be mixed properly in a power driven mixer in such manner as to avoid loss of water. The concrete shall be mixed for a minimum period of two minutes or until it is of even colour and of uniform consistency through out. Hand mixed concrete shall contain 10% extra cement and shall be made on hard, clean and even surface

The cement and sand will be mixed dry until the mixture is uniform in colour. It shall then be spread evenly over the coarse aggregate and mixed thoroughly. The water shall then be added, and the whole mixed thoroughly until the mass is uniform in colour and consistency. Concrete shall be handled from the place of mixing to the place of final deposit as rapidly as practicable The concrete once laid shall not be disturbed and shall be kept thoroughly damped by means of

well matting and sallid.

The aggregate should consist of stone ballast of quantity approved by Executive Engineer at shall consist of graded size 3/4" and downwards as per CPWD specification or the sizes mentioned in the item descriptions.

- 13 **Brick Work in Lime Mortar:**
It shall be done with brick soaked in water for not less than 4 hours before use in works. The proportion of mortar will be same as per schedule of quantity which will be strictly adhered to. the completed work should be perfectly in accordance with the drawings so far the line, level and verticality is concerned. Only mortar mixed properly in bailchaki to be used.
- 14 **Brick Work in Mud Mortar :-**
The mud to be used for mortar shall be from selected earth of tenacious nature to which sand shall be added in such quantity that a dried lump of the mixture shall not show signs of cracking. The mud shall be well trodden and variation in the consistency of paste will be effected by the addition of sufficient water, care being taken to remove all clods and stones. Brick~ work in
- 15 **Cement mortar in Foundation, plinth & Superstructure:-**
Only selected bricks approved by the Executive Engineer shall be used in the masonry. The bricks must be soaked in water for 6 hours before use. There should be proper bonding and shall be carried through the full width of the wall each course being truly longitudinal, either horizontal or vertical joints shall be of greater thickness than 1 cm.
The proportions of mortar will be as specified in the schedule of quantities. All old works to be kept thoroughly watered for two days before any new work is put in it.
The other specification will be same as that of CPWD.
16. **Damp Proof Course :-**
Damp proof course to a thickness specified in the drawing, schedule of quantities will be laid over the plinth after cleaning the brick work thoroughly of all its loose mortar sticking on the surface and wetting it thoroughly. The concrete shall be done with stone ballast of graded size, in proportion of 1:2:4 (1 cement: 2 coarse sand: 4 chips), cement concrete for D.P.C. should be cured for 5 days before a coat of hot bitumen is applied on it. The bitumen painted surface should be immediately sealed with sand.
17. **Lime Concrete in Floors with Brick Ballast :**
1:1:2" brick aggregate and down gauge as specified by the Engineer-in-charge with lime mortar consisting of lime, sand etc. shall be used as per item descriptions, The aggregate and mortal' shall be thoroughly mixed before laying and rammed. Consolidation shall be done until a skin of pure mortar covers the surface and completely hide the aggregate. No mortar or water shall be added during ramming. The mortar shall be mixed in a Bail Chaki.
18. **Patent Stone Flooring 1: 2 : 4 :**
The concrete shall consist of 1 cement: 2 sand: 4 stone ballast W' and down gauge or the size as required as per item description. hi all cases only measured quantities shall be used. Cement and sand shall first mixed with water and then laid in a layer of specified thickness over prepared sub base and beaten thoroughly with wooden straight edge. The surface shall be finished with a floating coat of neat Cement to the satisfaction of the Engineer-in-charge. The finished floors shall be kept wet for at least 7 days.
19. **Reinforced Cement concrete 1 : 2 : 4 Slab, Roofing, Lintels, Chajija.**
Reinforcement to be done with a net work of M.S. Rods, or Tor steel specified under quantity schedule or by the Engineer-in-charge. Rods and netting shall be by the contractor(s) at his own cost. Every alternative cross over of M.S. rods shall be tied fast with binding wire of approved gauge. The netting shall be of proper size. The concrete shall be of good, clean aggregate properly damped with water. The size of the stone aggregate to used shall be 3/4" gauge and below. The proportion shall be 1 cement: 2 sand: 4 stone ballast. Before laying the concrete the centetl'ng and frame works will have to be approved by the Engineer-in-charge or his authorized officer.
The concrete shall be we well mixed before laying and vibrated properly till mortar comes out to the surface and the Reinforcing rods are thoroughly embedded in concrete. Care is Lo be taken that specified covering is there and no reinforcing materials are exposed from outside. The laid concrete should not be disturbed and should be kept wet for 10 days. The centering will be removed only after 7 days of placing the concrete or as directed by the Executive Engineer. The general specification of C.P.W.D. will be followed in an respect.

20.Plaster inside & outside:

Prior to the application of plaster the faces of the walls shall be cleaned and the joints of the brick work raked out to depth of ½" and properly watered for at least 6 hours. The plaster shall be thoroughly smoothened and rubbed with straight edge and wooden flats in proper workman like manner. Watering shall be continued for 7 days on the .finished surface. The mortar will ordinarily consist of cement and sand in the proportion as specified in the schedule of quantity which should be strictly adhered.

Where lime is also specified, the cream of lime shall prepared by thoroughly slaking required quantity of quick lime with the minimum quantity of water in order to gel a thick slurry. This slurry or cream. of lime shall then be screened thoroughly a clean cloth to remove all dirt and any un-slaked lime particle. Sand shall be measured by volume in suitable sized measuring boxes while cement shall be measured by weight, taking 1 bag as 0.0347 cubic meter screened cream of lime and screened sand shall be mixed together in requisite proportion, and the whole then mixed with necessary quantity of cement. The minimum quantity of water to give a working consistency to the mix should only be added and no more. The plaster shall be applied, immediately after mixing, maintaining the said precautions as for cement mortar.

21.Cement Plaster Dado

All the joints of masonry should be raked out 15 mm deep and walls should be thoroughly wetted al least 6 hours before the plaster is laid. The plaster shall then be laid on with some what more than the required thickness and leveled and finished with a trowel. The plaster shall be kept constantly watered for 3 weeks. The thread lining is to be done. It shall be done before the cement takes initial set.

22. 5" Thick trellis work in cement mortar 1:3

5" thick first class-75 trellis, work in cement mortar 1:3 will be done with bricks soaked in water for not less than 4 hours before use in work. Watering to be continued on finished trellis work for at least 7 days. Freshly mixed mortar shall be used on 1/2" thick cement plaster as directed by Executive Engineer, shall be applied.

23.White washing 3Coats

White wash shall be prepared from burnt shell lime when thoroughly mixed with water, it should thin creamy consistency. It should then be screened through clean cloth in gum dissolved in hot water or good conjee water shall be added in proportion of 2 ounces to 1 cft. For each coat is allowed to be applied. The new wall shall be well cleaned and brushed. Each coat of white wash should to allowed to dry before applying the next coat.

24. Colour washing

The colour washing shall be prepared and applied in accordance with the standard specification for white washing except that the contractor(s) shall provide colour matter specified and colour by the Engineer-in-charge during use. The colour wash should be started continuously during use. The colour should be even over surface.

25. Lime Concrete Terracing on Roof

Brick aggregate 1" and down gauge with 50% of mortar consisting of 1 lime and 2 surkhi or as specified shall be used. The brick aggregate will be well watered before mixing up with mortar. The lime should be thoroughly screened and made free from kankars. The mortar should be mixed in bailchaki separately and then mixed thoroughly with aggregate before laying over roof. The mixture shall be properly leveled before beating. The concrete shall then be thoroughly consolidated by being with wooden mallets (thapi). Lime water shall be sprinkled at intervals on the terrace to keep it wet while. Proper slope are to be made towards leaves for flow of the rain water. In no case shall the mixture be allowed to dry until the work is complete. The surface shall be softened by being sprinkled with clean water and the mortar which will rise to the surface during beating shall be smoothed and finished off with lime slurry, gur and belgiri treatment complete. No plastering shall on any account be put on the surface. Watering shall be continued for 19 days after the completion of the work at the cost of the contractor(s). Ghoondi to be made of the same mix as in terrace along withjw1ction of the parapets roof of the design as per the instruction of the Engineer-in-charge.

-: 5 :-

26. Sal Wood Door and Window Frames

The frames shall be made of well seasoned sal wood free from, saps, bends, flaws, sun cracks, shakes or blemishes of any kind. Alternatively kiln seasoned and treated Badam or Chuglum wood free from sap, bends, flaw, sun crakes, shakes or blemishes of any kind will be acceptable.

27. Door and Windows shutters

Paneled, glazed, battened, shutters etc. shall be of wood as specified in the schedule of quantity and as directed by Executive Engineer. They shall be framed and put together, planned smooth in all surfaces and finished in accordance with the best class of joinery. Panels of fully or partly paneled doors shall always be of the same class of wood as the shutters frames, styles, top frieze lock an bottom rails of shutters and pots, heads and sills or threshold plates of frame shall be continuous throughout their length the mounting being divided into as many part as required by the position of the sills. Panel shall always be made in one piece.

28. Hold Fast

15" x 1 1/2" x 1/8" / 12" x 1 1/2" x 1/8" M.S. flat hold fasts shall be set in cement concrete 1:2:4, 6 Nos. for each door, 4 Nos. for each window and 2 Nos. for each clear story windows.

29. Pacca Drain

Earth excavation for cutting trenches for drain shall be done by the contractor and got approved by the Engineer-in-charge. The drain shall be made from well burnt bricks with cement concrete bed. Sizes shall be as specified in the schedule. The surface of the two sides and beds shall be cement plastered with smooth surface. Necessary earth filling by the drain shall also to be done

30. Painting Doors and Windows :

Painting 2 coats over one coat of primer to all doors and windows shall be done. The quality and shade of the paint shall be approved by Engineer-in-charge. The wood surface to be painted shall be thoroughly cleaned and sand papered before painting.

31. Window Gratings:

M.S. Rounds of size as per schedule of quantity and as directed by the Engineer-in-charge shall be fixed to windows. The bars shall be 4" center to center.

32. Cement Plaster 1:4 in ceiling:

The surface of the ceiling to be plastered should be thoroughly cleaned and damped before the plaster is laid. 1 part of clean cement and 4 parts of screened sand shall be mixed and immediately applied on the surface.

33. Construction Brick : Masonry Chullah :

Chullah shall be constructed on 2nd class-50 brick masonry in cement mortar 1:6 with 2 holes and iron gratings complete as per design and finished with and gobri plaster or as per schedule of quantities.

34. Ventilators :

Wire netted or R.C. Jali ventilators of required size shall be fixed in the walls as per specification and drawing.

35 Asbestos Rain Water Pipe:

In order of facilitate painting, all pipes will be blocked 1 1/2" from the wall. Asbestos heads and shoes shall be provided of the proper size for the size of rain water pipes, the shoes being fixed 6" above ground level.

36. Fan Hooks :

Fan hooks of requisite size of M.S. rounds shall be provide and fixed in the ceiling for electric fans.

37. Fly Proof Doors:

Galvanized iron fly proof webbing 16x16 mesh shall be used. The webbing shall be fixed securely to the styles, rails and mounting by G.I. staples at about 6" intervals. The styles, rails and mounting round the fly proof webbing shall be molded.

38. Items not covered by above will be guided by the specification of the CPWD or as decided by the Engineer-in-charge whose interpretation will be final.

QUALITY OF CEMENT

62

39. Ordinary Portland cement (OPC) should be used in all types of Civil Engineering Work unless otherwise specified in the specification of the items of the Bill of Quantity /
40. Agreement. The work will be carried out as per C.P.W.D. norms and specification.

GENERAL SPECIFICATION FOR PLUMBER'S WORK

The material to be used in sanitary and water supply works shall conform to the following makes and specifications.

1. European Pattern W.C. Set (Shanks in English make and Orrisa, Hind E.A.D. in Indian make) or as specified in the item of work or equivalent comprising of :

White Porcelain water closet ('S' or 'P' trap) with :

- a) 10 liters mosquito proof C.I. flushing cistern ELC (Elephant Brand) : or
- b) White porcelain white P.V.C. 10 liters mosquito proof low level cistern with Chromium Plated Handle.
 - (i) 10 liters mosquito proof C.I. Low level cistern with handle.
- c) (ii) 1 ¼" G.I. telescope flush pipe with buffer clamp, cast iron holder bat clamp and coupling and 1 ½" lead pipe.
 - (iii) (a) Single mahogany, Polished teak wood seat (re-enforced with iron pipes at the back) C.P. Hinges screws, Bolts, Rubber buffer.
 - (b) Plastic seat (Bestolite make) with all the fittings.
 - (iv) Wooden Blocks and Screws for fixing W.C. in floor and putty joint with flush pipe and soil pipe.
 - (v) ½" lead connection pipe 18" long with brass coupling and plumber joint at both ends.
 - (vi) 1" dia. over flow G.I. pipes with mosquito proof cover.

2. Indian pattern W.C. set (Hind, Orissa) or as specified in the item. of work or equivalent comprising of :

White Porcelain WC Pan fitted with:

- (i) 10 liters low level white P.V.C. flushing cistern with manually controlled device (handle lever) conforming to IS : 7231, Pallyware/Hindware/Seabird/Otient (Coral)
- (ii) 32mm diameter G.I. flush pipes C.I. Holders Bat.
- (iii) One pair foot rest of white glazed earthen work of standard pattern in Indian type WC Pan.
- (iv) 1 ½" lead connection pipe 18" long with brass couplings and plumber joints at both ends including fitting and fixing in proper position, jointing, cutting and making good damages and providing 3" cement concrete with Jhama Khoa I" down gauge (1:4:8) around the pan and the trap.
- (v) ½" lead connection pipe with brass coupling and plumber joint at both ends.
- (vi) 1" dia. Over flow G.I. pipes with mosquito proof cover.

3. Wash hand basin set 630mm x 450mm (Shank for English make, Orissa, Hind for Indian make).
- White Preocelain wash hand with two nos. cast iron brackets painted white, 32mm waste fittings, C.P. chain and rubber plug with :
- (a) 1 ½" lead waste pipe with coupling and plumber joint.
 - (b) 1 ½" lead connection pipe with brass coupling and plumber joint at both ends 18" long.
 - (c) Teak wood blocks and screws for fixing brackets.
 - (d) 15mm C.P. Brass / M.S. tap

Standing Urinal) specified in the item of work or equivalent of) lipped front standing urinal basin (corner of flat back) white porcelain I" head waste pipe 2'-0" long ½" lead flush pipe 9" long ½" C.P. stop cock for flushing, screws wooden block complete.

4. **G.I. Pipe fittings:**

- a) G.I. Pipe shall be of better quality by firm of repute and fittings may be either Galvanized wrought iron and Galvanized malleable iron.
- b) All exposed G.I. pipes should be fixed truly vertical or horizontal as the case may be and should remain clear at least ~" of wall every where and should be fixed by GJ. holder bat clamps at suitable places. Rate for pipe and fittings should include cost of holder bat.
- c) G.I. water pipes and fittings laid under ground shall not be less than 2 ft deep from ground level. Rate will include necessary excavation in trench in any kind of soil Of rock, refilling trenches, ramming, consolidating, top dressing, site cleaning etc.
- d) All pipes and fittings shall be of medium quality *I* class.

5. **SCI soil and vent pipes fittings:**

- a) All pipes and fittings shall be to the medium grade free from flaw and the interior should be clean and smooth and painted inside and out side while hot with Augus Smith Solution or other approved non-corrosive paint. The access door of fittings shall be of proper design. All joints will have to be made with Spun yarn and melted lead properly packed with caulking tools, as per standard practice and as given below :

Quantity of Lead and Spun yarn per joint for Cast Iron pipes.

Nominal size / Dia. of Pipes	Weight of lead (Kg.)	I	Weight of Spun Yam (Kg.)
50 mm	0.77	I	0.06
75 mm	0.88		0.09
100 mm	0.98	I	0.11

- b) In case of exposed work the rate for all pipes and fittings will include making joint with spun yam and lead, fixing nail G.I. bobbins and wooden pins. Exposed pipes will have ears.
- c) In case of underground work the rate will include excavation in any kind of soil or rock, depth not exceeding 5' laying, jointing with spun yam and lead, refilling the trenches, ramming, consolidating, top dressing, site clearing etc. complete.
- d) While mentioning sizes of pipes and fittings the internal diameter will always be meant.

6. **Asbestos Cement Pipes and fittings:**

All materials will be of Asbestos Cement Limited or equivalent. All joints will have to be made with Asbestos rope and cement mortar. Exposed pipes will have to be fitted with 1"x8" M.S. Flat clamps with bolts and nuts. All other works will be similar to SCI pipe work.

7. **Cast Iron and fittings: (Water Mains)**

- a) All C.I. pipes and fittings shall be of 'B' class and to be in accordance with latest British Standard Specifications.
- b) The price tendered for laying pipes and fittings are to include the excavation in any kind of soil 01' rock to a depth not less than 3', carrying, lowering, laying, excavation of joints holes, making lead caulked joints with fine lead and Spun yam in case of C.I. S&S. pipes and fittings with bolts nuts and 1/8" thick rubber washer. In case of C.I. flanged pipes and fittings where necessary, providing warning signs and barricading site clearing etc. complete.

8. **Lead caulked joint~ for C.I.S. and S. water mains S.C.I. Pipes.**
- | Size of pipes | Weight of lead | Weight of yam |
|---------------|-------------------------------------|--------------------------------------|
| 2" | As per respective ISI specification | As per respective ISI specification' |
| 6" | -do | -do |
9. **Lead Pipe work**
The lead piping is to be seamless and hydraulically drawn of uniform bore from pure lead of full weight and substance throughout The rate will include cutting of pipes to proper size and shape, plumber joints brass coupling making necessary bends and off sets etc. complete.
10. **Brass fittings**
Bib cocks, stop cocks, valves, etc. shall confirm to latest. Before fitting, samples should be submitted and got approved for the same from the Engineer-in-charge.
11. **S. W. Pipes and fittings.**
a). All pipes must be new, perfectly sound free from fire cracks and imperfections of glaze cylindrical straight in length of standard nominal diameter and length and depth of socket and barrel made of hard but stoneware of dark gray colour and thoroughly salt glazed inside and outside.
b) All pipes shall be jointed with tarred gasket and cement mortar made of 3 parts of sand and 2 parts of cement by volume.
c) The prices, tendered for laying pipe are to include excavation in any kind of soil 01' rock to required depths, lowering, jointing, testing, concreting, filling trenches in layers not exceeding 9", watering, consolidating the back fill, providing warning signs and barricading, shoring, if necessary, site clearing etc. all complete.
12. **Inspection Pit and Manholes**
a) Inspection pits will be of (2'-0"x2'-0") internal size or as specified brick masonry chamber made with 10" thick class - 75- sub class, B brick work in cement mortar 1:6 3"thick cement concrete (1:4:8) in floor with 3" Projection on all sides invert benching W' cement plaster (with cico 3% by weight of cement (1:4) inside smoothly finished with neat cement, rounding corners, 3" R.C. slab cover, 18" dia. C.I. water seal pit cover (18" clear opening, weight 56 kg) all complete (the rate will include excavation in any kind of soil or rock filling, site clearing etc. complete).
(b) Manholes will be of 2'-6" x 2'-0" internal size or as specified etc. as inspection pits, but with necessary 3/8" dia iron where necessary.
13. **Sluice Valve Chamber**
Sluice valve chambers on internal size 2'-6" x 3'-0" x 4'-0" x 10" thick class - J\$ sub class B cement brick work (1:6) 3" cement concrete floor (1:4:8) placed 3" below the bottom of sluice valve, inside with 1/2:" cement plaster top cover made with 2'-10" x 3'-4", 16 gauge thick M.S. sheet stiffened with I" flat iron bars M.S. handle properly hinged and complete with locking arrangements.
14. **Ferrule and stop cock box with necessary chamber**
6' square C.I. surface box 9" deep weighing not less than 10 lbs with hinged lid will be put on masonry chamber. Top of box will remain flush with the finished level. The chamber (9" x 9" inside) will be 3" thick cement concrete floor (1 :4:8) below stop cock or ferrule 5" thick brick work with cement mortar (1 :6) inside finished with cement plaster (1:4).
15. **Testing of Water pipes and fittings.**
Except where gravity test from a service reservoir is permitted the water main and distribution pipes where completed are to be tested in section by pumping water into them up to a pressure equal lo 25% above the maximum working pressure al the expense of the contractor.

16. **Testing of soil pipes and fittings**
Smoke test shall be applied if found necessary by the Engineer-in-charge and for this purpose the contractor shall supply and maintain a proper smoke test machine on the work site and test will be carried out at the expense of the contractor.
17. **Water for Construction**
Arrangement of water supply for all works and for testing shall be made by the contractor at his own cost.
All rates quoted will include all cutting walls, floors,. roof, cornice, surface drains etc. and making good all damages.
18. **Testing Sewers**
All sewers will be tested for water tightness under a head not less than 6' in shallow sewers and equal to the depth below the ground in case of sewer over 5'-0" depth. No sewers will be considered to have been completed until such tests have been made and passed by the Engineer-in-charge.

NOTE :

The foreign makes of materials mentioned in the above specifications shall be provided only in cases where the schedule of quantities attached to the contract specifically provides for the same or where the particular materials is not manufactured in India. In all other cases Indian make materials shall be used.

(Schedule - (:))

SPECIFICATION OF WORKS

1. All foundation should be taken to the adequate and safe founding level below the G.L.
2. The back filling in foundation and even filling in plinth may be done with local sand if directed by the EIC. The sand used shall be clean, medium grained and free from impurities. The filled sand shall be kept immersed in water for sufficient time, and mechanical vibration of ramming as directed by EIC to ensure maximum compaction.
3. The use of admixture in concrete for promoting workability, improving strength or for any other purpose may be used only with the approval of EIC.
4. Number, size, form and position of all the reinforcement bars and spacer bars shall be strictly in accordance with drawings unless other wise modified by the EIC. Bars shall be secured one to the other with approved soft black wire of 18 SWG. Adequate concrete cover blocks shall be used at bottom and sides of the form work to ensure concrete cover of concrete over the bars, Cement and sand ratio for these spacer blocks shall be at least equivalent to that used in concrete being cast.
5. The inspection of concrete work shall be done immediately after execution at various stages which shall include checking of dimensions variations, obvious or visible defects. No honey combing or unevenness shall be allowed in concrete of any description. Rejected members shall be dismantled/broken and removed. When the structure in the opinion of EIC is not properly executed according to the specifications and drawings and where the test cubes will give lower strength not acceptable as per "Acceptance Criteria" of IS 456 and if the load testing is decided by the EIC the same shall be done by the contractor as per IS at his own cost. In case the structure or part of it fails under the load test, the same shall be treated as rejected and shall be removed at the expenses of the contractor. But if it is felt that the defective part of structure will carry the designed load after giving additional support or otherwise, the additional work for safety of that structure or part shall be carried out by the contractor at his own cost. The detailed procedure will be decided by the EIC. If the member show evident failure, such changes are necessary to make the structure adequately strong shall be made by the contractor at his own cost.

6. **Material Specification:**

a) **Cement**

Cement shall comply in every respect with the requirements of the latest publication of IS and unless otherwise specified ordinary Portland cement shall be used. The weight of ordinary Portland cement shall be taken as 1440 Kg. per Cum (90 lbs per cft). Cement shall be measured by weight and in whole bags and each undisturbed and sealed 50 Kg bag being considered equivalent to (1.2cft) in volume. Care should be taken to see that each bag contains full quantity of cement when pad bag is required cement shall be taken by weight 01' measured in measuring boxes. No other make of cement but that approved by the E.I.C. will be allowed on works and the source of supply shall not be changed without approval of the E.I.C. in writing. Test certificate to show that cement is fully complying with the specifications shall be submitted to the E.I.C. and notwithstanding this, the E.I.C. may at his discretion, order that the cement brought on site and which he may consider damaged or of doubtful quality for any reason, whatsoever, shall be tested as per relevant IS in an approved testing laboratory and fresh certificate of its soundness shall be produced. Cement ordered for such testing shall not be used for any work pending results of the test. Cement shall be stored in weather proof shed with raised wooden plank flooring to prevent deterioration by dampness or intrusion of foreign matter. It shall be stored in such a way as to allow the removal and use of cement in chronological order of receipt i.e.. first received being first used. Cement deteriorated and or clodded shall not be used on work but shall be removed at once from the site. However, suitability of using warehouse set cement shall be determined by the E.I.C.

Daily record of cement received and consumed shall be maintained by the contractor in an approved form and submitted to E.I.C.

b) **Fine aggregate**

Sand shall conform to IS : 383 : 1970 and relevant portion of latest IS : 515. It shall pass through an IS sieve 4.75 nun (3/16 B.S.) test sieve, leaving a residue not more titan 5%. It shall be from natural source and chemically inert, clean, sharp, hard, durable, well graded and free from dust, clay, shale, large pebbles, salt, organic matter, loam, mica or other deleterious matt~, The sum of percentage of all deleterious materials in sand shall not exceed 5% by weight. It shall be washed if directed to reduce the percentage of deleterious substances to acceptable limits. sand shall not contain any trace of salt and it shall be tested and sand containing any trace of salt shall be rejected. The fine aggregate for concrete shall be graded within limits as specified in IS : 383 and the Finesse Modules may range between 2.60 to 3.20. The fine aggregate for concrete shall be graded within limits as specified in IS : 383 - 1970 and the fine aggregate shall be stacked carefully on clean hard dry surface so that it will not get mixed with deleterious foreign materials. If such a surface is not available, a platform of planks or corrugated iron sheets or brick floor on a thick layer of lean concrete shall be prepared.

c) **Coarse Aggregate**

Coarse aggregate shall consist of crushed or broken hard stone 95% of which shall be retained on 4.75 mm IS test sieve. It shall be obtained from crushing Granite, quartzite, trap, basalt or similar approved hard stones from approved quarry and shall conform to IS : 383 and IS : 515. Coarse aggregate shall be chemically inert when mixed with cement and shall be cubical in shape and tree from soft, thin, porous, laminated or flaky pieces. It shall be free from dust and any other foreign matter.

For all RCC work the size of coarse aggregate shall be 20mm and down gauge.

d) **Structural Steel**

Standard quality mild steel of various designation shall be used for different works confolluing to specifications given in IS codes listed below. They may be used for bolted riveted steel work and steel work where welding is done for fabrication provided that the thickness of material does not exceed 20 mm. When material conforming to this standard is more than 20 mm thick, special precaution shall be taken in case the material is to be welded.

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IS; 226 – 1975	Specification for structural steel (Standard quality).
IS : 800 (Latest)	Rolled steel beams, channel and angle sections.
IS; 2062 – 1969	Specification for structural steel (fusion welding quality).
IS : 1448 – 1964	Specification for Rivet bars for structural purpose.
IS : 1363 – 1984	Precision hexagonal Bolts, screws and nuts (BSW & BSF Threads)
IS : 814 – 1974	Specification for covered Electrodes for Metal Arc welding of structural steel
(part I & n)	Code of practice for use of Metal Arc welding for general building
IS : 816	Code of practice for the use of structural steel in general Building construction.
IS : 800 – 1984	Code of procedure for manual metal Arc welding of mild steel.
IS : 823 – 1964	Code of practice for training and testing of metal are welding.
> IS : 817 (Current)	Code of practice for painting of Ferrous metal in building and allied finishes.
IS ; 1477 (Current)	

e) **High Tensile Bolts.**

The materials used for the manufacture of structural quality high tensile strength of 58 Kg per Sq. mm Bolts, nuts and washers and other fastening materials shall be stored in racks with coating of suitable protective oil

(1) **Electrodes**

The electrodes required for metal arc welding shall be 'Covered Electrodes' and shall conform to IS : 814 (part-I) - 1974 for welding products other than sheets and IS : 814 (part-II) - 1974 for welding sheets.

(g) **Welding Equipment**

The welding plant and equipment shall be modern design and shall be got approved by the Engineer-in-charge.

7. **STACKING & STORAGE OF MATERIALS**

7.1 **Cement**

The manner of storage shall facilitate the requirement that lots of cement received are removed and used more or less in the order in which they are received. Cement bags shall be placed in stacks on raised platforms, dry and impervious to water, with adequate water proof cover / roof on top to protect the slack .from rain water and at least 30 cm. clearance .&um any wall. The stacks shall not be more than 12 bags high to prevent lumping of cement under pressure as also chances of injury to any workman.

Drums or other heavy containers of cement shall be bandied carefully and shall not be stacked more than two layers high.

Where bulk handling of cement is undertaken protective masks shall be provided for the workmen.

Cement deteriorated and or clodded shall not be used on work but shall be removed at once from the site. Daily record of cement received and consumed shall be maintained by the contractor in an approved form and submitted to the Engineer-in-charge.

7.2 **Aggregate**

Fine aggregate: Fine aggregate like sand, cinder and surkhi shall preferably be stacked in regular slacks un a hard-surface or platform so as to prevent the admixture of clay, dust, vegetable and other foreign mater.

Coarse Aggregate: Coarse aggregate shall be stacked in regular stacks in such a way as to prevent the admixture of vegetable and other foreign matter.

7.3 **Steel**

Steel reinforcement shall be stored in a way as to prevent distortion and corrosion. It is desirable to coat reinforcement with cement wash before stacking to prevent scaling and rusting. Bars of different classification, sizes and lengths shall be stored separately to facilitate issued in such sizes and lengths as to minimize wastage in cutting nom standard lengths.

In case of long storage or in coastal areas, reinforcement bars shall be stacked above ground level by at least 15 cm and a coat of cement wash shall be given to prevent scaling and rusting.

Structural steel of different sections, sizes and lengths shall be stored separately. It shall be stored above ground level by at least 15 cm upon platforms, skids or any other suitable supports to avoid distortion of sections, In case of long storage, suitable protective coating of cement wash shall be given to prevent scaling and rusting.

For each classification of steel separate areas shall be earmarked, Also ends of bars and sections of each class shall be printed with separate nominated colours.

For moving heavy steel sections suitable handling equipment shall be provided and men shall not be required to lift them with bare hands or Carry them on shoulders.

7.4 **Roofing sheets** - Roofing sheets shall be handled and stored in such a manner as not to damage them in any way. These sheets shall be stacked on wooden batten laid on :6nn and level ground, sheets like asbestos cement sheets shall be slacked and stored according lo manufacturer's instructions.

7.5 **Water**

Water to be stored for construction purposes shall be stored in proper tanks to prevent any organic impurities.

8. **WORKMANSHIP**

All the Civil Engineering works should be cat1 led out in accordance with the latest Civil Engineering practices and as per relevant IS (latest version).

8.1 **Plain & Reinforced Cement Concrete**

a) Except where they are varied by the requirement of this specification due provision of IS specification IS - 456 for plain and reinforced cement concrete and IS - 432 (part-I &II) for mild and medium tensile steel bars and hard drawn steel wire for concrete reinforcement and other relevant IS applicable together with the latest amendments shall be held to be incorporated in this specification, It shall be intent of these specification to ensure that all concrete placed at various locations of the job should be durable, strong enough to cay the design loads and practically be impervious to water. It should be nee nom such defects as shrinkage, cracking and honey combing.

b) Concrete used shall be 'Nominal Mix Concrete' (by Volume *I* weight and the ratio of cement to fine aggregates and coarse aggregate shall be as specified in the respective item of works. The proportion are based on the assumption that aggregates are dry. Necessary allowance shall be made for the bulkage of the fine aggregate in accordance with IS : 2386, Allowance shall also be made for surface water present when computing water content, surface water shall be determined by one of the field methods described in IS : 2386 (Part-II). In the absence of exact data, the amount of surface water may be estimated, from values given in Table - 4 of IS : 456,

c) **Mixing**

Concrete should be mixed in a mechanical concrete mixer and in accordance with IS : 456.

d) **Consistency**

Quantity of water or making reinforced cement concrete shall be sufficient so as to ensure that concrete shall surround and properly grip all the reinforcement. The best consistency shall be that which will flow sluggishly without flattening out and without separation of coarse aggregate from the mortar.

The degree of plasticity shall depend upon the nature of work and atmospheric temperature and whether the concrete is vibrated or hand compacted. The slump shown in Table - 1 contained by the standard slump test carried out in accordance with IS 119 shall be adopted for different types of work.

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Type of Work	<u>Stumps</u>	
	<u>When vibrated</u>	<u>When not vibrated</u>
1. Mass concrete in RCC foundation <u>footings, retaining wall and road slabs.</u>	2.5 CM	5 CM
2. Beams, slabs columns with simple p <u>reinforcement.</u>	2.5 CM to 5 CM	5 CM to 10 CM
3. Thin section with congested reinforcement	5 CM to 10 CM	10 CM to 15 CM

NOTE: Should conditions governing slumps and workability change pointing to advisability of an increased slumps this shall only be done by decreasing the amount of aggregate and not by increasing the amount of water.

e) **Form Work**

The form work shall conform to the shape, lines and dimensions as shown on the drawing and be so constructed as remain sufficiently rigid during the placing and compaction of the concrete and shall be sufficiently water tight to prevent loss of cement slurr for concrete. Shuttering shall be of steel plates or of shuttering plywood supported on steel! wooden frame work. The props shall be either mild steel tubes or sal ballies 150mm dia.

The form work shall be so designed as to support the full weight of wet concrete as well as the working load without deformation. All props shall be true and rigid and thoroughly braced both horizontally .and diagonally. Where staging is required extra care shall be taken to use bigger diameter props and bracings at maximum 3 M interval. All props shall be supported on sole plates and double wedges. At the time of removing props these wedges shall be' gently eased and not knocked out.

All rubbish, chippings, shearing and saw dust shall be removed from the interior of the forms before the concrete is placed and the form work in contact with the concrete shall be cleaned thoroughly wetted or treated with non-staining mineral oil or any other approved material. Care shall be taken that oil or such approved material is kept out of contact with the reinforcement

All form work shall be removed without shock or vibration and shall be eased off carefully in order to allow the structure to take up its load gradually. Forms shall not be removed until the concrete has adequately hardened to take up the superimposed load coming on it and in no circumstances shall form be struck until the concrete reaches a strength of at least twice the strength to which the concrete may be subjected at the time of working.

- f) In nomlal circumstances where ordinary Portland cement is used, form may be removed at the expiry of such period as mentioned in Clause 10.3 of IS : 456. However, the above period may be increased if found necessary by the Engineer-in-charge. Special care shall be taken while striking the centering of cantilevered slab, canopies, portal frames, folded plate construction etc. and period of striking shall be determined by the Engineer-in-charge.
- g) Surface that become exposed on removal of the forms shall be carefully examined of any fins, burrs, projections etc. that are detected shall be removed. In case honeycombs are found in the concrete the same shall be closely examined by the Engineer-in-charge. If the honey comb is of minor nature the loose portion should be removed and finished with cement mortar 1:1. But in case of large honeycomb the same shall have to be redone or made good by gunning etc. Any work showing signs of damage through premature or careless removal of centering and shuttering shall be reconstructed by the contractor at his own cost.
- h) Before re-use of forms, it shall be thoroughly scrapped, cleaned, joints etc., examined and if necessary repaired and inside surface treated. Framework shall not be used re-used if declared unfit by the Engineer-in-charge.
- i) Anchor bolts, anchors, opening, sleeves, inserts & other Built-in-Fixtures : The contractor shall provide openings, grooves, chases etc. in concrete work as required for erection of equipment and structures. He shall also build into concrete work the materials like inserts, hanger, anchors opening frames, manhole cover, frames, floor clips, sleeves, conduits, anchor bolts and plates for machinery / equipment and for structural steel work, dowel bars, lugs, joints etc. as may be required and instructed. Exposed surfaces of embedded materials are to be painted with one coat of approved anti-corrosive paint and / bituminous paint without any extra cost lo the owner.

J) **Steel Reinforcement**

Reinforcement should be accurately fabricated, bent to shape, placed and adequately maintained in position as shown on drawings or as directed by the Engineer-in-charge. All finished bars shall be free from cracks surface flows, laminations, jagged and imperfect edges, Cement mortar block (1:1) shall be used to give requisite cover as shown on the drawings or as directed and all intersections of bars shall be firmly tied with binding wire of 18 gauge. Reinforcement shall be bent cold in accordance with the procedure stipulated in IS : 2502

1963 and will not be straightened in a manner which will injure the material.

All reinforcement shall immediately before placing in concrete be thoroughly cleaned of loose mill scale, loose rust, oil and grease or other deleterious matter that would destroy or reduce bond.

Reinforcement in reinforced concrete members shall not be connected by welding or coupling except in accordance with relevant IS and with the previous approval of the Engineer-in-charge. Overlaps and joints shall be staggered and located at point, along the span where neither shear nor bending moment is a maximum.

Cover

Reinforcement shall have cover as shown in the drawings and where not specified, the thickness of cover shall be as per IS : 456.

k) **Transportation**

Concrete shall be handled from the place of mixing to the place of final deposit as rapidly as practicable but latest within 30 minutes by methods which will prevent the segregation or loss of any of the ingredients. If segregation occurs during transport, the concrete shall be re-mixed before being placed.

i) **Placing**

Concrete shall be placed in position and compacted before initial setting commences and when once compacted it shall not be subsequently disturbed. Method of placing shall be such as to prevent segregation.

ii) Concrete shall not be dropped into position from a height greater than 1 meter.

iii) Before the concrete is actually placed in position, the insides of the forms should be inspected to ensure that the shuttering is watertight and the surface treated with approved composition. All debris, sand, dust etc. shall be removed from shuttering before concrete is placed in position.

iv) Concrete shall be placed in suitable layers depending upon the nature of work and generally layers of 30 cm for thick concreting placing shall be confined as far as practicable.

v) When concrete is required to be placed under adverse conditions viz. extreme weather condition, under water, in alkali soils and in alkaline water, the requirements as stipulated in IS : 456 shall be complied with.

Compaction

i) Concrete shall be thoroughly compacted during the operation of placing and thoroughly worked around the reinforcement, around embedded fixtures and into corners of the form work. Means of compaction shall be mechanical vibration followed by the light taping of the form work on the external face. To ensure proper compaction at corner, junctions, underneath insert and thick reinforcement etc. Placing by steel rods is also to be done before mechanical vibration. All concrete work whether plain or reinforced shall be mechanically vibrated by needle plate vibrator as the case may be.

ii) Beams and columns shall be vibrated using immersion vibrator as per IS : 250 - 1963 and IS : 3558 - 1983, thin sections like water tanks walls shall be vibrated using surface vibrators, The contractor shall at all times have in reserve sufficient vibrators of each type to guard against shut down of the work occasioned by the failure of the equipment No concreting shall be permitted in the event of power failure.

- iii) Compression testing machine of min. cap. of 100 T. Slump cones.
- The intensity and duration of vibration shall be sufficient to ensure complete settlement and compaction without any stratification of successive layers or separation of ingredients or formation of laitance. Needle vibrators shall be immersed vertically and not at an angle as regular interval not more than 45 CM apart from withdrawn very slowly when air bubbles no longer come on the surface. It is better to vibrate an smaller intervals for shorter period of time, rather than at wider intervals for longer period of time. To avoid trapping of air the thickness of layer of concrete to be vibrated shall not be less than 15 CM and maximum advisable shall be 45 CM. The vibrator shall be used only to add compaction and shall never be used to push concrete laterally in the forms and it shall never be used nearer than 10 CM to the form surface in order to obtain a uniform appearance.
- 1) **Curing**
Concrete shall be carefully protected during first stage of hardening from harmful effects of excessive. heat. drying winds, running down of surface water and shocks. Concrete shall be prevented from drying out by proper curing at least for a period of 14 days and thereafter the surface kept moist for another 7 days. The method of curing shall be that horizontal surfaces shall be kept covered with ponded water for continuous period of 14 days and vertical surface like columns walls, fins etc. and inclined surfaces shall be covered with straw, Hessian etc. and kept constantly wet by water spray. Mere sprinkling of water on vertical on inclined surface shall not be allowed.
- m) **Sampling & Strength Test of Concrete**
Sampling and strength test of concrete shall be carried out in accordance with Clause 14 of IS : 456. The cost of sampling, testing etc. shall be completely borne by the contractor. For such testing a site laboratory having the following equipment / facilities has to be installed by the contractor for carrying out various strength test as follows:
> Adequate curing tank and moulds.
> Curing bank.
> Weighing balance.
> Oven or other apparatus to dry aggregate.
>
>
- n) **Acceptance of Concrete**
The criteria for acceptance of a concrete shall be in accordance with the clause 15 of IS : 456 - 1978 and the consequences of rejection shall be at the expense of the contractor.
- o) **Dismantling of Concrete**
Dismantling of concrete in RCC shall be done with utmost care so that the reinforcements and their bindings are not disturbed so as to ensure attainment of desired strength on recasting.
- p) **Recasting of Dismantled Concrete**
Recasting of dismantled concrete shall be done with the same grade of concrete. EPOXY RESIN based compounds of approved brand shall be used during recasting to ensure adequate bond between old and new concrete. Holding down bolts shall be placed and their positions checked with templates while casting foundations
- 8.2 **FABRICATION & ERRECTION OF STEEL STRUCTURES.**
- a) **General**
All structural steel works shall be carried out strictly as per relevant IS codes and standard practices. This will cover fabrication, transportation to the required location and erection including hoisting, grouting and site welding/ bolting etc. all complete. All holes for bolting shall be of machine cut and not gas cut.
All bolts and nuts shall be made in accordance with relevant IS specification and unless shown or specified other wise, shall be hexagonal. All nuts are to be fit tight, washers shall be used wherever necessary.

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-: 16 :-

b) **Fabrication**

All steel sections to be used in the work shall be of tested quality and shall be approved by the Engineer-in-charge before use. After proper marking to the required shape and size as per approved design and drawing, the steel section shall be cut to the required shape and size and cut edges, shall be finished smooth by grinding. No two pieces shall be welded or otherwise jointed to make up the required shape and size of the member except as indicated in the drawing or directed by the Engineer-in-charge.

All structural steel work shall be in accordance with IS : 800 - 1984 latest code or practice for use of structural steel in general building construction and loading shall be in accordance with IS : 875 - 1987 or latest code or practice for structural safety or building loading standards, where applicable. The templates for the connections between interchangeable parts shall be of steel and steel bushed in such cases as the Engineer-in-charge may consider necessary. In case where actual materials have been used as templates for drilling similar pieces, the Engineer-in-charge will decide whether they are fit to be used as parts of finished structure.

All smithy work shall be clean and sound and the metal shall not be burnt or injured in any way.

No drifting shall be allowed except for bringing together several parts forming a member but the drifts must not be driven with such force as to disturb or damage the metal about the holes.

Particular care must be taken to ensure free expansion and contraction wherever provided for in drawings or specifications.

All members must be so formed that they may be accurately assembled without unduly packing straining or forcing into position, and when built the same shall be true and free from any twist, kink buckles or open joints between component pieces. Any failure in this respect shall involve rejection of the member.

Greatest accuracy shall be observed to facilitate erection at site and all corresponding parts must be made similar and interchangeable.

Riveting is to be done by hydraulic or pneumatic machines. No hand riveting shall be allowed.

All loose, faulty or defective rivets must be cut out or replaced.

Machined surface must be well coated with a mixture of white lead and tallow. Screwed ends of the rods and anchor bolts or machined surfaces shall be protected from injury during transit. Dummy pieces are to be prepared where necessary during fabrication and shop assembly to check the accuracy of work to the satisfaction of the Engineer-in-charge or his representative at no extra cost.

c) **Electrodes**

Electrodes complying with IS : 814 - 1974 or latest "Covered Electrodes for Metal Arc Welding of Structural steel".

Arc welding shall be used. The contractor shall state in his tender the specifications and all relevant particulars of the electrodes which he proposes to use.

d) **Welding**

Welding of mild steel shall be in accordance with IS : 816 - 1969 or latest "Code of Practice for use of Metal Arc Welding for general construction in Mild steel".

All welding operation shall be carried out by skilled welders (who would satisfy the requirement of engaged in welding structures other than pipes) working under constant competent supervision in a properly organized manner with quality welding sets with automatic welding machines as far as possible and with suitable electrodes, all to the approval of Engineer-in-charge and to his satisfaction. Number of welding sets both automatic and hand operated proposed to be used in fabrication in workshop with all the relevant specifications is to be submitted to the Engineer-in-charge before execution of work

Special attention shall be given to a suitable sequence of welding to keep the internal stresses within permissible limits.

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-: 17 :-

e) **Inspection**

The Engineer-in-charge and his authorized representatives shall have free access at all reasonable times to all places where the work is being carried out and shall be provided by the contractor, at the expense of the contractor, with all the necessary facilities and labour for inspection during fabrication and erection. The Engineer-in-charge and his authorized representative shall be at liberty to reject in whole or part any work or material that does not conform to the terms of these specifications and may order the same to be removed, replaced or altered at the expense of the contractor.

No part of the work shall be oiled, painted (except contract surfaces as stated) taken down, packed, handled, created or dispatched until it has been finally inspected and approved by the Engineer-in-charge or his representative. No filling or other obliteration of surface defects shall be carried out prior to such inspection by or without the consent of the Engineer-in-charge or his representative.

f) **Marking & Dispatching**

Every portion of the work shall have its erection letters or numbers distinctly stenciled on it with paints and marked with a punch for guidance in erection at site and every piece, bundle or packing case shall also be clearly marked in accordance with a marking diagram and shall bear such other marks as will facilitate erection.

The work shall be dispatched to such portions as may be found convenient for erection or as ordered by the Engineer-in-charge and shall be unloaded and stocked neatly in the space allotted to the contractor.

All bolts, nuts, rivets, plates under 25 mm square and small articles generally are to be packed in cases of adequate strength for safe transit. All bolts, nuts, rivets and washers of different sizes are to be packed securely in separate bags, each bag having a label indicating its contents.

g) **Painting**

All steel works shall be provided with two coats of ready mixed paints of approved make and shade over primer.

The whole of the fabricated steel works before being dispatched from fabrication yard shall be dry and after being thoroughly cleaned free from rust, mill scale, dust etc. to the satisfaction of the Engineer-in-charge or his representative and shall be given one coat of red oxide paint. Paint shall be applied by brush and not by spraying. Surfaces which are to be held in contact by riveting or bolting shall not be painted before assembly.

Unless specified otherwise all surface inaccessible after riveting, bolting or intermittent welding shall be given two coats of red oxide paint before assembly. Welds and adjacent parent metal shall not be painted prior to removal of flakes inspection and approval.

All bolts, nuts, rivets and washers etc. shall be thoroughly cleaned and dipped in boiled linseed oil before dispatch from contractor's works.

h) **Bedding**

The bedding shall be carried out with Portland cement grout or mortar having a compressive strength of 250 Kg. Per Sq. cm. at 28 days for, all columns bases.

The bedding shall not be carried out until a sufficient number of columns have been properly aligned, leveled and plumbed and sufficient girders, beams and trusses are in position to the satisfaction of the Engineer-in-charge.

Immediately before grouting the space under steel shall be thoroughly cleaned and left free from excessive moisture.

The grout or mortar shall be fixed as thickly as possible consistent with fluidity and shall be poured under pressure with pressure grouting machine until the space has been filled with mortar.

i) **Erection & Setting Out**

The erection of steel work shall be in accordance with IS : 800 - 1984 or latest and IS : 810 - 1969 or latest. The contractor shall be responsible for the suitability and capability of all plant and equipment used for erection.

The contractor shall give to the Engineer-in-charge not less than twenty four hours notice of his intention to set out or give levels for any parts of the work with a view to enable the Engineer-in-charge to make arrangements for checking.

The contractor shall, as a contingency of the contract, provide all necessary assistance which the Engineer-in-charge may require for checking the setting out.

The dimensions and level of the site and of existing works shown upon the drawings should be verified before starting the erection work and in case of any error, omission or discrepancy the same should be rectified.

The setting out and leveling of the whole of the works shall be made from two reference lines / points and two datum marks which will be given at site.

The contractor shall take to see that the component parts fit correctly and according to the distinguishing match marks. No inter changeable pieces shall be made unless absolutely necessary.

j) **Cladding**

CGI sheets shall be accordance with latest IS specifications. All fixing necessities shall conform to IS : 730 - 1966 or latest.

The roof is to be covered with CGI sheets and to be fixed strictly in accordance with the manufacture's specifications and instructions. The sheets shall be laid on purlins and are to be secured with 10 mm dia. galvanized iron hook bolts. GI and bitumen washers, etc. as per manufacturer's instruction and to the satisfaction of the Engineer-in-charge. Cutting is to be carried out with a saw and holes must be drilled and not punched.

Coot'd ""

PART – II

PRICE B I D

Bill of Quantity for the work of " Polyethylene Water Reservoir of Water Supply at Muraidih Colony of MOCP"

SN	Description of items	Units	Quantity	Rate(Rs.)	Amount(Rs.)
1	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means foundation trenches, drain not exceeding 1.5 m in width as well as 10 sqm on plan including dressing of sides and ramming of bottom, lift up to 1.5 m including getting out the excavated soil and disposal of surplus excavated soil as directed within a lead of 50 m. (All kinds of soils).	cum	9.53	103.40	984.88
2	Earth work in excavation by mechanical means (Hydraulic excavator) / manual means over areas (exceeding 30 cm in depth, 1.5 m in width as well as 10 sqm on plan) including disposal of excavated earth lead up to 50 m and lift up to 1.5 m disposed earth to be leveled and neatly dressed. (Hard Rock requiring chiseling where blasting is prohibited).	cum	24.29	325.25	7900.32
3	Filling in plinth with Jamuna sand under floors including watering, ramming, consolidation and dressing complete.	cum	36.75	301.50	11080.12
4	Brick work on edge soling of Class 50	sqm	22.75	271.67	6180.49
5	Brick work (1:6) in in foundation	cum	20.84	2007.00	41825.88
6	Brick work (1:6) in super structure	cum	13.62	2315.50	31537.11
7	Providing and laying cement concrete of specified grade excluding the cost of centering and shuttering in all works up to plinth level : 1:4:8 (1cement : 4coarse sand : 8graded stone aggregates 40 mm nominal size).	cum	0.90	2449.00	2204.10

8	Providing and laying cement concrete of specified grade excluding the cost of centering and shuttering in all works up to plinth level : 1:2:4 (1cement : 2coarse sand : 4graded stone aggregates 20 mm nominal size).	cum	3.07	3257.45	10000.37
9	12mm cement plaster finished with a floating coat of neat cement of mix: 1:4 (1cement : 4fine sand).	sqm	19.80	97.90	1938.42
10	12mm cement plaster of mix: 1:6 (1cement : 6fine sand).	sqm	65.52	67.65	4432.43
11	Providing and placing on terrace (at all floor levels) polyethylene water storage tank ISI:12701 marked with cover and suitable locking arrangement and making necessary holes for inlet, outlet and overflow pipes but without fittings and the base support for the tank. (5X10000 liters)	per liter	50000.00	5.25	262500.00
12	Providing and fixing G.I. pipes complete with G.I. fittings including trenching and refilling etc. External work: 80 mm nominal bore.	metre	48.00	458.15	21991.20
13	Providing and fixing gun metal gate valve with C.I. wheel of approved quality (screwed end): 80 mm nominal bore.	each	3.00	1369.25	4107.75
14	Making connection of G.I. distribution branch with G.I. main of following sizes by providing and fixing tee, including cutting and threading the pipe, etc. complete: 50 to 80 mm nominal bore.	each	2.00	423.20	846.40

15	Constructing masonry Chamber 90x90x100 cm, inside with 75 class designation brick work in cement mortar 1:4 (1cement : 4coarse sand) for sluice valve, with C.I. surface box 100 mm. top diameter, 160 mm bottom diameter and 180 mm deep (inside) with chained lid and RCC top slab 1:2:4 mix (1cement : 2coarse sand : 4graded stone aggregate 20 mm nominal size) necessary excavation foundation concrete 1:5:10 (1cement : 5fine sand : 10graded stone aggregate 40 mm nominal size) and inside plastering with cement mortar 1:3 (1cement : 3coarse sand) 12 mm thick finished with a floating coat of neat cement complete as per standard design : With F.P.S. bricks	each	2.00	6028.55	12057.10
	Total Rs.				419586.57

I/We hereby quote% above/below of estimated coat

In word

Name & Address of Tenderer:-

Signature of Tenderer

Area Civil Engineer, Barora Area