

SECTION-1

e- TENDER NOTICE

e -TENDER NOTICE

FOR THE WORK OF INSTALLATION OF SOLAR ROOFTOP POWER PLANT AT OFFICE OF
CMPDI RI-II, KOYLA BHAWAN, KOYLA NAGAR -826005

TENDER NOTICE NO. : CMPDI/RI-II/e-tender/Solar P.P./16-17/658 , dt: 20.05.2016

1. Tenders are invited on-line on the website <http://coalindiatenders.gov.in> from the eligible bidders having Digital Signature Certificate (DSC) issued from any agency authorized by Controller of Certifying Authority (CCA), Govt. of India and which can be traced up to the chain of trust to the Root Certificate of CCA for the following work:

Description of work	Estimated Cost of Work (In Rs.)	Earnest Money (In Rs.)	Period of Completion (In days)
Design, Supply, Installation, Testing & commissioning of 30 KW Solar Rooftop Power Plant for CMPDI, RI-II office building at Dhanbad consisting of all Civil, Structural, Electrical and Mechanical Works and all other accessories and facilities required to make it complete in all respects.	23,15,538	24,000	180

2. Time Schedule of Tender:

Sl.No.	Particulars	Date	Time (IST)
a.	Tender Publication Date	Date and Time as mentioned in the website https://coalindiatenders.gov.in ,	
b.	Document download Start Date		
c.	Document download End Date		
d.	Bid Submission Start Date		
e.	Bid Submission End Date		
f.	Start Date for seeking Clarification on-line		
g.	Last Date for seeking Clarification on-line		
h.	Date of Pre-bid Meeting		
i.	Bid Opening Date		

For details of qualification requirements, bid security and complete tender document, visit our website www.cmpdi.co.in or <http://eprocure.gov.in/cppp>. Detailed Tender Notice is available at <https://coalindiatenders.gov.in>.

NOTE: End user portal agreement of CIL is applicable for CMPDI also

CENTRAL MINE PLANNING AND DESIGN INSTITUTE LIMITED

(A Subsidiary of Coal India Limited)

Koyla Bhawan, Koyla Nagar, Dhanbad-826005

DETAILED E -TENDER NOTICE

FOR THE WORK OF INSTALLATION OF SOLAR ROOFTOP POWER PLANT AT OFFICE
OF CMPDI RI-II, KOYLA BHAWAN, KOYLA NAGAR -826005

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Brief Scope of Work:

Description of work	Estimated Cost of Work (In Rs.)	Earnest Money (In Rs.)	Period of Completion (In days)
Design, Supply, Installation, Testing & commissioning of 30 KW Solar Rooftop Power Plant for CMPDI, RI-II office building at Dhanbad consisting of all Civil, Structural, Electrical and Mechanical Works and all other accessories and facilities required to make it complete in all respects.	23,15,538. 00 (Rupees Twenty Three Lakhs Fifteen Thousand Five Hundred Thirty Eight only)	24,000.00 (Rupees Twenty Four Thousand only)	180

2. Time Schedule of Tender:

Sl. No.	Particulars	Date	Time (IST)
a.	Tender Publication Date	Date and Time as mentioned in the website	
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i	Bid Opening Date		

3. Submission of EMD:

The bidder will have an option for submitting EMD through either ONLINE mode or OFFLINE mode.

In online mode the bidder can make payment of EMD either through net-banking from designated Bank/s or through NEFT/RTGS from any scheduled Bank. In case of payment through net-banking the money will be immediately transferred to the designated bank Account of CMPDIL. In case of payment through NEFT/RTGS the bidder will have to make payment as per the challan generated by system on e-procurement portal and will have to furnish online the UTR Numbers before submission of bid. Bidder will be allowed to submit his/her bid only when the EMD is successfully received in CMPDIL Bank account and the information flows from Bank to e-procurement system.

In Offline mode the bidder can make payment of EMD in the form of Bank Guarantee (BG) (if applicable) from any scheduled bank. The bidder will furnish all the details online i.e. BG Number, date of issue, expiry date, name of issuing bank and amount etc. regarding EMD. The bidders who opts for submission of EMD through BG (more than 5 Lakh) will opt for EMD exemption. The bidder will mention the amount of exemption for which he is required to submit the BG and he will upload the scanned copy of BG as pdf file at the space provided for EMD exemption document.

The information provided and document uploaded by L-1 bidder will be evaluated as per relevant clauses. If L-1 bidder qualifies all the criteria, he will be asked to submit the original BG either in person or by post which must be received in the office of Tender Inviting Authority within 7(seven) working days. If the bidder fails to submit the original BG then bidder will be debarred for 1(one) year from participating in future tender of CMPDIL.

The BG against EMD shall be taken for the tenders where EMD is amounting Rs. 5 Lakhs or more. In tenders with EMD less than Rs. 5 Lakh online mode of payment shall be enabled.

The date of validity of BG shall be mentioned in the NIT and it should counted as original End date of submission of Tender + Bid validity period + 90 days.

In case of exemption of EMD the scanned copy of document (attested by notary public) in support of exemption will have to be uploaded by the bidder during the bid submission. However, this option is to be enabled only in those cases where the exemption of EMD to some bidders is allowed as per NIT.

In case of discrepancy between the online submitted information regarding the instruments for EMD and the original BG being submitted by bidders, the later shall prevail if the instrument is found to be valid on the date of submission of the tender by the bidder and if it does not change the eligibility status of bidder.

The qualification in bid will also be subject to the receipt and acceptance of EMD within schedule date and time as mentioned in the NIT. CMPDI/CIL shall not be responsible for any postal delay in receipt of EMD.

- 4. Availability of Tender Documents:** Detailed Tender Notice & Tender Documents including terms and conditions of works shall be available on e-tendering portal <https://coalindiatenders.gov.in> and Tender Notice shall be available at websites www.cmpdi.co.in, or <http://eprocure.gov.in/cppp>.

5. **Clarification of Bid:** The bidder may seek clarification on-line within the specified period. However, the management will clarify as far as possible the relevant queries.
6. The bidders have to accept the on-line user portal agreement which contains the acceptance of all the Terms and Conditions of NIT and tender document, undertakings and the e-Procurement system through <https://coalindiatenders.gov.in> in order to become an eligible bidder. This will be a part of the agreement.
7. **Pre-Bid Meeting:** Not applicable.
8. **General Instructions for Submission of Tender:** A bidder should strictly comply with the following instructions:
 - (a) Bidders are required to submit offers on-line giving reference to this Tender Notice No. and Date, containing offers in two parts.
 - (b) Two Parts of the bid should contain the details as follows: -

Part-I: Letter of Bid, Information regarding Eligibility Criteria, Financial Turn-over, Confirmatory documents as mentioned in the NIT at Clause no. 10

Part-II: Prices, only in the Excel format, as indicated in the Tender Document.

9. **Eligible Bidders:**

The invitation for bid is open to all bidders including an individual, proprietorship firm, partnership firm, company or a Joint Venture having eligibility to participate as per eligibility criteria stipulated in clause No.10 of NIT and having Digital Signature Certificate (DSC) issued from any agency authorized by Controller of Certifying Authority (CCA), Govt. of India **and which can be traced up to the chain of trust to the Root Certificate of CCA.**

Note: Joint Venture: Two or three companies/contractors may participate in the tender as Joint Venture (JV). Joint Ventures must comply with the following requirements:

- i. The minimum qualification requirements for Joint Ventures: The qualifying criteria parameters e.g. experience, financial resources etc. of the individual partners of the J.V. will be added together and the total criteria should not be less than as spelt out in qualification criteria.
- 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. Joint Venture Agreement should legally bind all partners jointly and severally.
- iv. 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 JV Agreement must include 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 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 Partner.
- 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.
- x. The J.V. agreement may specify the share of each individual partner for the purpose of execution of this contract. This is required for the sole purpose of apportioning the value of the contract to that extent to individual partner for subsequent submission in other bids if he intends to do so for the purpose of the qualification in that tender.

10. **Eligibility Criteria:**

A. **Work Experience**

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.

(In case the bidder is not a prime contractor but a sub-contractor, the bidder's experience as sub-contractor will be taken into account if the contract in support of qualification is a sub-contract in compliance with the provision of such sub-contract in the original contract awarded to prime contractor.)

The work experience of the bidder for those works only shall be considered for evaluation purposes, which are completed on or before the last day of month previous to one in which e-Tender has been invited (i.e. e-Publication date of NIT). The experience

of incomplete/ongoing works as on the last date of eligibility period will not be considered for evaluation.

While considering the value of completed works, the full value of completed works will be considered whether or not the date of commencement is within the said 7 (seven) years period.

The cost of completed works shall be given a weight age to bring them at current price level by adding 5% for each completed year (total number of days/365) after the end date of experience (date of completion of work) till one year before the last day of month previous to one in which e-Tender has been invited.

The definition of similar work shall be as follows:

“
.....
.....”

The undertaking for execution of similar works is to be uploaded in the format given in Section-3.

In respect of the above eligibility criteria, the bidders are required to furnish the following information on-line:

- i) Start date & End date of each qualifying experience (similar work)
- ii) Agreement Number/Work Order Number of each experience
- iii) Work Order Issuing authority of each experience
- iv) Percentage (%) share of each experience (100% in case of an individual/ proprietorship firm or a partner in a partnership firm and the actual % of share in case of a Joint Venture)
- v) Executed Value of work against each experience
- vi) Confirmation in the form of Yes/No regarding submission of similar work experience as defined in the NIT.

Note: In case the bidder is a Joint Venture, the work experience of any one, two or three of the individual partners of JV may be furnished as the work experience of the bidder. **Joint Venture, shall be allowed for participation in the bid with estimated cost above Rs. 2.0 Crores.**

The above qualification criteria shall be fulfilled by JV in the following manner:

The qualifying criteria parameter e.g. experience of the individual partners of the J.V will be as deliberated hereinafter towards fulfillment of qualification criteria related to experience.

- a) In case of completion of single work of similar nature costing, not less than the amount equal to 80% of the estimated cost put to tender:
- i) Any of the JV partner shall have the experience of having completed successfully a single work of similar nature equal to 80% of the estimated cost put to tender.

Or

b) In case of completion of two works of similar nature each costing not less than the amount equal to 50% of the estimated cost put to tender:

i) Any one partner can match the above requirement.

Or

ii) At least two partners should each have completed at least one work of similar nature each costing not less than the amount equal to 50% of the estimated cost put to tender.

Or

c) In case of completion of three works of similar nature, each costing not less than the amount equal 40% of the estimated cost put to tender:-

i) Any one partner can match the above requirement.

Or

ii) Any two partners shall match the above requirement through completion of at least one work of similar nature each costing not less than the amount equal 40% of the estimated cost put to tender:-

Or

iii) All the three partners shall match the above requirement through completion of at least one work of similar nature each costing not less than the amount equal 40% of the estimated cost put to tender.

However, during fulfillment of any of the above criteria one of the partner, who is the lead partner shall have:

i) More than 50 (fifty) % share in J.V.

And

ii) Experience of having completed successfully a single work of similar nature equal to at least 40% of estimated cost put to tender

In case the bidder is a Joint Venture, the work experience of any one, two or three of the individual partners of JV may be furnished as the work experience of the bidder.

B. Financial Turn-over:

Average annual financial turnover during the last 3 (three) years ending 31st March of the previous financial year should be at least 30% of the estimated cost.

(The "Previous Financial Year" shall be computed with respect to the e-Publication date of NIT).

If any bidder does not furnish the turnover value for any financial year out of the last 3 financial years, the turnover for that financial year shall be taken as 'Zero' and the average annual financial turnover shall be calculated accordingly.

The intending bidder must submit documentary evidence in support of above in the form of certificate from Chartered Accountant or audited balance sheet or suitable acceptable documents.

If the audited balance sheet for the immediately preceding year is not available in case of tender notified before 30th September, audited balance sheet/ profit and loss statement and other financial statement of the three financial years immediately

preceding the previous financial year may be adopted for evaluating the credentials of the bidder.

Financial turnover shall be given simple weightage of 5% per year to bring them at current price level, while evaluating the qualification requirement of the bidder. Such weightage shall be considered from the end date of financial year. Updating will be considered for full or part of the year (total no. of days/365) i.e. considering 365 days in a year, till the last day of month previous to one in which bid has been invited.

Joint Ventures shall meet the above eligibility requirement, in the following manner:

The qualifying criteria parameter e.g. financial resources (Turnover) of the individual partners of the J.V. will be added together, for the relevant financial year, and the total should not be less than as spelt out above.

C. Net Worth:

The Net Worth of the bidder based on latest audited annual accounts as on 31st March 2014 (e.g. for tenders floated in the financial year 2015-16, this will beas on 31st March 2014) shall not be negative.

The Net Worth shall be equal to: - Aggregate of the Capital + Free Reserve ± Accumulated Profit/Losses. Offer of the bidder showing Negative Net Worth will be rejected (Net Worth provision applicable for tendered works with estimated cost above 100 lakhs).

The intending bidder must submit documentary evidence in support of above in the form of certificate from Chartered Accountant based on latest audited Balance Sheet.

Joint Ventures shall meet the above eligibility requirement, in the following manner:

The qualifying criteria parameter e.g. net worth (Turnover) of the individual partners of the J.V. will be added together, for the relevant financial year, and the total should not be negative.

If the bidder is a subsidiary of a company, the experience and resources of the holding company or its other subsidiaries will not be taken into account. However, if the bidder is a holding company, the experience and resources of its wholly owned subsidiaries will be taken into consideration.

Even though the bidders meet the above qualifying criteria, they are subject to be disqualified:

- (i) If they have made misleading or false representations in the forms, statements and attachments submitted as proof of the qualification requirements.
- (ii) If they have record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, or financial failure etc.

Notes: (Not a part of bid document)

I) The qualification criteria shown above are to be considered as a standard for normal works.

- 2) For specialized works, based on requirement, the subsidiary may add or modify with the approval of competent authority.
- 3) The documents to be furnished by the bidder to prove that he is satisfying the qualification criteria laid down should all be in the bidders name except in cases where though the name has changed, owners continued to remain the same and in cases of amalgamation of entities and when a holding company relies on the credential of its wholly owned subsidiaries.

In respect of the above eligibility criteria the bidders are required to furnish the following information online:

- i). Annual financial turnover of each of the last 3 years ending 31st March of the previous financial year.
- ii). Name of the Chartered Accountant issuing the Profit and Loss A/c or the Turnover certificate.
- iii). Membership Number of the Chartered Accountant.
- iv). Date of issue of financial turnover certificate by CA.

D. Permanent Account Number(PAN):

The bidder should possess Permanent Account Number (PAN) issued by Income Tax Department, Govt. of India.

In respect of the above eligibility criteria the bidders are required to furnish the following information online:

Confirmation regarding possessing of Permanent Account Number (PAN) issued by Income Tax Department, Govt. of India in the form of Yes / No

Note: In case the bidder is a Joint Venture, the PAN Number of each individual partner of JV will be furnished.

E. VAT/Sales Tax Registration on Works Contract:

The bidder should possess a VAT/ Sales Tax Registration on works contract issued by Sales Tax department of any Indian State/UT.

In respect of the above eligibility criteria the bidders are required to furnish the following information online:

Confirmation regarding possessing of VAT/ Sales Tax Registration on Works Contract issued by Sales Tax department of any Indian State in the form of Yes / No

Note: In case the bidder is a Joint Venture, the TIN/Sales Tax Registration Number of each individual partner of JV will be furnished.

F. Service Tax Registration Certificate:

The bidder should possess a Service Tax Registration Certificate issued by Govt. Deptt. of any Indian State.

In respect of the above eligibility criteria the bidders are required to furnish the following information online:

Confirmation regarding possessing of Service Tax Registration Certificate issued by Sales Tax /Service Tax department of any Indian State in the form of Yes / No

G. Provident Fund: The bidder should possess a Provident Fund Registration Certificate issued by Govt. Dept. of any Indian State.

i). Confirmation regarding possessing of Provident Fund Registration Certificate issued by Govt. Dept. of any Indian State in the form of Yes / No

H. An Affidavit:

An Affidavit on a non-judicial stamp paper of appropriate value regarding genuineness of the information furnished by him on-line and authenticity of the scanned copy of documents **uploaded** by him on line in support of his eligibility, as per the format given in the bid document at Section - 3

I. Legal Status of the bidder:

Any one of the following documents:

1. Affidavit or any other document to prove proprietorship/individual status of the bidder.
2. Partnership deed containing name of partners.
3. Memorandum & Article of Association with certificate of incorporation containing name of bidder
4. Joint Venture agreement containing name of partners and lead partner, Power of Attorney to the Lead Partner and share of each partner.

J. Digital Signature Certificate (DSC):

If the bidder himself is the DSC holder bidding on-line, then no document is required. However, if the DSC holder is bidding online on behalf of the bidder, then the Power of Attorney or any sort of legally acceptable document for the authority to bid on behalf of the bidder is required.

K. Banning:

The bidders would give a declaration that they have not been banned or delisted by any Govt. or Quasi Govt. agencies or PSUs. If a bidder has been banned or delisted by any Govt. or Quasi Govt. agencies or PSUs, 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.

~~K. The tenderers should have valid electrical contractor's licence issued by Govt. licensing Board. In case tenderer is a partnership firm, the licence shall be valid for that partnership firm. The tenderer shall submit photocopy of complete license showing name of the firm, name of the contractor/s, name and address of the firm. The tenderer shall provide proof of validity of his electrical contractor's license for proprietorship firm or partnership firm or limited company as the case may be.~~

11. **Methodology of Submission Of Bid And Its Evaluation:**

- a In order to submit the Bid, the bidders have to get themselves registered online on the e-Procurement portal (<https://coalindiatenders.gov.in>) with valid Digital Signature Certificate (DSC) issued from any agency authorized by Controller of Certifying Authority (CCA), Govt. of India and which can be traced up to the chain of trust to the Root Certificate of CCA. The online Registration of the Bidders on the portal will be free of cost and one time activity only. If the bidder is an individual person, then he should register himself under “Individual” category and if the bidder is a proprietorship firm/partnership firm/Joint Venture/Company then registration should be under “Corporate” category. The registration should be in the name of bidder, whereas DSC holder may be either bidder himself or his duly authorized person.
- b The bidders have to accept, unconditionally, the online user portal agreement which contains the acceptance of all the Terms and Conditions of NIT including General and Special Terms & Conditions and other conditions, if any, along with on-line undertaking in support of the authenticity of the declarations regarding the facts, figures, information and documents furnished by the Bidder on-line in order to become an eligible bidder. No conditional bid shall be accepted.

NOTE: End user portal agreement of CIL is applicable for CMPDI also.

c **General Technical Evaluation:**

The bidder has to fulfil/comply to all the terms of ‘General Technical Evaluation’ (GTE).

- d **Letter of Bid:** The format of Letter Of Bid (LOB) (as given in the NIT at section 3 will be downloaded by the bidder and **will be printed/typed on their letter head**. The scanned copy of this document will be uploaded by the bidder during bid submission in Cover-I. This will be the covering letter of the bidder for his submitted bid. The content of the “Letter of Bid” uploaded by the bidder must be the same as per the format downloaded from website and it should not contain any other information.

If there is any change in the contents of Letter of Bid uploaded by bidder as compared to the format of Letter of Bid uploaded by the department with NIT document, then the bid will be rejected.

The Letter of bid will be digitally signed by DSC holder submitting bid online and it does not require any physical signature. However, if the Letter of Bid (LoB) bears the physical signature in addition to the digital signature of DSC holder, it will be accepted without questioning the identity of person signing the Letter of Bid.

If there is any change in the contents of Letter of Bid uploaded by bidder as compared to the format of Letter of Bid uploaded by the department with NIT document, then the bid will be rejected.

e **Confirmatory documents:**

All the confirmatory documents as enlisted in the NIT in support of online information submitted by the bidder are to be uploaded in Cover-I by the bidder

while submitting his/her bid (Refer Table at Point No 36 below. The Bidder will have to give an undertaking online that if the information /declaration /scanned documents furnished in support of the same in respect of Eligibility Criteria are found to be wrong or misleading at any stage, they will be liable to punitive action. Any other document uploaded which is not required as per the terms of the Tender Document shall not be considered.

f Price bid:

The Price bid containing the Bill of Quantity will be in .xls format (password protected) and will be uploaded during tender creation. This will be downloaded by the bidder and he will quote the rates for all items on this Excel file. Thereafter, the bidder will upload the same Excel file during bid submission in Cover-II. The bidder will have to quote for all the tendered items and the L-1 will be decided on overall quoted value (i.e. Cost to company). The Price-bids of the tenderers will have no condition. The Price Bid which is incomplete and not submitted as per instruction given above will be rejected.

The Price Bids of the bidders will have no condition. The Price Bid which is incomplete and not submitted as per instruction given above (and also online) will be rejected. Any alteration/ modification in the excel format may lead to rejection of the bid.

Tenderers should quote their rates excluding the impact of Service-Tax. Applicable Service Tax payable by the Tenderer / Service Provider will be reimbursed on production of documentary evidence towards payment of such Service Tax to the Government Exchequer.

The Tenderer (Service Provider) will have to raise separate bill for claiming the reimbursable amount of Service Tax paid by him / them. Such bills should necessarily contain Contractor's Service Tax Registration Number with details of Range / Division / Commissioner ate address with documentary evidence of payment of Service Tax to the Government Exchequer. Separate challans should have to be submitted for separate services with specific mention of the services rendered to the CMPDI.

In case of any default / delay in payment of Service Taxes, wrong claim of CENVAT credit etc. by the Contractor / Service Provider, the CMPDI would not be responsible and in no case any such claim of the Contractor / Service Provider will be entertained by CMPDI.

g Cost of Bidding:

The Bidder shall bear all costs associated with the preparation and submission of the bid and CMPDIL will in no case be responsible and liable for those costs.

h Clarification of Bid:

The Bidder may seek clarification online within the specified period. The identity of the Bidder will not be disclosed by the system. The Department will clarify as far as possible the relevant queries of Bidders. The clarifications given by Department will

be visible to all the Bidders intending to participate in the tender. The clarifications may be asked from the next day of e-Publication of NIT. The last date for seeking clarification by Bidders / the last date of giving clarification on-line will be as per the TIME SCHEDULE OF TENDER as available on the website: <http://coalindiatenders.gov.in>. No other mode of seeking clarification shall be entertained.

i **Modification / Withdrawal of Bid :**

Modification of the submitted bid shall be allowed online only before the deadline of submission of tender and the Bidder may modify and resubmit the bid on-line as many times as he may wish.

Bidders may withdraw their bids online within the end date of submission. Modification/ withdrawal of the bid is **not permitted** after bid opening.

12. All bids are to be submitted on-line on the website <https://coalindiatenders.gov.in>. No bid shall be accepted off-line.

13. **Tender Status:**

It will be the bidder's responsibility to check the status of their Bid online regularly, after the opening of bid till award of contract. Additionally, information shall also be sent by system generated e-mail and SMS at nodal points (Date of bid opening, Requisition for Clarification on Confirmatory document from L-1 bidder, award of work etc.). No separate communication will be required in this regard. Non-receipt of e-mail and SMS will not be accepted as a reason of non-submission of Confirmatory documents within prescribed time. The Tender Status will be in public domain and anyone visiting the site can view it by identifying the tender.

14. It is the bidder's responsibility to comply with the system requirement i.e. hardware, software and Internet connectivity at bidder's premises to access the e-tender portal. Under any circumstance, CMPDIL shall not be liable to the bidders for any direct/indirect loss or damages incurred by them arising out of incorrect use of the e-tender system or Internet connectivity failures.

15. In cases where the number of bids received are less than three, the tender submission date will be extended initially by two days and thereafter by five days automatically by the system.

16. **Opening of bids:**

Tender (Cover-I and Cover-II) will be decrypted and opened online by the "Bid Openers" with their Digital Signature Certificates on the prescheduled date & time of Tender Opening. After opening of the tender on the scheduled date & time of opening, the system will automatically evaluate the particulars as contained in the GTE.

17. After opening of the bids, GTE, BOQ and all other documents uploaded by the eligible bidders get opened and comparative statement of prices will be generated by the system.

18. **Evaluation of Bid:**

- i) After opening of the tender on the scheduled date and time of opening, the system will automatically evaluate the particulars as contained in the GTE, TPS containing other Commercial parameters.
 - ii) Upon opening of the bids, GTE, TPS, BOQ and all other documents uploaded by the eligible Bidders get decrypted and a comparative statement of prices will be generated by the system.
 - iii) The supporting documents **only of the L-1 Bidder** will be downloaded for evaluation by the Tender Inviting Authority.
 - iv) After evaluation of the uploaded documents, shortfall documents, if required, will be sought from the L-1 bidder. For this purpose, maximum 2 chances, each of 10 x 24 hours duration shall be given.
19. The supporting documents only of the L-1 bidder will be downloaded for evaluation by the Tender Inviting Authority.
- In case the Tender Committee finds that there is some deficiency in uploaded documents by L-1 bidder then the same will be specified online by Evaluator clearly indicating the omissions/ shortcomings in the uploaded documents and indicating start date and end date allowing 10 days (10 x 24 hours) time for online re-submission by L-1 bidder. The L-1 bidder will get this information on their personalized dash board under "Upload confirmatory document" link. Additionally, information shall also be sent by system generated email and SMS, but it will be the bidder's responsibility to check the updated status/information on their personalized dash board regularly after opening of bid. No separate communication will be required in this regard. Non-receipt of e-mail and SMS will not be accepted as a reason of non-submission of documents within prescribed time. The bidder will upload the scanned copy of all those specified documents duly attested in support of the information/ declarations furnished by them online within the specified period of 10 days. If the L-1 bidder fails to submit the specified document/s in 10(ten) days, 10 more days (10 x 24 hours) of time may be given by Evaluator clearly indicating the omissions/shortcomings in the uploaded documents and indicating start date and end date for submission of such document/s.
- In case the L-1 bidder submits requisite documents online as per NIT, then the bidder will be considered eligible for award of Contract.
20. If the techno-commercial acceptability of L-1 bidder is established upon verification of the uploaded documents and short-fall documents if any, the case shall be considered by the tender committee for further decision.
- No additional time will be allowed to the bidder for on-line submission of documents. The tender will be evaluated only on the basis of documents uploaded by L-1 bidder online. The L-1 bidder is not required to submit hard copy of any document through offline mode. Any document submitted offline will not be given any cognizance in the evaluation of tender.
- In case the L-1 bidder submits requisite documents online as per NIT, then the bidder will be considered eligible for award of contract.

In case the L-1 bidder fails to submit requisite documents online as per NIT or if any of the information/ declaration furnished by L-1 bidder online is found to be wrong by Tender Committee during evaluation of scanned documents uploaded by bidder, then Documents will be asked from L-2 bidder. This process will continue sequentially till techno-commercially acceptable L-1 is established.

In case of defaulting bidders, Penal action will be taken as per table mentioned below.

It will be the responsibility of L-1 Bidder to upload legible/clearly readable scanned copy of all the required documents as mentioned above.

21. The following penalties shall be imposed on the defaulting bidders:

Sl.	Situation	Penal Provisions
(i)	L-1 bidder is a defaulter.	100% of EMD amount or ₹1.00 Lakh whichever is lower, is forfeited.
(ii)	Failure to submit offline EMD in the form of B.G.	In case of failure to submit original BG (offline submission of EMD) within 7 days, bidder will be debarred for 1 Year.
(iii)	L-1 bidder happens to be defaulter in 2 tenders issued by the same Tender Inviting Authority within a span of 1 year.	If the bidder defaults in two tenders under same Tender Inviting Authority in a span of one year, 100% of EMD amount of 2 nd tender, is forfeited.

Note: * The penal provisions will be squarely applicable to all those firms whose documents are examined on account of treating them as L-1 successively.

22. The bidders will upload the scanned copy of the following specified documents duly attested in support of the information/ declarations. However, the affidavit may be scanned and uploaded as it is, without any additional self-certification and attestation by Notary public.

Sl. No.	Eligibility Criteria	Scanned copy of documents (Attested) to be uploaded by L-1 bidder in support of information/ declaration furnished online by the bidder against Eligibility Criteria (CONFIRMATORY DOCUMENT)
1.	Work Experience (Ref. Clause No 8 (A) of NIT)	Satisfactory Work Completion Certificate issued by the employer against the experience of similar work containing all the information furnished by bidder on-line.
2.	Financial Turnover (Ref. Clause No 8 (B) of NIT)	Financial Turnover certificate for last 3 (three) financial years issued by a Practicing Chartered Accountant having a membership number with Institute of Chartered Accountants of India. (In case of JV, turnover certificate for each individual partner of JV)
3	Permanent Account Number (Ref. Clause No 8 (C) of NIT)	PAN card issued by Income Tax department, Govt.of India (In case of JV, PAN card for each individual partner of JV)

4	VAT/Sales Tax Registration (Ref. Clause No 8 (D) of NIT)	VAT/Sales Tax Registration Certificate issued by Sales Tax Department of any Indian State (In case of JV, VAT/Sales Tax Registration Certificate for each individual partner of JV)
5	Service Tax (Ref. Clause No 8 (E) of NIT)	Service Tax Registration Certificate issued by Govt. Dept of any Indian State
6	Provident Fund (Ref. Clause No 8 (F) of NIT)	Provident Fund Registration Certificate issued by Govt. Dept of any Indian State
7	Affidavit (Ref. Clause No 8 (G) of NIT)	An Affidavit on a non-judicial stamp paper of minimum value of Rs.5 regarding genuineness of the information furnished by him on-line and authenticity of the scanned copy of documents uploaded by him on-line in support of his eligibility, as per the format given in the bid document at Section 3.
8.	Legal Status of the bidder (Ref. Clause No 8 (H) of NIT)	Any one of the following document : 1.Affidavit or any other document to prove proprietorship/Individual status of the bidder. 2.Partnership deed containing name of partners 3.Memorandum & Article of Association with certificate of incorporation containing name of bidder 4. Joint Venture agreement containing name of partners and lead partner, Power of Attorney to the Lead Partner and share of each partner.
9.	Digital Signature Certificate (DSC) (Ref. Clause No 8 (I) of NIT)	If the bidder himself is the DSC holder bidding on-line then no document is required .However, if the DSC holder is bidding online on behalf of the bidder then the Power of Attorney or any sort of legally acceptable document for the authority to bid on behalf of the bidder
10	Banning (Ref. Clause No 8 (J) of NIT)	Declaration by the bidders that they have not been/have been banned or delisted by any govt. or quasi-govt. agencies or PSU, as per the Affidavit format given in the bid document at Section 3
11	Electrical contractor's licence (Ref. Clause No 8 (K) of NIT)	The tenderers should have valid electrical contractor's licence issued by Govt. licensing Board. In case tenderer is a partnership firm, the licence shall be valid for that partnership firm. The tenderer shall submit photocopy of complete license showing name of the firm, name of the contractor/s, name and address of the firm. The tenderer shall provide proof of validity of his electrical contractor's license for proprietorship firm or partnership firm or limited company as the case may be.
12	Any other document to support the qualification information as submitted by bidder on-line.	
Note: Only one file in .pdf format can be uploaded against each eligibility criteria. Any additional/other relevant documents to support the information/declaration furnished by bidder online against eligibility criteria may also be attached by the bidder in the same file to be uploaded against respective eligibility criteria.		

23. 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 costs.

24. The tenderer shall closely study all specifications in detail, which govern the rates for which he is tendering.

25. Currencies of Bid and Payment:

The unit rates and prices shall be quoted by the Bidder entirely in Indian Rupees (INR) only.

26. Validity of offer:

The rates offered in Part-II shall be valid for **120 (one hundred twenty) days** from the End date of bid submission.

27. One Bid per Bidder:

Each Bidder shall submit only one Bid, either individually, or as a partner in a partnership firm or a partner in a Joint Venture or a public limited firm. A Bidder who submits or participates in more than one Bid (other than as a sub-contractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.

In exceptional circumstances, prior to expiry of the original time limit, the Employer may request the bidders to extend the period of validity for a specified additional period. The employer's request and the bidder's responses shall be made in writing. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid but will be required to extend the validity of his bid security/ EMD (if submitted in the form of BG) for a period of 28 days beyond the extended validity of the bid.

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 take action as per clause No.50 (Modification and Withdrawal of Bid) of NIT

28. Modification and Withdrawal of Bid:

Modification of the submitted bid shall be allowed on-line only before the deadline of submission of tender and the bidder may modify and resubmit the bid on-line as many times as he may wish.

Bidders may withdraw their bids online within the end date of bid submission and their EMD will be refunded. However, if the bidder once withdraws his bid, he will not be able to resubmit the bid in this tender. For withdrawal of bid after the end date of bid submission, the bidder will have to make a request in writing to the Tender Inviting Authority. Withdrawal of bid may be allowed till issue of work order/LOA with the following provision of penal action:

- a. If the request of withdrawal is received before online notification for opening of price bid, the EMD will be forfeited and bidder will be debarred for 6 months from participating in tenders in CIL. The Price-bid of remaining bidders will be opened and the tender process shall go on.
 - b. If the request of withdrawal is received after online notification for opening of price bid, the EMD will be forfeited and the bidder will be debarred for 1 year from participating in tenders in CIL. The Price-bid of all eligible bidders including this bidder will be opened and action will follow as under
 - i). If the bidder withdrawing his bid is other than L-1, the tender process shall go on.
 - ii). If the bidder withdrawing his bid is L-1, then re-tender will be done.
(The penal action against clause (a) & (b) above will be enforced from the date of issue of such order.)
29. 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.
30. The Company reserves its right to allow Public Enterprises purchase preference facility as admissible under prevailing policy.

This Tender Notice shall be deemed to be part of the Contract Agreement. The Empanelment Certificate, PSARA Acknowledgement, Office Memorandum 28 (03)/2012/D(RES-I) dated 16 January 2013, and Sponsorship letter No. 2112/SA/CMPDIL/2015/ Jharkhand/3052/3352/3680/Emp Dt. 29 Oct.15 and any other document uploaded on portal as NIT document forms an integral part of this NIT and shall also form a part of the contract agreement.

31. **Subletting/Sub-vending:**

Subletting any part or whole of the contract to any Firm/Individual/Teams is not permitted. The ESM Officer shall comply with the Para-25 of DGR Guidelines and be present in all dealings with Principal Employer & No dealing through representatives on Power of Attorney will be permitted. Any deviation in this regard may be considered a Breach-of-Contract and shall be dealt with as per company regulations.

32. The tenderer shall have to ensure implementation of DGR guidelines in respect of CMPF/ EPF, if applicable, in respect of the security guards deployed by him as detailed in the tender document.
33. 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. The Company/employer will follow the seniority order as mentioned in the letter of Jt. Director (Emp) vide No. 2112/SA/CMPDIL/2013/Jharkhand/2672/2863/2867/Emp dated 06th Aug 2013, if and when required/applicable.

Matters relating to any dispute or difference arising out of this tender and subsequent contract awarded based on this tender shall be subject to the jurisdiction of District Court, where the subject work is to be executed.

34. Refund of EMD:

The bidder shall furnish, as part of his bid, an Earnest Money/Security deposit of the amount as shown in E-Tender Notice and in the form as deliberated in CL.3 Sec.1 of E-tender notice.

Any bid not accompanied by an acceptable EMD shall be rejected by the employer as non-responsive.

In case the tender is cancelled the EMD of all the participating bidders will be refunded unless it is forfeited by the department.

If the bidder withdraws his/her bid online (i.e., before the end date of submission of tender) then his/her EMD will be refunded automatically after the opening of tender.

If the refund of EMD is not received by the bidder in the account from which the EMD has been made due to any technical reason then it will be paid through conventional system of e-payment. For this purpose, if required, Tender Inviting Authority will obtain the Mandate Form from the Bidder.

The EMD of successful bidder (after award of contract) will be retained by CMPDI and released after submission of the security deposit in case of all tenders related to procurement of goods. In case of works and services, the EMD of successful bidder will be retained by CMPDI and adjusted against performance security deposit. However, EMD deposit by L-1 bidder in form of Bank Guarantee will be discharged when the bidder furnishes the required performance security deposit and signs the agreement.

The EMD deposited with the company/employer shall not carry any interest.

35. Site Visit:

The Bidder, at the Bidder's own responsibility, cost and risk, is encouraged to visit and examine the Site of works and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a contract for execution of the works. The cost of visiting the Site shall be at the Bidder's own expense.

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 he actually visits the site/area or not and has taken all the factors into account while quoting his rates.

36. 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 costs.

37. 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.

38. 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.

39. The tenderer shall closely study all specifications in detail, which govern the rates for which he is tendering.

40. **Currencies of Bid and Payment:**

The unit rates and prices shall be quoted by the Bidder entirely in Indian Rupees only.

41. The work should be completed within **60** days and the date of commencement of the work will be reckoned from the actual date of handing over the site for this purpose.
42. 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.
43. The Bidder, whose Bid has been accepted, will be notified of the award on-line and also by registered post by CMPDI prior to expiration of the bid validity period. The L-1 bidder will get the information regarding award of work on their personalised dashboard on-line.

44. **Validity of offer:**

The validity period of the tenders shall be 180 (One Hundred Eighty) days from the end date of bid submission.

In exceptional circumstances, prior to expiry of the original time limit, the Employer may request the bidders to extend the period of validity for a specified additional period. The employer's request and the bidder's responses shall be made in writing. A bidder may refuse the request without forfeiting his bid security. A bidder agreeing to the request will not be required or permitted to modify his bid but will be required to extend the validity of his bid security/EMD (if submitted in the form of BG) for a period of 28 days beyond the extended validity of the bid.

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 take action as per clause No.30 (Modification and Withdrawal of Bid) of NIT.

45. 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 at his own cost. 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.

46. **Bid Prices:**

The Bidders shall offer for the whole work based on the priced Bill of Quantities submitted by the bidder. However, the employer reserves the right to allot part of the work at their discretion and no claims, whatsoever, shall be entertained in this regard.

The Bidder shall fill-in rates and prices for all items of the work described in the Bill of Quantities. The rates and prices quoted by the Bidder shall be fixed for the duration of the contract and shall not be subject to variations on any account except to the extent variations allowed as per the conditions of the contract of the bidding document. The base diesel price will be specified in the BOQ by the company.

47. (a) All duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause as applicable on the last date of submission of tender, shall be included in the rates, prices and total Bid price submitted by the Bidder. All incidental, overheads etc. as may be attendant upon execution and completion of works shall also be included in the rates, prices and total Bid price submitted by the bidder.

However such duties, taxes, levies etc, which is notified after the last date of submission of tender and /or any increase over the rate existing on the last date of submission of tender shall be reimbursed by the Company on production of documentary evidence in support of payment actually made to the concerned authorities. Any decrease in duties, taxes, levies etc. as above shall be recovered by the Company.

The company reserves the right to deduct/withhold 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.

(b).Service Tax applicable for this work/service will be paid by the Contractor; hence the service tax applicable for this work/service should be shown separately in the BOQ/Price Bid to be quoted by the bidder.

After the award of work, Contractor will have to submit VAT Registration certificate on works contract from the state of Jharkhand, before execution of agreement.

48. In case the works / service is awarded to a joint venture participating in the tender they have submit VAT, PAN and Service Tax registration (as applicable in the tender and for the bidder status) on the name of the Joint Venture after Award of the Works / Service at the time execution of agreement / before the payment of first running on account bill.
49. 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.
50. The Company reserves its right to allow Public Enterprises purchase preference facility as admissible under prevailing policy.
51. This Tender Notice shall be deemed to be part of the Contract Agreement. The “General Terms & Conditions”, Additional Terms & Conditions, Special Terms & Conditions (if any), Technical Specifications, drawings (if any) and any other document uploaded on portal as NIT document forms an integral part of this NIT and shall also form a part of the Contract agreement.
52. 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.

53. The Company does not bind itself to accept the lowest tender and reserves the right to reject any or all of 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.

54. Negotiations:

Negotiations will be held only if the lowest rate received is not reasonable and 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 (L-1) without post tender negotiations if the rates are reasonable

If the rates are not reasonable, negotiations with L-1 only may be undertaken to arrive at a reasonable rate.

55. Notification of Award and Signing of Agreement:

The Bidder, whose Bid has been accepted, will be notified of the award on-line and also by registered post by the Employer prior to expiration of the Bid validity period. The L-1 bidder will get the information regarding award of work on their personalized dashboard on-line. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution and completion of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").

The notification of award will constitute the formation of the Contract, subject only to the furnishing of a Performance Security/Security Deposit in accordance with Clause-4 of General terms & Conditions of the tender document.

The Agreement will incorporate all agreements between the Employer and the successful Bidder within 28 days following the notification of award along with the Letter of Acceptance.

56. Matters relating to any dispute or difference arising out of this tender and subsequent contract awarded based on this tender shall be subject to the jurisdiction of District Court, where the subject work is to be executed.

57. Non-disclosure/ Confidentiality clause:

The bidder will not at any time during pendency of contract or afterwards, disclose to any person any information as to documents, components, parts, information, drawings, data, sketches, plans, programs, specifications, techniques, processes, software, inventions and other materials, both written and oral, of a secret, confidential or proprietary nature, including without limitation any and all information relating to finance, invention, research, design or development of information system and any supportive or incidental subsystems, and any and all subject matter claimed in or disclosed by any patent application prepared or filed by or on behalf of CMPDI, in any jurisdiction, and any amendments or supplements thereto. The bidder should understand that any breach of this clause would constitute a serious offence for which appropriate legal action may be taken to ensure the enforcement of confidentiality

clause.

CMPDI also desires that the bidder shall hold in trust and confidence, and not disclose to others or use for its own benefit or for the benefit of other, any Proprietary Information which is disclosed to the bidder by CMPDI at any time during the agreement / award of work / execution of work and thereafter. The bidder shall disclose Proprietary Information received under the contract to person within its organization only if such persons (i) have a need to know and (ii) are bound in writing to protect the confidentiality of such Proprietary Information. This clause shall survive and continue after any expiration or termination of the contract and shall bind the contractor, its employees, agents, representatives, successors, heirs and assigns.

58. The tenderer shall have to ensure implementation of CMPF/EPF, if applicable, in respect of the workers deployed by him.

If services are not found satisfactory, CMPDI reserves the right to cancel the contract within three-months.

Regional Director
RI-II, Koyla Bhawan Complex,
Koyla Nagar, Dhanbad-826005

SECTION -2

GENERAL TERMS & CONDITIONS

1. Definitions

i) The word "Employer" or "Company" or "Owner" wherever occurs in the conditions, means the.....Limited, represented at Head Quarters of the Company by the or his authorized representatives or any other officer specially deputed for the purpose who will employ the contractor.

ii) The word "Principal Employer" wherever occurs, means the officer nominated by the Company to function on its behalf.

iii) The word "Contractor/ Contractors" wherever occurs means the successful bidder /bidders 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 and any constitutional, or otherwise change of which shall have prior approval of the employer.

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 on its 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 authorized 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 / lump sum 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 rate(s) / percentage rate(s) 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 person 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 / e-mail to the last business address known to him who gives the notice.

xiv) "The constructional plant" means all appliances, tools, plants or machinery of 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.

xix) "Drawings"/"Plans" shall mean all:

- a. drawings furnished by the owner with the bid document, if any, as a basis for proposals,
- b. working drawings furnished by the Owner after issue of letter of acceptance of the tender to start the work,
- c. subsequent working drawings furnished by the owner in phases during progress of the work, and
- d. drawings, if any, submitted by the contractor as per provision of the contract and duly approved by the owner.

xx) "Codes" shall mean the following, including the latest amendments, and/or replacements, if any:

- a. Bureau of Indian Standards relevant to the works under the contract and their specifications.
- b. Indian Electricity Act and Rules and Regulations made there under.
- c. Indian Mines Act and Rules and Regulations made there under.
- d. Any other Act, rule and regulations applicable for employment of labour, safety provisions, payment of provident fund and compensation, insurance etc.

2. Contract Documents and Miscellaneous Provisions:

The following documents shall constitute the contract documents:

- i) Articles of Agreement.
- ii) Letter of Acceptance of Bid/ Work Order indicating deviation, if any, from the conditions of contract incorporated in the tender document issued to the bidder.
- iii) Notice Inviting Tender and Instructions to Bidders.
- iv) Conditions of Contract including General Terms & Conditions of contract, Additional Terms & Conditions, Special Terms & Conditions, and Commercial Terms & Conditions etc. - as applicable.
- v) Frozen terms & conditions / technical parameters and revised offer, if any.

- vi) Specifications/ scope of Work, if any.
- vii) Schedule of quantities (or Bill of Quantities) along with accepted rate.
- viii) Contract drawings and work programme.
- ix) Safety Code etc. forming part of the tender,
- x) Integrity Pact (If applicable).

2.1 The contractor shall enter into and execute contract agreement in the prescribed form. 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 additional copy, cost to be charged. 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 authorized 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 The local Court, where the subject work is to be executed shall have exclusive jurisdiction in all matter arising under this contract.

2.4 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.

2.5 Acceptance of Offer :

“Letter of Acceptance”- is an acceptance of offer by the company. The tenderer should acknowledge the receipt of the order within 10 days of mailing of LOA 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.

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.
- e) BIS 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.

4.00 Security Deposit:

4.1 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.

4.2 Performance Security should be 5% of contract amount and should be submitted within 28 days of issuance of LOA by the successful bidder in any of the form given below:

- Bank Guarantee in the form given in the bid document from any Scheduled bank. The BG issued by outstation bank shall be operative at its local branch at Ranchi or branch at Ranchi. Bank Guarantee against Performance Security shall be applicable if the amount of Performance Security exceeds Rs. 5.0 lakhs.
- Govt. Securities, FDR or any other form of deposit stipulated by the owner and duly pledged in favour of owner.
- Demand Draft drawn in favour of "CMPDI Ranchi" on any Scheduled Bank payable at its Branch at Ranchi.

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/ 1st part of security deposit.

The bid security deposited in the form of Demand draft/ cash may be adjusted against the Performance security (1st part of security deposit) at bidder's option.

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

(a) At Bidder's option by a Scheduled Bank, or

(b) By a foreign bank located in India and acceptable to the employer.

The validity of the Bank Guarantee shall be for a period of one year or ninety days beyond the period of contract /extended contract period (if any), 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/ earnest money.

In addition to the above penal measures, the bidder will not be allowed to participate in the re tendering process. The bidder may also be debarred from participating in future tenders in the subsidiary for a minimum period of 12 Months.

4.3 5% Performance Security should be refunded within 14 days of the issue of defect liability certificate (taking over certificate with a list of defects).

4.4 All running on account bills shall be paid at 95% (ninety five percent) of work value. The balance 5% shall be treated as retention money and will be second part of security deposit.

Retention Money may be refunded against equivalent Bank Guarantee, on written request of the contractor, on its accumulation to a minimum amount of Rs 5 lakhs subject to the condition that amount of any Bank Guarantee except last one, shall not be less Rs. 5 lakhs.

However, Bank Guarantee against retention money shall be with suitable validity based on nature of work which shall be 90 days beyond the defect liability period, but in no case less than the period of one year.

Bank Guarantee is to be submitted in the format prescribed by the company. Bank Guarantee shall be irrevocable and will be from Scheduled Banks as elaborated at Cl.4.2.

4.5 Retention Money should be refunded after issue of No Defect Certificate.

4.6 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.

4.7 REFUND OF SECURITY DEPOSIT: 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.

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

(Performance Security) shall be refunded as elaborated at Cl. No.4.3.

The other half (Retention Money) 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 one year , subject to the following conditions:

a) Any defect/defects in the work, if detected after issue of defect liability certificate (Taking over certificate with list of defects) is/are rectified to the satisfaction of the Engineer-in-Charge within the said defect liability period of one year or on its due extension till completion of the rectification works as required.

b) In the case of building work or other work of similar nature, the refund shall be made on the expiry of the said one year 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.

NB: In case of Maintenance contracts, that ends with successful completion of work, where question of Defect Liability Period does not arise (e.g. sweeping / cleaning, horticulture, tank cleaning, jungle cutting, grass cutting, surface dressing etc.), the performance security and retention money (second part of bid security) can be released simultaneously after completion of work and taking over by department.

4.8 Additional performance security: (applicable for item rate as well as percentage rate tenders):

Additional performance security shall be applicable if the bid price is below 15% of the justified price, finalized by the owner. The amount of such additional performance security shall be the difference between 85% of the owner's justified price and quoted price.

Justified price shall be finalized by the owner on the basis of prevalent market rate of materials and labour analyzed as per standard analysis of rate of CPWD/ NBO, and shall be binding on the bidder.

Additional performance security shall be furnished by bidder along with normal performance security.

Failure to submit such additional performance security may result into termination of the contract.

This additional performance security will not carry any interest and shall be released in the following manner:

- i) 30% of Additional performance security will be released after 60% of the total work is completed.
- ii) 50% of Additional performance security will be released after 80% of the total work is completed.
- iii) 100% of Additional performance security will be released after total work is completed.

Additional performance security may be furnished in the shape of BG or any of the forms as applicable for performance security.

4.9 Refund of Security Deposit regarding Specialized Item of Works (shall be applicable only when relevant item exists in the contract and shall be for 10% of value of such items in the contract or for 10% of value of contract with such specialized items only).

a) For some specialized items of work such as anti-termite treatment, waterproofing work, kiln seasoned and chemically treated wooden shutters, or any other item of work deemed as such 'specialized' by Engineer-in-Charge that are entrusted to specialized firms or contractors who associate specialized agencies, the contractor / firm executing the work should be asked to give a specific guarantee that they shall be responsible for removal of any defects cropping up in these works executed by them during the guarantee period. The form of the guarantee to be executed by the contractors shall be as enclosed.

b) 10% of the security (performance security and retention money) deposited / deducted from the bills of the contractors, relevant to the item(s), shall be refunded to him after expiry of Guarantee period. The security amount relevant to the item(s) of work, may be released after 12 months of completion of work against equivalent BG and furnishing Guarantee as at (a) above.

4.10 Refund of security deposit for contracts with supply installation and commissioning of equipment i.e. with Mechanical & Electrical Works (shall be applicable only when relevant item exists in the contract)

For some specialized contracts like Pump house, Intake well etc. there may be Civil works as well as Mechanical and Electrical works. For such works 10% as security deposit

(performance security and retention money) - deposited / deducted from the bills of the contractors shall be refunded to him after expiry of guarantee period, which will be one year from the date of commissioning of equipment/ completion of work and/or rectification of any defect which may be detected in the individual equipment for the whole system under the contract, whichever is later.

In addition, all types of manufacturers guarantee/warranty wherever applicable are to be issued/ revalidated in the name of the owner by the contractual agency and will be covered with relevant counter guarantee. Bank guarantees furnished against Performance Security and Retention Money shall be validated for a period 90 days beyond the guarantee period.

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 work(s) 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 extra 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.

However, if the extra item is not available in company's approved SOR, then the rate for such extra item(s) shall be dealt as at (c) below.

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 / class of work available in the agreement schedule of work or by analysis of rates as at below and the lower rate out of the above two shall be considered.

In case of composite item rate tenders, where two or more schedule of quantities for similar item description may form part of the contract, the applicable rates shall be taken from the Schedule of Quantities of that particular part in which the deviation is involved, failing that at the lowest applicable rate for the similar item of work in the other schedule of quantities.

For derivation of rates based on analysis, the same shall be done by analysis on prevalent market rate of materials and labour based on standard norms of analysis of rate of C.P.W.D/ N.B.O.

c) In the case of extra item(s) that are completely new, and are in addition to the items contained in the contract, the contractor may within 15 days of receipt of order or occurrence of the item(s) claim rates, supported by proper analysis. The Engineer-in-Charge shall determine the rate(s) by analysis based on prevalent market rate of material and labour and on standard norms of analysis of rate of CPWD / NBO.

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) & (c) 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. GM(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 Alteration in the quantities shall not be considered as a change in the condition of the contract nor invalidate any of the provision thereof provided that a deviation estimate / revised estimate / supplementary agreement for the item(s) involved is made. Such approval shall be from appropriate authority.

5.5 Payment for such deviated items [additional/ altered / substituted items of work of the agreement schedule] shall be made in the contractors running on account bills, till the revised estimate / deviation estimate regularizing 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. GM(C) of the company or SO(C) of the Area, if the rate is directly available in the SOR of the company/ if the rate is derived from available rate of BOQ.

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

Total payment for such extra items of work shall not exceed 10% of work order / agreement value / approved deviation estimate value. Also total payment including extra items of work shall not exceed the work order / agreement / approved deviation estimate value.

5.6 PROVISIONS FOR DEALING WITH VARIATIONS IN RESPECT OF ABNORMALLY HIGH RATE AND ABNORMALLY LOW RATE ITEMS.

The abnormally high rate items are those whose quoted rates are more than 20% of the justified rates decided by the owner.

The abnormally low rate items are those whose quoted rates are less than 20% of the justified rates decided by the owner.

In case of Item Rate Tenders, the revision of rates for (i) abnormally high rate items and (ii) abnormally low rate items, shall become operative under the following circumstances:-

For increase in quantity of more than 25% in respect of works executed below plinth level and 10% in respect of works executed above plinth level.

Quantity variation beyond the limit mentioned above shall be dealt by arriving at new rate based on

prevalent market rate of materials and labour analysed as per standard analysis of rate of CPWD/NBO. Payment of extra quantity over the permitted quantity as explained above would be made on the basis of the new analysed rate.

The variation in quantity of abnormally low rate items for item rate tenders shall not be permitted below 25% for the items below plinth level and below 10% for the items above plinth level of the agreement schedule quantity, but in exceptional cases with written consent of Engineer-in-Charge arising out of technical necessity.

The above provisions shall be applicable for item rate tenders only and not applicable for percentage rate tenders for works based on standard schedule of rates of the company.

For the purpose of operation, the following works shall be treated as works related to foundation, unless otherwise defined in the contract.

- a) For Buildings: All works up to 1.2 meters above ground level or up to floor 1 level whichever is lower.
- b) For abutments, piers and well steining: All works up to 1.2m above the bed level.

- c) For retaining walls, wing walls, compound walls, chimneys, overhead reservoirs / tanks and other elevated structures: all works up to 1.2 meters above the ground level.
- d) For reservoirs / tanks (other than overhead reservoirs / tanks): All works up to 1.2 meters above the ground level.
- e) For basement : all works up to 1.2m above ground level or up to floor 1 level whichever is lower.

For Roads, all items of excavation and filling including treatment of sub base

5.7 The time of completion of the originally contracted work shall be extended by the company in the event of any deviation resulting in additional cost over the awarded value, if requested by the contractor as follows:-

- (i) In the proportion which the additional cost of the altered, additional or substituted work (in value) bears to the original tendered value plus.
- (ii) 25% of the time calculated in (i) above or such further additional time as may be considered reasonable by the Engineer-in-Charge.

5.8 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.

5.9 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. The work shall, throughout the stipulated period of contract, be carried out with all due diligence on the part of the contractor.

Immediately after the contract is concluded i.e. LOA / 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 LOA /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 or 7(seven) days after handing over the site of work or handing over reasonable number of working drawings to the contractor or the period of mobilization allowed in the work order for starting the work in special circumstances, whichever is later.

* For Specialized Works/ High Value Works (above Rs. 5 crores), the period shall be 30 days.

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, failing which to forfeit the Earnest Money deposited by him and to rescind the Letter of Acceptance of Tender/Work Order and also to debar the contractor to take part in the future re-tender.

The Company may debar such defaulting Contractors from participating in future Tenders for a minimum period of 12(twelve) months.

6.2 If the contractor fails to complete the work and clear the site on or before the date of completion 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):

i) @ half percent ($\frac{1}{2}$ %) of the contract amount/Revised Contract amount whichever is less, per week of delay.

OR

ii) $\frac{1}{2}$ % of the contract-value of group of items/ revised completion value of group of items whichever is less, per week of delay, for which a separate period of completion is originally given.

The aggregate of such compensation/ compensations shall not exceed:

i) 10% (ten) percent of the total amount of the contract/ Revised contract amount, whichever is less.

OR

ii) 10% of the contract-value of group of items/ revised completion value of group of items whichever is less, for which a separate period of completion is originally given.

The amount of compensation may be adjusted or set off 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 as described at Cl.6.2.

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 impose penalty/LD as deliberated at Clause 10. Additionally the contractor shall be debarred from participating in the future tenders for a minimum period of 12 months.

6.3 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.

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 like 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, and 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.

For delays arising out of Force Majeure, the bidder / contractor will not claim extension in completion date for a period exceeding the period of delay attributable to the clauses of Force Majeure and neither company nor bidder / contractor shall be liable to pay extra cost (like increase in rates, remobilization advance, idle charges for labour and materials etc.) provided it is mutually established that Force majeure conditions did actually exist.

- b) Serious loss or damage by fire and abnormally bad weather.
- 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 genuineness 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 cannot challenge the soundness of the opinion.

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 GM (Civil)/ CM (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:

The contractor shall at his own expense, provide all materials required for the work, unless otherwise specified, and the rates quoted by the contractor shall be for finished work inclusive of all materials required for completion of the work as specified in the contract.

~~* The company may, of its own or at the request of the contractor, supply such materials as may be Specified, if available, at rate/rates to be fixed by the Engineer-in-charge.~~

~~7.1 For the materials which the company has agreed to supply for the contract, the contractor shall give in writing of his requirements in accordance with the agreed phased programme to the Engineer in-charge sufficiently in advance.~~

~~The value of materials so supplied shall be set off or deducted from the payment to be made for the items of work in which such materials have been consumed, or from any sum then due or to become due to the contractor thereafter.~~

~~7.2* The company will supply steel both reinforcement and structural and cement at the following rates inclusive of all taxes. The contractor shall bear all the cost for transportation; handling and storage from the issuing store of the company to contractor's work site store.~~

~~i) Reinforcement Steel *:-~~

~~a) M.S. Round _____ : Rs.~~

~~b) Tor Steel _____ : Rs.~~

~~c) Structural Steel _____ : Rs.~~

~~ii) Cement * _____ : Rs.~~

~~[* delete whichever is not applicable]~~

~~7.3 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.~~

~~7.4 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 up to 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.~~

~~7.5 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 GM/HOD(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 authorized 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.~~

~~7.6 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 authorized 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.~~

~~7.7 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.~~

~~7.8 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.~~

~~7.9 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.~~

~~7.10 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.~~

7.11 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.

7.12 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.

7.13 The contractor shall arrange necessary water for the work and his own establishment and nothing extra will be paid for the same. Such water used by the contractor shall be fit for construction purposes.

However, if available and feasible the company may arrange water, at the written request of the contractor, to the extent possible, 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. The contractor shall make his own arrangement of water connection and laying of pipe lines from main source of supply. Department do not guarantee to maintain uninterrupted supply of water. No claim of damage or refund of water charges will be entertained on account of such break down.

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 license 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, (as enclosed or in absence of enclosed specifications current CPWD/BIS 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 there from, along with clarifications/ explanations thereof, if necessary. However, the contractor will be solely responsible for design and erection of all temporary structures required in connection with the work.

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 authorized representative or any other official of higher rank or any other person authorized 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 be bound to furnish fresh sample, if disapproved by the Engineer-in-Charge, for his approval. 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. However, Engineer-in-Charge's approval for any sample, design / drawings (permanent / temporary structures) shall not alter contractor's full responsibility whatsoever for the performance and safety of the executed job.

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. All such expenses born by the contractor are not to be paid separately by the employer and shall be assumed covered in accepted prices.

The cost of any other tests, if so required by the Engineer-in-Charge, shall be borne by the company. However 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 the cost shall be borne by the contractor. .

8.7 Access to the works: The Engineer-in-charge and any person authorized 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 there from, 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 there from under any circumstances. It shall be the property of the company. The Engineer-in-Charge or his authorized 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 / MORTH standard specifications acceptable to the Engineer-in-Charge. The method of sampling and testing shall be as per the relevant BIS, IRC/ MORTH 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 there from. 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 authorized representative and by the contractor or his authorized 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 authorized 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 authorized 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 authorized 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 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 along with the on account bills only up to 10% of the quantity provided in the agreement subject to overall value of work not exceeding the agreement value.

(ii) The GM (Civil) of the company and / or the Staff Officer(C) of the Area may authorize interim payment for excess work done up to 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. This however, shall not be applicable for High Value Items.

c) Extra items of work executed will be paid on specific written authorization of GM(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 regularizing 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 up to 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-4.6 & 4.7 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 overpayments 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 overpayments 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 realized 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. GM / HoD (C) of the company in this case or any other officer nominated by GM / HoD (C) for the purpose.

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

- i. Signature of Subordinate Engineer (Civil)/ 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 Sr. Officer(C)/ Asstt. Manager (Civil) with appropriate check measurements in the MB's and the bill form.
- iii. Signature of Dy. Manager(C)/ Manager(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) account checking may be made by the concerned Accounts Officer/ Accountant.

(In case of non-availability of officials as at (i) above, company may authorize suitable executives for the works outlined at (i). Further for check measurement also company may authorize Executives based on availability.

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.50.00 lakhs only.

Secured advance for structural steel sections, reinforcement steel and cement, collected at site, will be paid up to 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 cements 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, thermocol & 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 and Building and Construction Workers Cess (as applicable in States) 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, and whether the date of completion has or has not elapsed, by notice in writing 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 reorganization, 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, any materials, constructional plant, equipment, stores etc. thereon and carry out balance work through any means or through any other agency.

b. 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.

c. After giving notice to the contractor to measure up the work of the contractor and to take such whole or the balance or part thereof, as shall be unexecuted out of his hands and to give it to another contractor or take up departmentally, to complete the work. The contractor whose contract is terminated shall not be allowed to participate in future bidding for period of minimum twelve months.

In such an event, the contractor shall be liable for loss/damage suffered by the employer because of action under this clause and to compensate for this loss or damage, the employer shall be entitled to recover higher of the following:

i) Forfeiture of security deposit comprising of performance guarantee and retention money and additional performance security, if any, at the disposal of the employer.

Or

ii) 20% of value of incomplete work. The value of the incomplete work shall be calculated for the items and quantities remaining incomplete (as per provision of agreement) at the agreement rates including price variation as applicable on the date, when notice in writing for termination of work was issued to the contractor.

The amount to be recovered from the contractor as determined above, shall, without prejudice to any other right or remedy available to the employer as per law or as per agreement, will be recovered 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 liable to pay the same within 30 days. In case of failure to pay the same the amount shall be debt payable.

In the event of above course being adopted by the Engineer-in-charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased materials, equipment or entered into agreement or made advances on any account or with a view to the execution of work or performance of the contract. And in case action is taken under any of provision aforesaid, the contractor shall not be entitled to recover or to be paid any sum for any work thereof or actually performed under this contract unless and until the engineer-in-charge has certified in writing the performance of such work and value payable in respect thereof and he shall only be entitled to be paid the value so certified.

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 10.1(d).

10.3 Suspension of Work:

Suspension of work – The Company shall have power to suspend the work. The contractor shall on receipt of the order in writing of Engineer-in -charge (whose decision shall be final and binding on the contractor), suspend the progress of work or any part thereof for such time in such manner as the Engineer-in-Charge may consider necessary so as not to cause any damage, or endanger the safety thereof for any of the following reasons:

- a) on account of any default on the part of the contractor, or
- b) for proper execution of the works, or part thereof, for reasons other than the default of the contractor or,
- c) for safety of the works, or part thereof.

The contractor shall, during such suspension properly protect and ensure the works to the extent necessary and carry out the instruction of the Engineer-in-charge. If the suspension is ordered for reasons (b) & (c), the contractor shall be entitled to an extension of time equal to the period of every such suspension plus 25%. This shall also be applicable for completion of the item or group of items of the work for which a separate period of completion as specified in the contract and of which the suspended work forms a part.

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 Foreclosure of contract:

If at any time after acceptance of the tender the company decides to abandon or reduce the scope of work for any reason whatsoever the company, through its Engineer-in-Charge, shall give notice in writing to that effect to the contractor and contractor shall act accordingly in the matter. In the event of abandonment, the contractor shall have no claim to any payment of compensation or otherwise whatsoever, other than those mentioned below:-

- 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 up to 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.

10.4.01 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 10.4(a) (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. Carrying out Part Work at Risk & Cost of Contractor.

If the progress of the work or of any portion of the work is unsatisfactory, the Engineer-in-Charge, after giving the contractor 15 days' notice in writing, without cancelling or terminating the contract, shall be entitled to employ another Agency for executing the job or to carry out the work departmentally or contractually through tendering / limited tendering process, either wholly or partly, debiting the contractor with cost involved in engaging another Agency or with the cost of labor and the prices of materials, 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. However, when this clause is invoked, penalty will not be applicable other than on account of delayed completion.

The value of the work taken away shall be calculated for the items and quantities taken away at the agreement rates including price variation as applicable on the date, when notice in writing for taking away part work was issued to the contractor. The contractor, from whom part work is being taken out, shall not be allowed to participate in the tendering process if any.

If the expenses incurred by the department is less than the amount payable to the contractor at his agreement rates, the difference shall not be payable to the contractor.

In the event of above course being adopted by the Engineer-in-Charge, the contractor shall have no claim to compensation for any loss sustained by him by reasons of his having purchased or procured any materials or entered into any engagements or made any advance on any account or with a view to the execution of the work or the performance of the contract.

12. 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 there for 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.

12.1 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.

12.2 Before the date fixed for completion of work, the work as well as the site of work are to be made clean after removal of rubbish, scaffolding, surplus materials, temporary structures etc.

12.3 In case of contractor's failure to clear the site, the EIC shall have right to get the work done. The cost thereof shall be recovered from the final bill of the contractor.

13. 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 rights to let other contractors also work 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, technical and managerial staff as mentioned below.

Sl.No.	Value of Work	Manpower Requirement
1	More than 10 Crores	One Resident Engineer (Degree Holder), One Engineer (Degree Holder), Two Engineers (Diploma Holder)
2	5 Crores to 10 Crores	One Resident Engineer (Degree Holder), Two Engineers (Diploma Holder)
3	2 Crores to 5 Crores	One Resident Engineer (Diploma Holder), One Engineer (Diploma Holder)
4	50 lakhs to 2 crores	One Resident Engineer (Graduate/ Diploma Holder)

For works below Rs. 50 lakhs, the deployment of manpower shall be as assessed by Engineer.

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 as assessed by Engineer-in-charge or as specifically mentioned in the bid. 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

drawings, 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 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 authorized 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 authorized 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 familiarize 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 Labor (Regulation & Abolition) Act, 1970 and the Contract Labor (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 authorized representative with work reports from time to time regarding the contractor / contractors organization and the progress made by him / them in the execution of the work as per the contract.

ix) All duties, taxes (excluding Service Tax only) and other levies, octroi, royalty, building and construction workers cess (as applicable in States), whether local, municipal, provincial or central pertaining to the contract payable by the Contractor under the Contract (during the entire period of contract), or for any other cause as applicable on the last date of submission of Bid, shall be included in the rates, prices and the total Bid Price submitted by the Bidder. All investments, operating expenses, incidentals, overheads, lifts, carriages, tools and plants etc. as may be attendant upon execution and completion of works shall also be included in the rates, prices and total Bid price submitted by the bidder.

However, such duties, taxes, levies etc. which is notified after the last date of submission of Bid and/or any increase over the rate existing on the last date of submission of Bid shall be reimbursed by the company on production of documentary evidence in support of payment actually made to the concerned authorities.

Similarly if there is any decrease in such duties, taxes and levies the same shall become recoverable from the contractor. The details of such duties, taxes and other levies along with rates shall be declared by the bidder in the Price bid.

The item wise rate quoted shall be exclusive of service tax (share of service provider). Service tax (share of service provider) will be paid extra, if payable. Payment of service tax (share of service provider) by the service availer (i.e. CIL/Subsidiary), to the service provider would be made only on the latter submitting a Bill/invoice in accordance with the provision of relevant service tax rules. CENVAT credit is to be availed by paying authority as per rule.

Payment/deposit of service tax (share of service provider) is the responsibility of the service provider.

The rates and prices quoted by the Bidder shall be fixed for the duration of the contract and shall not be subject to variations on any account except to the extent variations allowed as per the conditions of the contract of the bidding document.

The company reserves the right to deduct/ withhold 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 of collection of minor minerals in area (both virgin and non-virgin), acquired by the Company under the Coal Act, the contractor will have to produce a royalty clearance certificate from the District Authorities before full and final payment.

x) The contractor / contractors shall make his / their own arrangement for all materials, tools, staff and laborer 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. Prior permission is required to be taken from the owner for engagement of sub-contractor in part work/ piece rated work.

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 up to 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 laborer 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. The contractor / contractors shall make necessary payments of the provident fund for the workmen employed by him for the work as per the laws prevailing under provisions of CMPF

and allied scheme and Miscellaneous Provisions Act, 1948 or Employees Provident Fund and Miscellaneous Provisions Act 1952 as the case may be.

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 laborer including payment of provident fund considered necessary and the company may arrange for witnessing the payment to the laborer 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 there under 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) **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 (except for reasons which are beyond control of the contractor or 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.

The contractor/contractors shall take following insurance policies during the full contract period at his own cost:

a). In the case of construction works, without limiting the obligations and responsibilities under the contract, the contractor shall take insurance policy for the works and for all materials at site so that the value of the works executed and the materials at site up to date are sufficiently covered against risk of loss/damage to the extent as permissible under the law of insurance. The contractor shall arrange insurance in joint names of the company and the contractor. All premiums and other insurance charges of the said insurance policy shall be borne by the contractor.

The terms of the insurance policy shall be such that all insurance claims and compensations payable by the insurers, shall be paid to the Employer and the same shall be released 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. Policies and certificates for insurance shall be delivered by the contractor to the EIC for his approval before the starting date. Alterations to the terms of insurance shall not be made without the approval of EIC.

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 13(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 labor 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 Labor (Regulation & Abolition) Act 1970, the Contract Labor (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.

14. 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 one year 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 one year from the date of issue of Defect Liability certificate/ completion certificate or before the expiry of one full monsoon period i.e. June to September whichever is later in point of time.

14.1 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.

15. 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.

16. Settlement of Disputes.

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.

Effort shall be made to resolve the dispute in two stages

In first stage dispute shall be referred to Area GM or GM/HoD(C). If difference still persist the dispute shall be referred to a committee constituted by the owner. The committee shall have one member of the rank of Director of the company who shall be chairman of the committee.

If differences still persist, the settlement of the dispute shall be resolved in the following manner:

Disputes relating to the commercial contracts with Central Public Sector Enterprises / Govt. Departments (except Railways, Income Tax, and Customs & excise duties)/ State Public Sector Enterprises shall be referred by either party for Arbitration to the PMA (Permanent Machinery of Arbitration) in the department of Public Enterprises.

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. Mobilization Advance

i) No mobilization advance is payable for works whose estimated value is less than Rs.100.00 lakhs.

ii) In the case of turnkey 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 mobilization advance subject to submission of Bank Guarantee equal to 110% of the advance amount. The mobilization advance shall be paid in two installments.

iii) In case of other civil works valued more than Rs.100 lakhs mobilization advance will be paid upto 5% of the contract value subject to submission of Bank Guarantee equal to 110% of the advance amount. The mobilization advance shall be paid in two installments.

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

v) The mobilization 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 Scheduled- Bank acceptable to the Company.

2. Application of Price Variation Clause.

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 of capital nature, for which stipulated period of completion is six months or less. For regular maintenance/Service contract, price

variation shall not be applicable where stipulated period of completion is twelve months or less.

b) The base date for working out such escalation/de-escalation shall be the last date on which the bids (inclusive of price part) or revised price bids (inclusive of revised offer) 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 thereafter at three months' interval.

d) Job specific modification in the formulae of price variation given in the following para(s) can be done with the approval of the CMD of the company

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:

$$VL = W \times A/100 \times (L - Lo)/Lo$$

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.

Lo = 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 bids (inclusive of price part) or revised price bids whichever is later.

L = Revised minimum wages of unskilled worker corresponding to Lo 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:

$$V_m = W \times B/100 \times (M-M_o)/M_o$$

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 bids (inclusive of price part) 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 :

$$V_f = W \times C/100 \times (F-F_o) / F_o$$

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.

F_o = 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 bids (inclusive of Price Part) 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. No such adjustment for the increase / decrease in material price and/ or wages of labour before mentioned would be made in case of contracts related to capital works, in which the stipulated period of completion of the work is six (6) months or less. However for Maintenance works any adjustment for the increase or decrease in material price or wages of labour would be made only when the stipulated period of completion of the work is twelve (12) months or less.

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 the 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 successful 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 further 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.

Table – 1

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

Sl	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	
9	For only labour oriented works of maintenance nature	100	NIL	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.

SAFETY CODE.

1. Suitable scaffolds should be provided for workmen for all works that cannot safely be done from the ground, or from solid construction except such short period work as can be done safely from ladders. When a ladder is used, an extra mazdoor shall be engaged for holding the ladder and if the ladder is used for carrying materials as well suitable footholds and hand-hold shall be provided on the ladder and the ladder shall be given an inclination not steeper than $\frac{1}{4}$ to 1 ($\frac{1}{4}$ horizontal and 1 vertical).
2. Scaffolding of staging more than 3.6 m (12ft). above the ground or floor, swung or suspended from an overhead support or erected with stationary support shall have a guard rail properly attached or bolted, braced and otherwise secured at least 90 cm (3ft) high above the floor or platform of such scaffolding or staging and extending along the entire length of the outside and ends thereof with only such opening as may be necessary for the delivery of materials. Such scaffolding or staging shall be so fastened as to prevent it from swaying from the building or structure.
3. Working platforms, gangways and stairways should be so constructed that they should not sag unduly or unequally, and if the height of the platform or the gangway or the stairway is more than 3.6 m (12ft) above ground level, they should be closely boarded, should have adequate width and should be suitably fastened as described in (2) above.
4. Every opening in the floor of a building or in a working platform shall be provided with suitable means to prevent the fall of person or materials by providing suitable fencing or railing whose minimum height shall be 90 cm (3ft).
5. Safety means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. No portable single ladder shall be over 9 m (30ft) in length while the width between side rails in rung ladder shall in no case be less than 20 cm (11 $\frac{1}{2}$ ") for ladder upto and including 3 m (10ft) in length. For longer ladders, this width should be increased at least $\frac{1}{4}$ " for additional 30 cm (1ft.) of length. Uniform step spacing of not more than 30 cm shall be kept. Adequate precautions shall be taken to prevent danger from electrical equipment. No materials on any of the sites or work shall be so stacked or placed as to cause danger or inconvenience to any person or the public. The contractor shall provide all necessary fencing and lights to protect the public from accident and shall be bound to bear the expenses of defence of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and cost which may be awarded in any such suit; action or proceedings to any such person or which may, with the consent of the contractor, be paid to compensate any claim by any such person.
6. Excavation and Trenching: All trenches 1.2 m (4ft) or more in depth, shall at all times be supplied with at least one ladder for each 30 m. (100 ft.) in length or fraction thereof. Ladder shall extend from bottom of the trench to at least 90 cm (3ft) above the surface of the ground. The side of the trenches which are 1.5 m (5ft) or more in depth shall be stepped back to give suitable slope or securely held by timber bracing, so as to avoid the danger of sides collapsing.

The excavated materials shall not be placed within 1.5 m (5ft) of the edges of the trench or half of the depth of the trench whichever is more. Cutting shall be done from top to bottom. Under no circumstances, undermining or undercutting shall be done.

7. Demolition: before any demolition work is commenced and also during the progress of the work,

i. All roads and open areas adjacent to the work site shall either be closed or suitably protected.

ii. No electric cable or apparatus which is liable to be a source of danger or a cable or apparatus used by the operator shall remain electrically charged.

iii. All practical steps shall be taken to prevent danger to persons employed from risk of fire or explosion or flooding. No floor, roof or other part of the building shall be so overloaded with debris or materials as to render it unsafe.

8. All necessary personal safety equipment as considered adequate by the Engineer-in-Charge should be kept available for the use of the person employed on the site and maintained in a condition suitable for immediate use, and the contractor should take adequate steps to ensure proper use of equipment by those concerned:- The following safety equipment shall invariably be provided.

i) Workers employed on mixing asphaltic materials, cement and lime mortars shall be provided with protective footwear and protective goggles.

ii) Those engaged in white washing and mixing or stacking of cement bags or any material which is injurious to the eyes, shall be provided with protective goggles.

iii) Those engaged in welding works shall be provided with welder's protective eye-shields.

iv) Stone breaker shall be provided with protective goggles and protective clothing and seated at sufficiently safe intervals.

v) When workers are employed in sewers and manholes, which are in active use, the contractors shall ensure that the manhole covers are opened and ventilated at least for an hour before the workers are allowed to get into the manholes, and the manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to the public. In addition, the contractor shall ensure that the following safety measures are adhered to:-

a) Entry for workers into the line shall not be allowed except under supervision of the Engineering Assistant or any other higher officer.

- b) At least 5 to 6 manholes upstream and downstream should be kept open for at least 2 to 3 hours before any man is allowed to enter into the manhole for working inside.
- c) Before entry, presence of Toxic gases should be tested by inserting wet lead acetate paper which changes colour in the presence of such gases and gives indication of their presence.
- d) Presence of Oxygen should be verified by lowering a detector lamp into the manhole. In case, no Oxygen is found inside the sewer line, workers should be sent only with Oxygen kit.
- e) Safety belt with rope should be provided to the workers. While working inside the manholes, such rope should be handled by two men standing outside to enable him to be pulled out during emergency.
- f) The area should be barricaded or condoned of by suitable means to avoid mishaps of any kind. Proper warning signs should be displayed for the safety of the public whenever cleaning works are undertaken during night or day.
- g) No smoking or open flames shall be allowed near the blocked manhole being cleaned.
- h) The malba obtained on account of cleaning of blocked manholes and sewer lines should be immediately removed to avoid accidents on account of slippery nature of the malba.
- i) Workers should not be allowed to work inside the manhole continuously. He should be given rest intermittently. The Engineer-in-Charge may decide the time up to which a worker may be allowed to work continuously inside the manhole.
- j) Gas masks with Oxygen Cylinder should be kept at site for use in emergency.
- k) Air-blowers should be used for flow of fresh air through the manholes. Whenever called for, portable air blowers are recommended for ventilating the manholes. The Motors for these shall be vapour proof and of totally enclosed type. Non sparking gas engines also could be used but they should be placed at least 2 meters away from the opening and on the leeward side protected from wind so that they will not be a source of friction on any inflammable gas that might be present.
- l) The workers engaged for cleaning the manholes / sewers should be properly trained before allowing to work in the manhole.
- m) The workers shall be provided with Gumboots or non-sparking shoes bump helmets and gloves non sparking tools safety lights and gas masks and portable air blowers (when necessary).
They must be supplied with barrier cream for anointing the limbs before working inside the sewer lines.

n) Workmen descending a manhole shall try each ladder stop or rung carefully before putting his full weight on it to guard against insecure fastening due to corrosion of the rung fixed to manhole well.

o) If a man has received a physical injury, he should be brought out of the sewer immediately and adequate medical aid should be provided to him.

p) The extents to which these precautions are to be taken depend on individual situation but the decision of the Engineer-in-Charge regarding the steps to be taken in this regard in an individual case will be final.

vi) The Contractor shall not employ men and women below the age of 18 years on the work of painting with products containing lead in any form. Wherever men above the age of 18 are employed on the work of lead painting, the following precaution should be taken:-

a) No paint containing lead or lead products shall be used except in the form of paste or readymade paint.

b) Suitable face masks should be supplied for use by the workers when paint is applied in the form of spray or a surface having lead paint is dry rubbed and scrapped.

c) Overalls shall be supplied by the contractors to the workmen and adequate facilities shall be provided to enable the working painters to wash during and on the cessation of work.

d) Measures shall be taken, wherever practicable, to prevent danger arising out of from dust caused by dry rubbing down and scraping.

e) Adequate facilities shall be provided to enable working painters to wash during and on cessation of work.

f) Overall shall be worn by working painters during the whole of working period.

g) Suitable arrangement shall be made to prevent clothing put off during working hours being spoiled by painting materials.

9. When the work is done near any place where there is risk of drowning, all necessary equipment should be provided and kept ready for use and all necessary steps taken for prompt rescue of any person in danger and adequate provision, should be made for prompt first aid treatment of all injuries likely to be obtained during the course of the work.

10. Use of hoisting machines and tackle including their attachments, anchorage and supports shall conform to the following standards or conditions:-

i) (a) These shall be of good mechanical construction, sound materials and adequate strength and free from patent defects and shall be kept repaired and in good working order.

(b) Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable quality and adequate strength, and free from patent defects.

ii) Every crane driver or hoisting appliance operator, shall be properly qualified and no person under the age of 21 years should be in charge of any hoisting machine including any scaffolding winch or give signals to operator.

iii) In case of every hoisting machine and of every chain ring hook, shackle swivel and pulley block used in hoisting or as means of suspension, the safe working load shall be ascertained by adequate means. Every hoisting machine and all gear referred to above shall be plainly marked with the safe working load. In case of a hoisting machine having a variable safe working load each safe working load and the condition under which it is applicable shall be clearly indicated. No part of any machine or any gear referred to above in this paragraph shall be loaded beyond the safe working load except for the purpose of testing.

iv) In case of departmental machines, the safe working load shall be notified by the Electrical Engineer-in-Charge. As regards contractor's machines the contractors shall notify the safe working load of the machine to the Engineer-in-Charge whenever he brings any machinery to site of work and get it verified by the Electrical Engineer concerned.

12. Motors, gearing, transmission, electric wiring and other dangerous parts of hoisting appliances should be provided with efficient safeguards. Hoisting appliances should be provided with such means as will reduce to the minimum the risk of accidental descent of the load. Adequate precautions should be taken to reduce to the minimum the risk of any part of a suspended load becoming accidentally displaced. When workers are employed on electrical installations which are already energized, insulating mats, wearing apparel, such as gloves, sleeves and boots as may be necessary should be provided. The worker should not wear any rings, watches and carry keys or other materials which are good conductors of electricity.

13. All scaffolds, ladders and other safety devices mentioned or described herein shall be maintained in safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities should be provided at or near places of work.

14. These safety provisions should be brought to the notice of all concerned by display on a notice board at a prominent place at work spot. The person responsible for compliance of the safety code shall be named therein by the contractor.

15. To ensure effective enforcement of the rules and regulations relating to safety precautions the arrangements made by the contractor shall be open to inspection by the Labour Officer or Engineer-in-Charge of the department or their representatives.

16. Notwithstanding the above clauses from (1) to (15), there is nothing in these to exempt the contractor from the operations of any other Act or Rule in force in the Republic of India.

TECHNICAL SPECIFICATIONS

Technical Specifications to be followed

Civil Engineering Works

Latest CPWD specification shall be adopted. Presently CPWD specifications 2009 Vol. I & II is in vogue which may be followed. These specifications cover all type of Building Works. The specifications are available as a printed document issued by CPWD and also in soft copy PDF format in CPD website.

Electrical Engineering Works

Latest CPWD specification shall be adopted. Presently the following are in vogue:

Part No.	Description Year Of Issue	Year Of Issue
I	Internal	2013
III	Lifts And Escalators	2003
V	Wet Riser And Sprinklers System	2006
VI	Heating, Ventilation And Air Conditioning Works	2005

*Roads And Bridges

Standard specifications issued by ministry of surface transport may be followed. Presently MORTH

Specifications on roads and bridges 2013 is available. These specifications cover exhaustively various roads and bridge works. (Applicable for important and major roads.)

*Delete if not applicable

SECTION -3

LETTER OF BID & FORMATS

FORMAT OF LETTER OF BID

LETTER OF BID SHOULD BE PRINTED ON THE LETTER HEAD OF THE BIDDER
(As Enrolled Online on e-Procurement Portal of CIL)

To

HOD (E&M)
Central Mine Planning and design Institute Limited ,
Regional institute -2
Dhanbad-826005
Jharkhand

Sub: Letter of Bid for the work.....

Ref No. :

Tender Id No.:

Dear Sir,

I/We offer to execute the work as per our offered bill of quantity in accordance with the conditions of the NIT document as available in the website.

This Bid and your subsequent Letter of Acceptance/ Work Order shall constitute a binding contract between us.

I/We hereby confirm our acceptance of all the terms and conditions of the NIT document unconditionally.

If any information furnished by me/us online towards eligibility in this tender is found to be incorrect at any time, penal action as deemed fit may be taken against me/us for which I/we shall have no claim against CMPDI.

(This document is digitally signed by the DSC holder authorized by the bidder and therefore no physical signature is required).

“Format of Undertaking for Execution of Supply Order”

LETTER HEAD OF BIDDER

To,

HOD (E&M)
Central Mine Planning and design Institute Limited ,
Regional institute -2
Dhanbad-826005
Jharkhand

Sub: Certificate for Execution of Supply Order.

Ref: Tender No..... Date:.....

Tender ID: (will be taken from the TENDER DETAIL page of this tender in the
website: <http://coalindiatenders.gov.in>)

Dear Sir,

This is to certify that the items covered in the following supply order (s) uploaded in support of the eligibility for participation against the subject tender have been successfully executed by us:-

Sl.No	Supply Order No.	Date of Supply Order	Name of the Purchaser
1			
2			

We also certify that the information provided by us are correct & true. If the said information is found to be incorrect or false, CMPDI may initiate penal action against us as per the provision of the NIT and/or CIL guidelines.

Yours faithfully,

(Signature of Bidder)

Company Seal

AFFIDAVIT

(NON JUDICIAL STAMP PAPER OF APPROPRIATE VALUE)

I.....
..... Partner/Legal Attorney Proprietor/Accredited Representative
of
M/s. Solemnly declared that :

1. I/We are submitting tender for the work
.....
.....
.....
against Tender Notice No. ----- dated -----

2. None of the partners of our firm is relative of employee of CMPDI.

3. All information furnished by me / us in respect of fulfillment of eligibility criteria and information given in this Bid is complete, correct and true.

4. All documents / credentials submitted along with this tender are genuine, authentic, true and valid.

5. If, any information or document submitted is found to be false /incorrect at any time, Employer may cancel my Bid and action as deemed fit may be taken against me /us including termination of the contract, forfeiture of all dues including Earnest Money and blacklisting of our firm and all Partners of the firm etc.

6. I/We have never been banned or delisted by any Govt. or Quasi Govt. Agency or any Public Sector Undertaking.

OR

I/We have been banned by the organization named "-----"for a period of ----- year/s, effective from ----- to -----

Signature of the Tenderer

Dated-----

Seal of Notary

MANDATE FORM FOR ELECTRONIC FUND TRANSFER/INTERNET BANKING PAYMENT.

To

HOD (E&M)

Central Mine Planning and design Institute Limited ,

Regional institute -2, Dhanbad-826005

Jharkhand

Sub: Authorization for release of payment due from **Central Mine Planning & Design Institute Limited, Regional Institute-2**, Koyla Bhawan Complex, Koyla Nagar, Dhanbad **826005** through Electronic Fund transfer/Internet Banking.

(SBI-NET)

Ref: Order No. _____ Date _____ and/or Tender/Enquiry/Letter No. _____ Date _____

(Please fill in the information in CAPITAL LETTERS, Please TICK wherever it is applicable).

1. Name of the Party : _____

2. Address of the Party : _____

City _____ PIN Code _____

E- Mail Id _____

Permanent Account Number _____

3. Particulars of Bank

Bank Name		Branch Name	
Branch Place		Branch City	
PIN Code		Branch Code	
MICR No.			
(9 Digits code number appearing on the MICR Band of the cheque supplied by the Bank. Please attach Xerox copy of a cheque of your bank for ensuring accuracy of the bank name, branch name and code number)			
RTGS CODE			
Account Type	Savings	Current	Cash Credit
Account Number(as appearing in the Cheque Book)			

4. Date from which the mandate should be effective.

I hereby declare that the particulars given above are correct and complete. If any transaction is delayed or not effected for reasons of incomplete or incorrect information. I shall not hold Central Mine Planning & Design Institute Limited responsible. I also undertake to advise any change in the particulars of my account to facilitate updation of records for purpose of credit of amount through SBI Net.

Place:

Date:

Signature of the party/Authorized Signatory.

Certified that the particulars furnished above are correct as per our records.

Banker's Stamp :

Date :

(Signature of the Authorized official from the Banks)

PROFORMA FOR EXECUTION OF AGREEMENT

AGREEMENT NO. _____ DT. _____

This Agreement is made on this _____ day of _____ 20..... between the Central Mine Planning and Design Institute Limited, a Company Registered under the Indian Companies Act, 1956 having its Registered Office at Koyla Bhawan Complex, Koyla Nagar, dhanbad (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.

And whereas the Company invited tender for the work _____ against Tender Notice No. _____.

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 works.

NOW THIS AGREEMENT WITNESS AND IT IS HEREBY AGREED 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 annexure 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 specifications (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)
- 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 item's measurements at unit prices by the Company, the said Contractor shall, subject to the terms & conditions 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 converted a sum of Rs.....only, from the amount of Rs.....deposited by the said contractor as Earnest Money, into "Initial Security Deposit" of 1% of the awarded work value. The excess / balance amount of earnest money shall be adjusted in the RA Bills(s).
- 5) The said contractor hereby covenants with the company that the Company shall retain a sum of Rs.....or such sum as may be arrived at based on the executed value of the work, as security deposit for the fulfillment of the contract to the satisfaction of the Company.

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 Sri on behalf of Signature
(name of Company) in presence of :

1. Name : Signature

2. Address :

**BANK GUARANTEE PROFORMA FOR
EARNEST MONEY DEPOSIT/BID SECURITY**
(TO BE STAMPED IN ACCORDANCE WITH STAMP ACT)

*(TO BE ISSUED BY ANY NATIONALISED/ SCHEDULED BANK
AUTHORISED BY RBI TO ISSUE A BANK GUARANTEE)*

To :

**Central Mine Planning & Design Institute Limited,
RI-II, Koyla Bhawan Complex,
Koyla Nagar, Dhanbad 826005 (Jharkhand)**

WHEREAS _____ [*name and address of Bidder*] (hereinafter called "the Bidder") shall be submitting its Bid dated _____ [*date of the Bid*] for the work. _____ [*name of the work*] (hereinafter called "the Bid").

KNOW ALL MEN by these present that we, _____ [*name of the bank*] of _____ [*name of the country*] _____ having our registered office at [*address of the bank*] (hereinafter called "the bank"), are bound unto the **Central Mine Planning & Design Institute Limited, RI-II, Koyla Bhawan Complex, Koyla Nagar, Dhanbad 826005 (Jharkhand)** (hereinafter called "the Employer") for the sum of [*amount of the Guarantee in words and figures*] for which payment well and truly to be made to the said Employer the Bank binds itself, his successors and assigns by these presents.

SEALED with the Common Seal of the said bank this _____ day of _____ 20__.

THE CONDITION of this obligation are :

1. If the Bidder withdraws its Bid during the period of Bid Validity specified by the Employer on the bid form ; or
2. If the Bidder withdraws having been notified of the acceptance of its bid by the Employer during the period of Bid Validity :
 - (a) Fails or refuses to execute the Contract Agreement when required ; or
 - (b) Fails or refuses to furnish the Performance Security (if any) in accordance with the Bid conditions.

We, _____ [*name of the bank*] undertake to pay to the Employer up to the above amount upon receipt of its first written demand, without the Employer having to substantiate its demand, provided that in its demand the Employer will note that the amount claimed by it is due to it owing the occurrence of 1 or both of the 2 (a) or (b) specifying the occurred condition or conditions.

This guarantee will remain in full force up to and including the date _____ and any demand in respect thereof should reach the Bank not later than the date of expiry of this guarantee.

For and on behalf of the Bank

Signature _____
Name _____
Designation _____
Common Seal of Bank _____

BANK GUARANTEE PROFORMA FOR PERFORMANCE SECURITY/GUARANTEE
(TO BE STAMPED IN ACCORDANCE WITH STAMP ACT)

(TO BE ISSUED BY ANY NATIONALISED/ SCHEDULED BANK
AUTHORISED BY RBI TO ISSUE A BANK GUARANTEE)

To:

**Central Mine Planning & Design Institute Limited,
RI-II, Koyla Bhawan Complex,
Koyla Nagar, Dhanbad 826005 (Jharkhand)**

In consideration of the **Central Mine Planning & Design Institute Limited, RI-II, Koyla Bhawan Complex, Koyla Nagar, Dhanbad 826005 (Jharkhand)** (hereinafter called to as the “Employer” which expression shall unless repugnant to the context or meaning thereof, include all successors, administrators and assigns) having awarded to _____ *[Name & Address of the Contractor]* (hereinafter called to as “Contractor” which expression shall unless repugnant to the context of meaning thereof include its successors, administrators, executors and assigns) the work _____ *[Name of the Work]* by issue of Letter of Award No. _____ *[Work Order/Letter of Intent No.]* and the same having been unequivocally accepted by the Contractor resulting into a Contract Agreement dated _____ valued at _____ *[value of Work Order]* (hereinafter called ‘the Contract’) and the Employer having agreed to accept Performance Bank Guarantee of ____ *[indicate figure]*% of the Contract Sum _____ *[amount in figures and words]* from a Nationalized/Scheduled Bank for due performance of the work executed by the Contractor as per the terms & conditions contained in the said Contract.

We, _____ *[name of the Bank]*, of _____ *[address of the Bank]* (hereinafter called to as “Bank” which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the Employer immediately on demand and or, all money payable by the Contractor to the extent of _____ *[amount of guarantee in figures and words]*, at any time from _____ to _____ without any demur, reservation, recourse, contest or protest and/or without any reference to the Contractor. Any such demand made by the Employer on the Bank shall be conclusive and binding notwithstanding any difference between the Employer and the Contractor or any dispute pending before any Court, Tribunal, Arbitrator or any other authority. We agree that the Guarantee herein contained shall be irrecoverable and shall continue to be enforceable as per the terms & conditions contained in the said Contract.

The Employer shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee, from time to time, to extend the validity of time of Performance of the Contract by the Contractor. The Employer shall have the fullest liberty without affecting this Guarantee, to postpone, from time to time, the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forebear or to enforce any covenants contained or implied in the Contract, between the Employer and the Contractor or any other course or remedy or security available to the Employer. The Bank shall not be released of its obligations under these presents by any exercise by the Employer of its liberty with reference to matter aforesaid or any of them or by reason of any other act of forbearance or other acts of

omission or commission on the part of the Employer or any other indulgence shown by the Employer or by any other matter or thing whatsoever which under law would, but for this provision, have the effect of relieving the Bank. The Bank also agrees that the Employer at its option shall be entitled to enforce this Guarantee against the Bank as a Principal Debtor in first instance, without proceeding against the Contractor and notwithstanding any security or other Guarantee that the Employer may have in relation to the Contractor's liabilities.

Dated this _____ day of _____ at _____

For and on behalf of the Bank.

Signature _____

Name _____

Designation _____

Common Seal of Bank _____

HINDERANCE REGISTER

1. Name of Work : _____
2. Contract Agreement No. : _____
3. Date of Commencement : _____
4. Stipulated Date of Completion : _____
5. Extended Date of Completion, if applicable : _____

Sl. No.	Nature of Hindrance	Activity of Work affected	Effect of Hindrance on employment of labour and T&P etc	Date of notification of hindrance by contractor	Signature of contractor's representative	Date of removal of hindrance	Sign of client Engineer	Period of Hindrance
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)

SPECIAL TERMS AND CONDITIONS

(A) SCOPE OF WORK

- 1.) Supply, installation, testing and commissioning of minimum 30 kW roof-top solar power plant along with all accessories.
- 2.) The Solar Power plant must be micro grid type i.e. Regarding the generated power consumption, priority needs to be given for internal consumption first and thereafter any excess power can be exported to grid.
- 3.) Optimal use of the available roof-top area for maximum power generation per sq.mt. of the roof-top area.
- 4.) Calculate and justify the inclination angle of the solar PV modules for maximum average power generation.
- 5.) Detailed calculation showing the amount of solar insolation (both from Direct and Diffused radiation) available at various instant of the day.
- 6.) Array sizing must be done in consultation with the CMPDI officials.
- 7.) Proper and judicious use of DC and AC cable. The cables must be properly laid so that proper and efficient monitoring of the solar power plant can be carried out.
- 8.) Supply, installation and commissioning of an efficient, user friendly and informative Data Acquisition System as per the requirement of system.
- 9.) Supply, installation and commissioning of all the protective devices including lightning arrestors.
- 10.) Construction of sufficient numbers of earth pits as per concerned IE rules (bentonite clay filling material) having all the characteristics for proper earth protection and lightning protection.
- 11.) Any statutory requirement shall be made by bidders.
- 12.) Termination of solar generated power to the existing utility power with provisioning of net metering and required protection and isolation shall be done by bidder.
- 13.) Transportation and lifting of all the materials to the site shall be responsibility of bidders.
- 14.) Safety and Security of materials and workforce shall be responsibility of bidders.
- 15.) Supply, installation and commissioning of the array structure for PV module mounting, keeping in view the maximum load bearing capacity of the said roof.
- 16.) Any structural or civil work required for installation of other components of system like Inverters, isolation transformer, junction box etc. are also included in this scope.
- 17.) Calculate and justify the mounting points of the array structure.
- 18.) Mounting points must be such that it must cause minimum or no damage to the roof.
- 19.) Roof treatment must be done by the bidder to ensure that no seepage occurs from the roof due to the installation of roof-top solar PV plant.
- 20.) Necessary PCC and RCC work for mounting structure.
- 21.) Providing maintenance facilities like ladders, water supply at strategic points for cleaning purpose.

- 22.) Any damage to the roof or any part of the building during installation or transportation of materials of rooftop solar power plant system shall be rectified and repaired by the bidders at their own cost.
- 23.) The structure should be able to withstand the maximum wind speed of that area.
- 24.) Consumption of electricity during execution of work shall be charged on the bidder, according to the preexisting arrangement of CMPDI with BCCL regarding electricity tariff and rate.
- 25.) Any other works required for the successful completion of the work.

(B) SCOPE OF WORK FOR EMPLOYER

- 1.) Space for storage of material during execution of work may be provided by the employer, if possible.
- 2.) However, the employer will not be responsible for any damage, theft or loss to the materials from the storage location provided by employer.
- 3.) The safety and security of the materials shall be the sole responsibility of the bidders.
- 4.) One point of water source shall be provided one floor below the work site.
- 5.) One point of Power Source shall be provided.

(C) SYSTEM DESCRIPTION

LOCATION OF THE PROJECT SITE

The Regional Institute –II is located in Dhanbad, Jharkhand. The latitude and longitude of the place are 23.8 °N and 86.5° E respectively. The closeness of the place from the tropic of cancer makes solar power option feasible for the place.

- i) Typical climate data for Dhanbad is given as below:

Climate data for Dhanbad

Month	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
Average high °C (°F)	25 (77)	28 (82)	33 (91)	38 (100)	39 (102)	35 (95)	31 (88)	31 (88)	31 (88)	31 (88)	28 (82)	25 (77)	31.3 (88.2)
Average low °C (°F)	11 (52)	14 (57)	18 (64)	23 (73)	25 (77)	25 (77)	24 (75)	24 (75)	23 (73)	20 (68)	16 (61)	11 (52)	19.5 (67)
Average <u>precipitation</u> mm (inches)	17 (0.67)	18 (0.71)	18 (0.71)	22 (0.87)	49 (1.93)	192 (7.56)	342 (13.46)	311 (12.24)	282 (11.1)	105 (4.13)	7 (0.28)	5 (0.2)	1,368 (53.86)

- ii) Parameters for Sizing and Pointing of Solar Panels:

Monthly Averaged Insolation Incident On A Horizontal Surface (kWh/m ² /day)													
Lat 23.8 Lon 86.5	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average
22-year Average	4.32	5.05	5.66	6.13	6.14	4.87	4.26	4.13	4.12	4.49	4.30	4.11	4.79

Minimum And Maximum Difference From Monthly Averaged Insolation (%)												
Lat 23.8 Lon 86.5	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Minimum	-18	-13	-12	-9	-9	-21	-16	-15	-14	-22	-12	-20
Maximum	10	9	10	9	5	13	9	16	16	10	10	9

Monthly Averaged Insolation Clearness Index (0 to 1.0)													
Lat 23.8 Lon 86.5	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Annual Average
22-year Average K	0.61	0.62	0.59	0.58	0.55	0.43	0.38	0.38	0.42	0.52	0.59	0.62	0.52
Minimum K	0.50	0.53	0.52	0.52	0.50	0.34	0.32	0.33	0.36	0.40	0.52	0.49	0.44
Maximum K	0.67	0.67	0.65	0.63	0.58	0.49	0.41	0.45	0.48	0.58	0.65	0.67	0.58

Other required variables

Variable	I	II	III	IV	V	VI	VII	VIII	IX	X	XI	XII
Temperature, °C	17.79	21.35	26.22	28.69	28.40	28.52	27.73	27.49	26.58	24.59	21.82	18.80
Wind speed, m/s	2.12	2.57	2.59	3.31	3.67	3.60	3.05	2.62	2.44	1.93	1.93	2.00
Precipitation, mm	12	19	18	22	46	210	324	309	240	89	6	4
Wet days, d	1.1	1.5	1.6	2.2	3.9	10.7	15.7	14.8	10.5	3.7	0.6	0.5

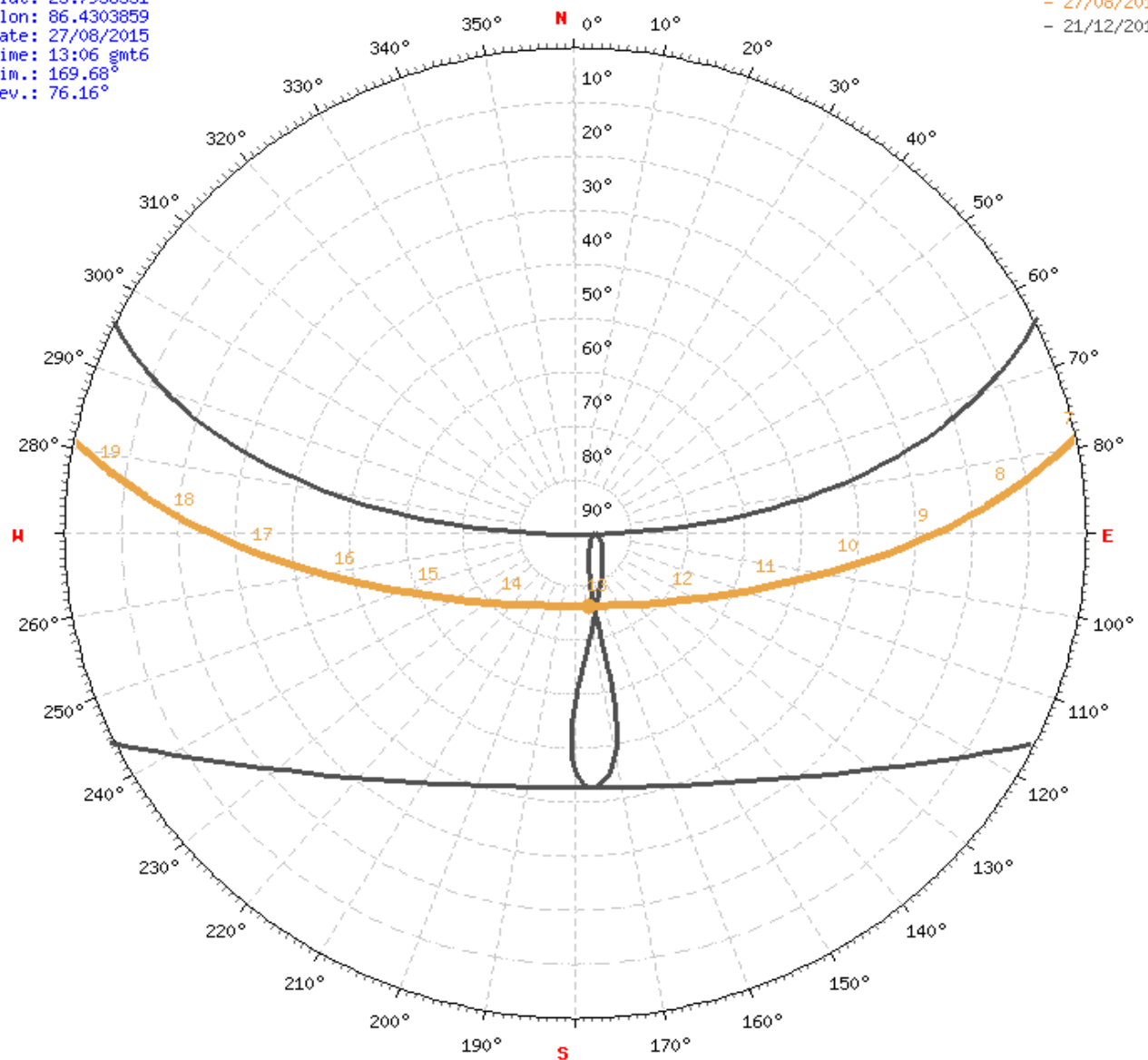
i) Sunrise, sunset, dawn and dusk times, table

Date	Sunrise	Sunset	Length	Change	Dawn	Dusk	Length	Change
Today	05:24	18:08	12:44		05:01	18:31	13:30	
+1 day	05:24	18:07	12:43	00:01 shorter	05:01	18:30	13:29	00:01 shorter
+1 week	05:27	18:01	12:34	00:10 shorter	05:04	18:24	13:20	00:10 shorter
+2 weeks	05:29	17:54	12:25	00:19 shorter	05:06	18:17	13:11	00:19 shorter
+1 month	05:34	17:37	12:03	00:41 shorter	05:12	18:00	12:48	00:42 shorter
+2 months	05:47	17:10	11:23	01:21 shorter	05:24	17:33	12:09	01:21 shorter
+3 months	06:05	16:57	10:52	01:52 shorter	05:41	17:21	11:40	01:50 shorter
+6 months	06:11	17:45	11:34	01:10 shorter	05:48	18:08	12:20	01:10 shorter

ii) The Sun Path diagram for Dhanbad is shown below:

name:
 lat.: 23.7956531
 lon.: 86.4303859
 date: 27/08/2015
 time: 13:06 gm+6
 azim.: 169.68°
 elev.: 76.16°

- 21/06/2015
 - 27/08/2015
 - 21/12/2015



EXISTING SYSTEM

The RI-II office is a multi storeyed building of 6 floors, with a central bus riser having opening at every floor. The central bus riser is fed through 630 A MCCB, receiving power from BCCL Substation via double circuit of e 3 ½ core, 150 sqmm cables. Every floor has a separate MCCB and bus bar arrangement for distribution of power at that floor. There is also a contactor along with the MCCB at every floor to switch between utility power and DG power in case of Load shedding. The office building consists of typical lighting loads, fan loads, coolers, air-conditioners and also some sophisticated equipment in the Laboratories. There is also a separate UPS system to cater to Computers and other necessary loads.

(D) TECHNICAL SPECIFICATION

A Grid Tied Solar Rooftop Photo Voltaic (SPV) power plant consists of SPV array, Module Mounting Structure, Power Conditioning Unit (PCU) consisting of Maximum Power Point Tracker (MPPT), Inverter, and Controls & Protections, interconnect cables and switches. PV Array shall be mounted on a suitable structure. Grid tied SPV system shall be without battery and should be designed with necessary features to supplement the grid power during day time. Components and parts used in the SPV power plants including the PV modules, metallic structures, cables, junction box, switches, PCUs etc., should conform to the BIS or IEC or international specifications, wherever such specifications are available and applicable. The system and its components shall necessarily conform to specifications or guidelines as published by MNRE for ensuring quality of equipment, given in Section (E) at the end of the chapter.

Solar PV system shall consist of following equipment/components.

- Solar PV modules consisting of required number of crystalline PV modules.
- Grid interactive Power Conditioning Unit with Remote Monitoring System.
- Mounting structures
- Junction Boxes.
- Earthing and lightening protections
- IR/UV protected PVC Cables, pipes and accessories.
- Isolation transformer

2.0. SOLAR PHOTOVOLTAIC MODULES:

- I. The PV modules used should be made in India.
- II. The PV modules used must qualify to the latest edition of IEC PV module qualification test or equivalent BIS standards Crystalline Silicon Solar Cell Modules IEC 61215/IS14286. In addition, the modules must conform to IEC 61730 Part-1-requirements for construction & Part 2 – requirements for testing, for safety qualification or equivalent IS.
- III. For the PV modules to be used in a highly corrosive atmosphere throughout their lifetime, they must qualify to IEC 61701/IS 61701.
- IV. The total solar PV array capacity should not be less than allocated capacity kW_p i.e. 30 kW_p and should comprise of solar crystalline modules of minimum 260 W_p. Module capacity less than minimum 260 W_p will not be accepted.
- V. Protective devices against surges at the PV module shall be provided. Low voltage drop bypass diodes shall be provided.
- VI. PV modules must be tested and approved by one of the IEC authorized test centers.
- VII. The module frame shall be made of corrosion resistant materials, preferably having anodized aluminum.
- VIII. The bidder shall carefully design & accommodate requisite numbers of the modules to achieve the rated power as per drawing.
- IX. Other general requirement for the PV modules shall be as follows:-

Sl.No.	Electrical parameters at standard test condition	Required value
1	Nominal power output (W)	Minimum 260
2	Module Efficiency	Greater than or equal to 15.5 %
3	Voltage at P max V(Mpp) (V)	30.5 (tolerance 2 %)
4	Current at P max I(Mpp) (A)	8.45 (tolerance 2 %)
5	Open Circuit Voltage Voc (V)	37.5 (tolerance 2 %)
6	Short-Circuit current Isc (A)	7.5 (tolerance 2 %)
7	Fill Factor	Not less than 72%
8	Power output P max (W) at NOCT	Greater than 187

- X. The peak-power point voltage and the peak-power point current of any supplied module and/or any module string (series connected modules) shall not vary by more than 2 (two) per cent from the respective arithmetic means for all modules and/or for all module strings, as the case may be.
- XI. The module shall be provided with a junction box with either provision of external screw terminal connection or sealed type and with arrangement for provision of by-pass diode. The box shall have hinged, weather proof lid with captive screws and cable gland entry points or may be of sealed type and IP-65 rated.
- XII. The IV curves at STC should be provided by bidder.
- XIII. Modules deployed must use a RF identification tag. The following information must be mentioned in the RFID used on each modules (This can be inside or outside the laminate but must be able to withstand harsh environmental condition.)
1. Name of the manufacturer of the PV module.
 2. Name of the manufacturer of Solar Cells.
 3. Month & year of the manufacture (separate for solar cells and modules).
 4. Country of origin (separately for solar cells and module).
 5. I-V curve for the module Wattage, I_m , V_m and FF for the module.
 6. Unique Serial No and Model No of the module.
 7. Date and year of obtaining IEC PV module qualification certificate.
 8. Name of the test lab issuing IEC certificate.
 9. Other relevant information on traceability of solar cells and module as per ISO 9001 and ISO 14001.

2.1 Module General Characteristics:-

1	Module dimensions (mm)	1670 X 1000 X 40 (maximum)
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2	Module weight (kgs)	Must not exceed 22
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2.2 Warranty/Guarantee:-

a) Material Warranty:-

Material Warranty is defined as: The manufacturer should warrant the Solar Module(s) to be free from the defects and/or failures specified below for a period not less than twenty five (25) years from the date of sale to the original

- i. Defects and/or failures due to Manufacturing.
- ii. Defects and/or failures due to quality of materials.
- iii. Non conformity to specifications due to faulty manufacturing and/or inspection processes. If the solar Module(s) fails to conform to this warranty the bidder shall replace the module(s).

b) Performance Warranty:-

The predicted electrical degradation of power generated not exceeding 20% of the minimum rated power over the 25 year period and not more than 10% after ten years period of the full rated original output.

The relevant standards are as follows:

- IEC 61215/IS14286 :
- IEC 61730 :
- IEC 61701/IS 61701:
- ISO 9001 and ISO 14001:

3.0 Array Structure:-

a) Hot dip galvanized MS mounting structures may be used for mounting the modules/ panels/arrays. Each structure should have angle of inclination as per the site conditions to take maximum insolation. However to accommodate more capacity the angle inclination may be reduced until the plant meets the specified performance ratio requirements. The array structuring must be done in consultation with CMPDI.

b) The Mounting structure shall be so designed to withstand the speed for the wind zone of the location where a PV system is proposed to be installed. It may be ensured that the design has been certified by a recognized Lab/ Institution in this regard and submit wind loading calculation sheet to CMPDI. Suitable fastening arrangement such as grouting and calming should be provided to secure the installation against the specific wind speed.

c) The mounting structure steel shall be as per latest IS 2062: 1992 and galvanization of the mounting structure shall be in compliance of latest IS 4759.

d) Structural material shall be corrosion resistant and electrolytically compatible with the materials used in the module frame, its fasteners, nuts and bolts. Aluminium structures also can be used which can withstand the wind speed of respective wind zone. Necessary protection towards rusting need to be provided either by coating or anodization.

e) The fasteners used should be made up of stainless steel. The structures shall be designed to allow easy replacement of any module. The array structure shall be so designed that it will occupy minimum space without sacrificing the output from the SPV panels.

f) Regarding civil structures the bidder need to take care of the load bearing capacity of the roof and need to arrange suitable structures based on the quality of roof.

g) The total load of the structure (when installed with PV modules) on the terrace shall be less than 60 kg/m². Roof treatment must be done to avoid seepage after installation work is over.

The relevant Standards are:

➤ IS 2062: 1992 :

➤ IS 4759 :

4.0. JUNCTION BOXES (JBs):-

a) The junction boxes are to be provided in the PV array for termination of connecting cables. The J. Boxes (JBs) shall be made of GRP/FRP/Powder Coated Aluminium /cast aluminium alloy with full dust, water & vermin proof arrangement. All wires/cables must be terminated through cable lugs. The JB's shall be such that input & output termination can be made through suitable cable glands.

b) Copper bus bars/terminal blocks housed in the junction box with suitable termination threads shall be Conforming to IP65 standard and IEC 62208 . The Hinged door shall be provided with EPDM rubber gasket to prevent water entry and single compression cable glands. There must be provision for earthing. It should be placed at feasible height for ease of accessibility.

c) Each Junction Box shall have High quality Suitable capacity Metal Oxide Varistors (MOVs) / surge arrestors, suitable Reverse Blocking Diodes. The Junction Boxes shall have suitable arrangement for monitoring and disconnection for each of the groups.

d) Suitable markings shall be provided on the bus bar for easy identification and the cable ferrules must be fitted at the cable termination points for identification.

4.1 DC Distribution Board:-

- a) DC Distribution panel to receive the DC output from the array field.
- b) DC DPBs shall have dust and vermin proof sheet steel enclosure conforming to IP 65 protection. The bus bars shall be made of copper of desired size. Suitable capacity MCBs/MCCB shall be provided for controlling the DC power output to the PCU along with necessary surge arrestors.

4.2 AC Distribution Pannel Board:-

- a) AC Distribution Panel Board (ACDB) shall control the AC power from PCU/ inverter, and should have necessary surge arrestors. Interconnection from ACDB to mains at LT Bus bar shall be provided while in grid tied mode.
- b) All switches and the circuit breakers, connectors should conform to IEC 60947, part I, II and III/ IS:60947 part I, II and III.
- c) The change-over switches, cabling work should be undertaken by the bidder as part of the project.
- d) All the Panels shall be metal clad, totally enclosed, rigid, floor mounted, air - insulated, cubical type suitable for operation on three phase / single phase, 415 / 230 V , 50 Hz.
- e) The panels shall be designed for minimum expected ambient temperature of 45 degree Celsius, 80 percent humidity and dusty weather.
- f) All indoor panels will have protection of IP54 or better. All outdoor panels will have protection of IP65 or better.
- g) Should conform to Indian Electricity Act and rules (till last amendment).
- h) All the 415 AC devices/ equipment like bus support insulators, circuit breakers, VTs etc., mounted inside the switchgear shall be suitable for continuous operation and satisfactory performance under the following supply conditions.

Supply voltage variation- $\pm 10\%$

Supply frequency variation - ± 3 Hz.

The relevant Standards are:

- IS:60947:

5.0 PCU/ARRAY SIZE RATIO:

- a) The combined wattage of all inverters should not be less than rated capacity of power plant under STC.

b) Maximum power point tracker shall be integrated in the PCU/inverter to maximize energy drawn from the array.

5.1 PCU/INVERTER

As SPV array produce direct current electricity, it is necessary to convert this direct current into alternating current and adjust the voltage levels to match the grid voltage. Conversion shall be achieved using an electronic Inverter of suitable capacity and the associated control and protection devices. All these components of the system are termed as “Power Conditioning Unit (PCU)”. In addition, the PCU shall also house MPPT (Maximum Power Point Tracker), an interface between Solar PV array & the Inverter. The power conditioning unit/inverter should also be DG set interactive. Inverter output should be compatible with the grid frequency. Typical technical features of the inverter shall be as follows:

- Switching devices : IGBT
- Control : DSP(Digital Signal Processing)
- Nominal AC output voltage and frequency : 415 V , 3 Phase, 50 Hz.
- Output frequency : 50 Hz.
- Ambient temperature considered : -10 deg. C to 65 deg. C.
- Humidity : 95 % non-condensing.
- Protection of Enclosure : IP-54(Min.) for Indoor.
: IP-65(Min.) for outdoor.
- No-load losses : Less than 1% of rated power.
- Inverter efficiency (minimum) : 95%.
- THD : less than 3%.
- P.F. : Greater than 0.9.
- MPP Voltage range (V) : 320 to 900.
- Grid Voltage tolerance : -20% to + 15%.

a) Three phase PCU/ inverter shall be used with power plant system.

b) PCU/inverter shall be capable of complete automatic operation including wake-up, synchronization & shutdown.

c) The output of power factor of PCU inverter shall be suitable for all voltage ranges or sink of reactive power, inverter should have internal protection arrangement against any sustainable fault in feeder line and against lightning on feeder.

d) Built-in meter and data logger to monitor plant performance through external computer shall be provided.

e) There should also be an external digital display on the PCU/inverter to show adequate performance parameters and indicative LED lights showing the present state of operation, facilitating easy monitoring on site.

f) The power conditioning units / inverters should comply with applicable IEC/ equivalent BIS standard for efficiency measurements and environmental tests as per standard codes IEC 61683/IS 61683 and IEC 60068- 2(1,2,14,30)/Equivalent BIS Standard.

g) The charge controller/ MPPT units environmental testing should qualify IEC 60068-2(1, 2, 14, 30)/Equivalent BIS standard. The junction boxes/ enclosures should be IP 65(for outdoor)/ IP 54 (indoor) and as per IEC 529 specifications.

h) The PCU/ inverters should be tested from the MNRE approved test centres / NABL /BIS /IEC accredited testing- calibration laboratories. In case of imported power conditioning units, these should be approved by international test houses.

5.2 INTEGRATION OF PV POWER WITH GRID:

The output power from SPV shall be fed to the inverters which converts DC produced by SPV array to AC and shall feed into the main electricity grid after synchronization. In case of grid failure, or low or high voltage, solar PV system shall be automatically disconnected from the grid. Once the DG set comes into service PV system shall again be synchronized with DG supply and load requirement would be met to the extent of availability of power. 4 pole isolation of inverter output with respect to the grid/ DG power connection need to be provided.

Relevant Standards are as follows:

- IEC 61683/IS 61683:
- IEC 60068- 2(1,2,14,30):
- IEC 529:

6.0 DATA ACQUISITION SYSTEM / PLANT MONITORING:

a) Data Acquisition System shall be provided for each of the solar PV plant.

b) Data Logging Provision for plant control and monitoring, time and date stamped system data logs for analysis with the high quality, suitable PC. Metering and Instrumentation for display of systems parameters and status indication shall be provided.

c). Solar Irradiance: An integrating Pyranometer (Class II or better, along with calibration certificate) shall be provided, with the sensor mounted in the plane of the array and integrated with data logging system.

- d) Temperature: Temperature probes for recording the Solar panel temperature and ambient temperature shall be provided complete with readouts integrated with the data logging system.
- e) The following parameters shall be accessible via the operating interface display in real time separately for solar power plant:
- a. AC Voltage.
 - b. AC Output current.
 - c. Output Power
 - d. Power factor.
 - e. DC Input Voltage.
 - f. DC Input Current.
 - g. Time Active.
 - h. Time disabled.
 - i. Time Idle.
 - j. Power produced
 - k. Protective function limits (Viz-AC Over voltage, AC Under voltage, Over frequency, Under frequency ground fault, PV starting voltage, PV stopping voltage.
- f) All major parameters available on the digital bus and logging facility for energy auditing through the internal microprocessor and displayed on the digital front panel at real time) and logging facility (the current values, previous values for up to a month and the average values) should be made available for energy auditing through the internal microprocessor and should be read on the digital front panel.
- g) PV array energy production: Digital Energy Meters shall be provided to log the actual value of AC/DC voltage, Current & Energy generated by the PV system provided. Energy meter along with CT/PT shall be of 0.5 accuracy class.
- h) Computerized DC String/Array monitoring and AC output monitoring shall be provided as part of the inverter and/or string/array combiner box or separately.
- i) String and array DC Voltage, Current and Power, Inverter AC output voltage and current (All 3 phases and lines), AC power (Active, Reactive and Apparent), Power Factor and AC energy (All 3 phases and cumulative) and frequency shall be monitored.
- j) The time interval between two sets of data shall not be more than 10 minutes. (A min. of 6 samples of data shall be recorded per hour).
- k) Data Acquisition System shall have real time clock, internal reliable battery backup (2 hours) and data storage capacity to record data round the clock for a period of min. 1 year. Computerized AC energy monitoring shall be provided in addition to the digital AC energy meter.
- l) The data shall be recorded in a common work sheet chronologically date wise.

The data file shall be MS Excel compatible. The data shall be represented in both tabular and graphical form.

m) All instantaneous data shall be shown on the computer screen.

n) Software shall be provided for USB download and analysis of DC and AC parametric data for individual plant.

o) Provision for Internet monitoring and download of data shall be also incorporated.

p) Remote Server and Software for centralized Internet monitoring system shall be also provided for download and analysis of cumulative data of all the plants and the data of the solar radiation and environment monitoring system.

6.1. Solar Radiation and Environment Monitoring System.

a) Computerized solar radiation and environment monitoring system shall be installed on the building along with the solar PV power plant.

b) The system shall consist of various sensors, signal conditioning, data acquisition, LCD display and remote monitoring.

c) Global and diffuse beam solar radiation in the plane of array (POA) shall be monitored on continuous basis.

d) Ambient temperature and relative humidity near PV array, control room temperature, at the level of array plane shall be monitored on continuous basis.

e) Solar PV module back surface temperature shall also be monitored on continuous basis.

f) Simultaneous monitoring of DC and AC electrical voltage, current, power, energy and other data of the plant for correlation with solar and environment data shall be provided.

g) Solar radiation and environment monitoring system shall have real time clock, internal reliable battery backup and data storage capacity to record data round the clock for a period of min. 1 year.

h) The data shall be recorded in a common work sheet chronologically date wise.
The data file should be MS Excel compatible. The data shall be represented in both tabular and graphical form.

i) All instantaneous data shall be shown on the computer screen.

j) Historical data shall be available for USB download and analysis.

k) Provision for Internet monitoring and download of data shall be incorporated.

l) Remote Monitoring and data acquisition through Remote Monitoring System software at the owner /CMPDI location with latest software/hardware configuration and service connectivity for online / real time data monitoring/control complete to be supplied and operation and maintenance/control to be ensured by the supplier. Provision for interfacing these data on CMPDI server and portal in future shall also be made.

7.0 POWER CONSUMPTION:

Regarding the generated power consumption, priority need to be given for internal consumption first and thereafter any excess power can be exported to grid through micro-grid system.

8.0 PROTECTION

The system should be provided with all necessary protections like Earthing , Lightning and grid islanding as follows:

8.1 LIGHTNING PROTECTION:

The SPV power plants shall be provided with lightning & overvoltage protection. The main aim in this protection shall be to reduce the over voltage to a tolerable value before it reaches the PV or other sub system components. The source of over voltage can be lightning, atmosphere disturbances etc. The entire space occupying the SPV array shall be suitably protected against Lightning by deploying required number of Lightning Arrestors. Lightning protection should be provided as per IEC 62305 standard. The protection against induced high-voltages shall be provided by the use of metal oxide varistors (MOVs) and suitable earthing such that induced transients find an alternate route to earth.

8.2 SURGE PROTECTION:

Internal surge protection shall consist of three MOV type surge-arrestors connected from +ve and -ve terminals to earth (via Y arrangement).

8.3 EARTHING PROTECTION:

a) Each array structure of the PV yard should be grounded/ earthed properly as per IS:3043-1987. In addition the lightning arrester/masts should also be earthed inside the array field. Earth Resistance shall be tested in presence of the representative of E&M Department/CMPDI as and when required after earthing by calibrated earth tester. PCU, ACDB and DCDB should also be earthed properly.

b) Earth resistance shall not be more than 5 ohms. It shall be ensured that all the earthing points are bonded together to make them at the same potential.

8.4 GRID ISLANDING:

a) In the event of a power failure on the electric grid, it is required that any independent power-producing inverter attached to the grid turns off in a short period of time. This prevents the DC-to-AC inverters from continuing to feed power into small sections of the grid, known as “islands.” Powered islands present a risk to workers who may expect the area to be unpowered, and they may also damage grid-tied equipment. The Rooftop PV system shall be equipped with islanding protection. In addition to disconnection from the grid (due to islanding protection) disconnection due to under and over voltage conditions shall also be provided.

b) A manual disconnect 4pole isolation switch beside automatic disconnection to grid would have to be provided at utility end to isolate the grid connection by the utility personnel to carry out any maintenance. This switch shall be locked by the utility personnel.

Relevant Standards are as follows:

- IEC 62305:
- IS:3043-1987:

9.0. CABLES

Cables of appropriate size to be used in the system shall have the following characteristics:

- a) Shall meet IEC 60227/IS 694, IEC 60502/IS1554 standards.
- b) Temp. Range: 0 °C to + 80 °C.
- c) Voltage rating : 650V/1100V.
- d) Excellent resistance to heat, cold, water, oil, abrasion, UV radiation.
- e) Flexible.
- f) Sizes of cables between array interconnections, array to junction boxes, junction boxes to Inverter etc. shall be so selected to keep the voltage drop (power loss) of the entire solar system to the minimum. The cables (as per IS) should be insulated with a special grade PVC compound formulated for outdoor use.
- g) Cable Routing/ Marking: All cable/wires are to be routed in a GI cable tray and suitably tagged and marked with proper manner by good quality ferule or by other means so that the cable easily identified.
- h) The Cable should be so selected that it should be compatible up to the life of the solar PV panels i.e. 25years.
- i) The ratings given are approximate. Bidder to indicate size and length as per system design requirement. All the cables required for the plant shall be provided by the bidder. Any change in cabling sizes if desired by the bidder/approved after citing appropriate reasons. All cable schedules/layout drawings shall be approved prior to installation.
- j) Multi Strand, cable shall have Annealed high conductivity copper conductor PVC type ‘A’ pressure extruded insulation or XLPE insulation. Overall PVC/XLPE insulation shall be provided for UV protection armoured cable for underground laying. All cable trays including covers shall

be provided. All cables shall conform to latest edition of IEC/ equivalent BIS Standards as specified below: BoS item / component Standard Description , Standard Number Cables , General Test and Measuring Methods, PVC/XLPE insulated cables for working Voltage up to and including 1100 V ,UV resistant for outdoor installation as per IS /IEC 69947.

k) The size of each type of DC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 1%.

l) The size of each type of AC cable selected shall be based on minimum voltage drop however; the maximum drop shall be limited to 2 %.

10.0 ISOLATION TRANSFORMER

An **isolation transformer** is a transformer used to transfer electrical power from a source of alternating current (AC) power to some equipment or device while isolating the powered device from the power source, usually for safety reasons. Isolation transformers provide galvanic isolation and are used to protect against electric shock, to suppress electrical noise in sensitive devices, or to transfer power between two circuits which must not be connected. An isolation transformer shall be built with special insulation between primary and secondary, and shall withstand a high voltage between windings.

Isolation transformers shall block transmission of the DC component in signals from one circuit to the other, but allow AC components in signals to pass. Transformers that have a ratio of 1:1 between the primary and secondary windings are often used to protect secondary circuits and individuals from electrical shocks. Suitably designed isolation transformers shall block interference caused by ground loops. Isolation transformers with electrostatic shields shall be used for power supplies for sensitive equipment such as computers, medical devices, or laboratory instruments

- a) Isolation transformer of minimum 35 kVA shall be installed in between inverter and point of termination at utility grid.
- b) Further a manual disconnector of adequate capacity shall also be incorporated along with isolation transformer.

(E) MNRE GUIDELINES FOR QUALITY ASSURANCE

The following are some of the technical measures to ensure quality of equipment used in grid-connected solar photovoltaic power projects:

1. **SPV Modules**

1.1 The SPV modules used in the grid solar power projects must qualify to the latest edition of any of the following IEC PV module qualification test or equivalent BIS standards

- Crystalline Silicon Solar Cell Modules : IEC61215
- Thin film modules : IEC61646

➤ Concentrator PV modules : IEC62108

1.2 In addition, SPV modules must qualify to IEC61730 for safety qualification testing at 1000V DC or higher. The modules to be used in a highly corrosive atmosphere throughout their lifetime must qualify to IEC61701.

2. Power Conditioner/Inverters

The power conditioners/Inverters of the SPV power plants conform to the latest edition of IEC/equivalent BIS standards as specified below:

Efficiency measurement	: IEC61683
Environmental Testing	: IEC 60068-2/IEC 62093
Electromagnetic Compatibility (EMC)	: IEC 61000-6-2, IEC 61000-6-4 & other relevant parts of IEC 61000
Electrical Safety	: IEC 62103/IEC 62109-1&2
Protection against Islanding of Grid	: IEEE1547/ IEC62116/UL 1741/equivalent BIS standard

3. Other Sub-systems/Components:

Other subsystem/components used in the SPV power plants (Cables, connectors, junction boxes, surge protection devices, etc.) must also conform to the relevant international/national standards for electrical safety besides that for quality required for ensuring expected service life and weather resistance. (IEC Standard for DC cables for PV systems is under development. It is recommended that in the interim, the cables of 600-1800 volts DC for outdoor installations should comply with the draft EN50618/TUV 2pfg 1169/08/07 for service life expectancy of 25 years.)

4. Authorized Test Centres

The PV Modules / Power Conditioners deployed in the power plants must have valid test certificates for their qualification as per above specified IEC / BIS standards by one of the NABL Accredited Test Centers in India. In case of module types like Thin film and CPV / equipment for which such test facilities may not exist in India at present, test certificates from reputed ILAC Member Labs abroad will be acceptable.

5. Warranty

PV modules used in Grid Solar Power Plants must be warranted for output wattage, which should not be less than 90% at the end of 10 years and 80% at the end of 25 years.

6. Identification and Traceability

Each PV module used in any solar power project must use a RF identification tag. The following information must be mentioned in the RFID used on each module. (This can

be inside or outside the laminate, but must be able to withstand harsh environmental conditions.)

- i) Name of the Manufacturer of the PV module
- ii) Name of the manufacturer of the Solar Cells
- iii) Month and year of the Manufacture (separately for solar cells and module)
- iv) Country of origin (separately for solar cells and module)
- v) I-V curve for the module at Standard Test Conditions (1000 w / m², AM1.5, 25°C)
- vi) Wattage, I_m, V_m and FF of the module
- vii) Unique serial no. and model no. of the module
- viii) Date and year of obtaining IEC PV module qualification certificate
- ix) Name of the test lab issuing IEC certificate
- x) Other relevant information on traceability of solar cells and module as per ISO 9000.

Site Owners would be required to maintain accessibility to the list of module IDs along with above parametric data for each module.

7. Performance Monitoring

All grid solar PV power plants must install necessary equipment to continuously measure solar radiation, ambient temperature, wind speed and other weather parameters and simultaneously measure the generation of DC power as well as AC power generated from the plant. They will be required to submit this data to SECI and MNRE or any other designated agency on line and / or through a report on regular basis every month for the entire duration of the PPA. In this regard they shall mandatorily also grant access to SECI and MNRE or any other designated agency to the remote monitoring portal of the power plants on a 24 X 7 basis.

8. Safe Disposal of Solar PV Modules

The developers will ensure that all solar PV modules from their plant after their 'end of life' (when they become defective / non-operational / non-repairable) are disposed of in accordance with the "e-waste (management and Handling) Rules, 2011" notified by the Government and as revised and amended from time to time.

Bill of Quantities

Sl.No.	Description	Unit	Unit Price	Quantity	Amount
1	Supply, Installation, Commissioning and Testing of min 30 kW _p grid connected rooftop Solar Power Plant comprising of minimum 260Wp PV modules mounted on a suitable Module Mounting Structure (MMS) with minimum two numbers of string inverters having minimum capacity of 15 kVA, isolation transformer of minimum 35 kVA and manual disconnector, all the required wiring and cabling work with DC and AC junction box and connection of solar power to utility power, all civil and mechanical works with material required for successful completion of work, rectification of any damage to roof or building or materials during execution of work. The system shall comprise of all the electrical protection, safety, metering, earthing and lightning protection, any other work of any nature not mentioned but essential for successful completion of work etc. The work shall be carried out as per the technical specification given in NIT.	Lot		1	
2.	3 ½ core, 1100V, PVC armored, PVC sheathed Al power Cable of 50 sq. mm as per technical specification in NIT	Meters		60	
3.	Labour and Lifting Cost	LS			

- Service Tax will be paid extra as applicable on Labour and Lifting costs for successful Commissioning, Installation and Testing of Solar Rooftop Power Plant.