



GVK Coal (Tokisud) Company Pvt Ltd (GCTCPL)

NOTICE INVITING TENDER

FOR

COAL HANDLING PLANT

AT

TOKISUD NORTH CAPATIVE COAL MINE

OF

SOUTH KARANPURA AREA

Dist - Hazaribagh

State – JHARKHAND

NIT BID SPECIFICATION NO. GVK/Tokisud coal/CHP/NIT/013

Dated 09 March, 2012.

**VICE PRESIDENT – PROJECT DEVELOPMENT
GVK COAL (TOKISUD) COMPANY PVT LTD (GCTCPL)**

PAIGAH HOUSE,

**156-159, SARDAR PATEL ROAD,
SECUNDERABAD - 500 003, INDIA**

EMAIL: tokisudnorth@gvk.com

Website: www.gvk.com

CONTENTS

Sl.No.	Contents	Page No.
PART - I		
1	NOTICE INVITING TENDER	3 - 6
2	INSTRUCTIONS TO BIDDERS	7 - 17
3	GENERAL TERMS AND CONDITIONS OF CONTRACT	18 - 33
4	GENERAL TECHNICAL CONDITIONS	34 - 45
5	ERECTION CONDITIONS OF CONTRACT	46 - 56
6	BASIC DATA AND SYSTEM DESCRIPTION	57 - 73
PART - II		
7	TECHNO COMMERCIAL OFFER (TECHNICAL PACKAGE)	75 - 76
PART - III		
8	FINANCIAL BID	78 - 81
APPENDIX		
9	APPENDIX – 1 – FORMS OF BID AND QUALIFICATION INFORMATION	
	ANNEXURE – I : FORM OF BID	83 -85
	ANNEXURE – II : QUALIFICATION INFORMATION	86 -89
	ANNEXURE – III : BILL OF QUANTITIES	90
	ANNEXURE – IV : POWER OF ATTORNEY	91
	ANNEXURE – V : CERTIFICATE	92
	ANNEXURE – VI : FORMAT FOR EARNEST MONEY DEPOSIT	93 -95
10	APPENDIX – 2 : LIST OF DRAWINGS	Given Separately
11	APPENDIX – 3 : OTHER TECHNICAL REPORTS	Soil Testing Report – Given Separately

Notice Inviting Tender

COMPANY: GVK Coal (Tokisud) Company Pvt Ltd (GCTCPL)

PROJECT / AREA: TOKISUD NORTH OCP, SOUTH KARANPURA AREA

TENDER NOTICE NO: [GVK/Tokisud coal/CHP/NIT/010 dated 09 March 2012.](#)

1. Sealed turn-key tenders are invited from reputed and experienced bidders for the following work:

Name of the work:

Planning, Design, Engineering, Procuring, Construction, Fabrication, Supply, Erection, Commissioning & Trial Run of 1000 TPH Coal Handling Plant at Tokisud North OCP, South Karanpur Area, Hazaribagh Dist. complete with Civil, Structural, Electrical & Mechanical works of Conveyor System along with allied auxiliary facilities such as Dust Suppression System, Fire fighting System, Plant Cleaning System, Illumination & Communication System, Construction of Utility Buildings & Compound Wall, Lying of approach Roads in CHP area, etc. as per given layout of requirement on Turnkey basis.

Bidders desirous of supplying Feeder Breakers, Secondary Crushers, Belt conveyors, drives etc., can also submit the bids against this NIT.

Location:

Tokisud North Captive Coal Mine, Hazaribagh district of South Karanpura Coalfields.

Estimated value of the Project: Rs.2390.00 Lakh

Expected date of Commencement: The work shall commence from the 30th day of issue of LOA or handing over of site, whichever is later.

Period of Completion: 12 months.

2. **Earnest Money:**

Rs. 5,00,000.00 (Rupees Five Lakhs) only Earnest Money / Bid Security is to be deposited in the form of irrevocable Bank Guarantee from any Scheduled Bank with validity 28 days beyond the validity of the Bid in the format given in the Bid

document. Demand Drafts will also be acceptable as Earnest Money / Bid Security drawn in favour of “GVK Coal (Tokisud) Company Private Limited” payable at Hyderabad. Earnest Money / Bid Security of the unsuccessful bidder shall be refundable as promptly as possible after opening of Price Bid and finalisation of the tender and shall bear no interest.

3. Application fee for Tender document:

The price of the Tender document shall be **Rs.5000.00** (Rupees Five thousand) only payable either in cash or by Bank draft (non-refundable) drawn in favour of “GVK Coal (Tokisud) Company private Limited” payable at Hyderabad.

4. Availability of Tender documents:

4.1 The tender documents including terms and conditions of work, shall be available, on payment can be obtained either in person or by post from the Office of

Vice President – Project Development
GVK Coal (Tokisud) Company Pvt Ltd (GCTCPL)
Paigah House, 156-159, Sardar Patel Road,
Secunderabad- 500 003, India
Email: tokisudnorth@gvk.com
Fax: 040-27902665

From **12th March 2012 to 10th April 2012**. (Excluding Holiday) during office hours. Any cash payment for obtaining NIT shall not be accepted if the NIT is requested by post. The cost of NIT is non refundable.

GCTCPL takes no responsibility for any delay, loss or non-receipt of the NIT sent by post / courier.

4.2 Complete tender documents are also available on website www.gvk.com , from **12th March 2012 to 10th April 2012**. This can be down loaded from the website for submitting the tender. However, Bidders using downloaded tender document has also to pay the cost of tender document in the form of D.D. in favour of **GVK Coal (Tokisud) Company Private Limited**, payable at **Hyderabad** to be submitted in Part –I envelope of the tender. The Bidder has to submit an undertaking (Annexure-V) duly filled up as required in this connection

5. General Instructions for Submission of Tender:

A Bidder should strictly comply with the following instructions:

a) A Bidder is required to submit his offers in sealed covers giving reference to this Tender Notice No. and date, containing offers in three parts prominently superscripted as Part I, Part II and Part III respectively.

b) Three parts should contain the details of the offer as follows.

- **Part I** - Full details of the firm, information on the supplies of equipment to different parties in the country, details of project handled, testimonials and documentary evidence in support of satisfactory performance, financial capabilities and any other relevant information the Earnest Money Deposit and cost of tender documents.

Any subsequent corrigendum/ amendments and clarification issued by GCTCPL shall also form an integral part of NIT. NIT along with corrigendum/ amendments and clarification issued by GCTCPL shall be signed on each page by the authorised signatory of the Bidder for submission

- **Part II** – Technical offer along with technical specifications of equipment / Knowhow offered, drawings, pamphlets etc. strictly in terms of tender enquiry
- **Part III** - Prices only in the format as indicated in the tender documents.

c) **Part II** and **III** of the offer shall be opened only in respect of such tenders as are found valid after scrutiny of Part I.

d) The inner envelope shall be marked “Planning, Design, Engineering, Procuring, Construction, Fabrication, Supply, Erection, Commissioning & Trial Run of 1000 TPH Coal Handling Plant at Tokisud North OCP, South Karanpur Area, Hazaribagh Dist. complete with Civil, Structural, Electrical & Mechanical works of Conveyor System along with allied auxiliary facilities such as Dust Suppression System, Fire fighting System, Plant Cleaning System, Illumination & Communication System, Construction of Utility Buildings & Compound Wall, Lying of approach Roads in CHP area, etc. as per given layout of requirement on Turnkey basis” Followed by “**Part A, B or B**” as the case may be. All the inner envelopes shall also have the name and address of the Bidder. All the inner envelopes shall be sealed in an outer envelope clearly marked as “**Lump Sum Bid for Coal Handling Plant**” and “**To be Vice President – Project Development**”. Outer cover shall also have the name and address of the Tendered.

6. Validity period of Offer:

The rates offered in Part III should be valid for a period not less than **one hundred and eighty** days after the deadline for bid submission.

7. Receipt of tenders:

Tenders are to be received in Sealed covers up to **16.00 Hrs** on **12th April 2012** at the following office of

Vice President – Project Development
GVK Coal (Tokisud) Company Pvt Ltd (GCTCPL)
Paigah House, 156-159, Sardar Patel Road,
Secunderabad- 500 003, India
Email: tokisudnorth@gvk.com
Fax: 040-27902665.

8. Opening of Tenders:

The received Proposals shall be opened on the same day at **17.00 hours** at the above mentioned address. The Bidder's representative may choose to be present at the time of opening of the Proposals for which they have to submit the authorisation certificate or letter from the respective Bidder. In the event, the specified date for the submission of bids being declared as holiday for GCTCPL, the bid will be received up to the appointed time on the next working day.

9. Deputation of representatives for negotiation:

After opening of the tender, if the company decides to negotiate, the Bidders should be in a position to depute their representatives at short notice with full authority for negotiating on technical as well as commercial terms and conditions of the contract.

- 10.** The company is not under any obligation to accept the lowest tender / tenders and reserves the right to reject any or all the tenders without assigning any reason whatsoever and also to distribute the work and allot the work / works to more than one Bidder, at its sole discretion.
- 11.** The Bidders are deemed to have visit the project site and ascertain the site conditions. No claim for any site related issues shall be entertained by GCTCPL.
- 12.** The bidders are required to sign the Contract Agreement.

INSTRUCTIONS TO BIDDERS

1. SCOPE OF TENDER:

Planning, Design, Engineering, Procuring, Construction, Fabrication, Supply, Erection, Commissioning & Trial Run of 1000 TPH Coal Handling Plant at Tokisud North OCP, South Karanpur Area, Hazaribagh Dist. complete with Civil, Structural, Electrical & Mechanical works of Conveyor System along with allied auxiliary facilities such as Dust Suppression System, Fire fighting System, Plant Cleaning System, Illumination & Communication System, Construction of Utility Buildings & Compound Wall, Lying of approach Roads in CHP area, etc. as per given layout of requirement on Turnkey basis.

Bidders desirous of supplying Feeder Breakers, Secondary Crushers, Belt conveyors, Drives etc., can also submit the bids against this NIT.

2. ELIGIBLE BIDDERS:

The Invitation for Bids is open to all bidders eligible to participate as Individual.

All bidders shall provide in Part I, Forms of Bid and Qualification Information, a statement that the Bidder is not associated, nor has been associated in the past, directly or indirectly, with the consultant or any other entity that has prepared the design, specifications and other documents for the Project or being proposed as engineer for the contract.

A firm that has been engaged by the Engineer to provide consulting services for the preparation or supervision of the works shall not be eligible to Bid.

3. QUALIFICATION OF THE BIDDER:

- i. All bidders shall provide all information in Part I, Forms of bid and qualification information.
- ii. All bidders shall include the following information and documents with their Bids (copies of all documentary evidences are to be duly authenticated by the Bidders / constituted attorney of the Bidder with full signature in indelible ink and seal. All signed declarations are to be made in the Bidder's letter head.)
 - a) Copies of original documents defining the constitution of legal status, place of registration and principal place of business; written power of attorney of signatory of the Bid to commit the Bidder.
 - b) Total monetary value of contractual work performed for each of the last five years.

- c) Experience in works of similar nature and size for each of the last five years, and details of work under way or contractually committed; and the name and address of clients who may be contacted for further information on those contracts with performance certificate for the works executed in last five years from the respective owners.
- d) Major items of construction equipment proposed to carry out the Contract.
- e) Qualifications and experience of key site management and technical personnel proposed for the contract.
- f) Reports on financial standing of Bidder, such as profit and loss statement and auditor's reports for the past five years.
- g) Evidence of possessing adequate working capital, at least **20%** of the value of this work inclusive of access to lines of credit and availability of other financial resources to meet the requirement to be furnished by the Bidder.
- h) Authority to seek references from the Bidder's Bankers.
- i) Information regarding any litigation, current or during the last five years, in which the Bidder is involved, the parties concerned, and disputed amount including status of final settlement of contracts including claims / counter claims, liquidated damages, bonus etc. if any.
- j) Proposals for subcontracting components of the Works amounting to more than 10 percent of the Contract price.
- k) Permanent Income Tax Account No. (PAN).
- l) 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 by any Govt or Quasi Govt Agencies or PSU's that fact must be clearly stated and it may not necessarily be a cause for disqualifying him. If this declaration is not given the bid will be rejected as non- responsive.
- m) The intending tenderer must have in its name as prime contractor experience having successfully completed **"Design, Supply, Construction & Commissioning of Integrated Bulk Material Handling System / CHP / RLS / UTLS with Conveyor System for Coal or other minerals and its allied works on Turn-Key basis** during last 5 (Five) years ending last day of month previous to the one in which bid application are invited.
- n) In case the bidder is not a Prime Contractor but a Sub-Contractor, the bidder's experience as subcontractor will be taken into account if the contract in support of qualification is a sub-contract in compliance with the provision of such subcontract in the original contract awarded to prime contractor.

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

- Made misleading or false representations in the forms, statements and attachments submitted in proof of the qualification requirements; and /or
- Record of poor performance such as abandoning the works, not properly completing the contract, inordinate delays in completion, litigation history, or financial failures etc.

4. ONE BID PER BIDDER:

Each bidder shall submit only one Bid. A Bidder who submits or participates updated estimated value in more than one Bid (other than as a subcontractor or in cases of alternatives that have been permitted or requested) will cause all the proposals with the Bidder's participation to be disqualified.

5. 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 or liable for those costs.

6. 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 construction of the works. The costs of visiting the Site shall be at the Bidder's own expense.

7. CONTENT OF BIDDING DOCUMENTS:

The set of bidding documents comprises the documents listed in the table below and addenda issued in accordance with Clause 9:

PART - I

Section 1 - Notice inviting tender

Section 2 - Instructions to bidders

Section 3 - General Terms and Conditions of Contract

Section 4 - General Technical Conditions

Section 5 - Erection conditions of Contract

Section 6 - Scope of work, Basic Data & System Description

Section 7 - Bill of Quantities / Price Bid in Pricing Format.

PART – II Techno Commercial Offer (Technical Package)

PART – III Financial Bid

APPENDIX – 1 Form of Bid and Qualification Information

APPENDIX – 2 List of Drawings

APPENDIX – 3 Other Technical Reports.

8. CLARIFICATION OF BIDDING DOCUMENTS:

A prospective Bidder requiring any clarification of the bidding documents may notify the Employer in writing or by cable (cable includes telex and facsimile) at the Employer's address indicated in the Notice Inviting Tender. The Employer will respond to any request for clarification received earlier than 15 days prior to the dead line for the submission of Bids.

9. AMENDMENT OF BIDDING DOCUMENTS:

Before the dead line for submission of Bids, the Employer may modify the bidding documents by issuing addenda.

Any addendum thus issued shall be part of the bidding documents and shall be communicated in writing or by cable to all purchasers of the bidding documents. Prospective bidders shall acknowledge receipt of each addendum by cable to the Employer.

To give prospective Bidders reasonable time in which to take an addendum into account in preparing their bids, the Employer shall extend, as necessary, the deadline for submission of Bids, in accordance with Sub-clause 19.2 below. And the same is also to be communicated simultaneously to all the purchasers of the bidding document.

10. LANGUAGE OF BID:

All documents relating to the Bid shall be in English language.

11. DOCUMENTS COMPRISING THE BID:

The Bid comprising of three parts will be submitted by the bidder in the following manner:

A) **Part I** of the bid to be submitted in 1st inner sealed envelope comprising of –

- i. Bid security / earnest money deposit
- ii. Cost of Tender document (D.D. in case down loaded from web site / Receipt of cost of Tender document)
- iii. Letter of the bidder submitting the bid in the form as stipulated in Contractor's bid of the bid document and
- iv. Qualification information as indicated in bid document and Documents as required in accordance with stipulations of bid document and any other materials required be completing and submitting by bidder in accordance with these instructions.
- v. Any subsequent corrigendum/ amendments and clarification issued by GCTCPL shall also form an integral part of NIT. NIT along with corrigendum/ amendments and clarification issued by GCTCPL shall be signed on each page by the authorised signatory of the Bidder for submission

B) **Part II** of the bid to be submitted in the 2nd inner sealed envelope comprising of

- i. Technical offer along with technical specifications of equipments / know-how offered, drawings, pamphlets etc. strictly in terms of tender enquiry.
- ii. Alternative offers of the bidder, if any, fulfilling the requirements in terms of tender inquiry with specifications and details.

C) **Part III** of the bid, to be submitted in 3rd inner sealed envelope, shall comprise of Price Bid only in the format as indicated in the tender documents.

D) All the inner sealed envelopes will then be placed in one outer envelope, sealed and marked properly as per Clause 18 and submitted to the employer at its address before the deadline for submission of the bid as described in Clause 19.

12. BID PRICES:

- a) The contract shall be for the whole Works as described, based on the scope of work as detailed in the bidding document.

- b) The bidder shall submit rates and prices for all items of the Works described in the scope of works, corrections, if any, shall be made by crossing out, initialling dating and rewriting. **The bidders may quote their bid either Item-Wise or Broad Head-Wise.**
- c) 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/bid, shall be included in the rate, prices and the total Bid Price submitted by the bidder.
- d) All incidentals, 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.
- e) However, such duties, taxes, Levis etc. which are 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.
- f) In case of decrease in duties, taxes, Levis etc., the same shall be refunded by the bidder or to be deducted by the owner.
- g) As per Section 65(105) (zzzza) of the Finance Act, the turnkey contract falls under “works contract” and is a taxable service. The liability to pay Service Tax lies with the Contractor. However, the Contractor shall show the Service Tax claim separately in his bill and mention his Service Tax Registration number.
- h) 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 indicated in the bidding document.

13. CURRENCIES OF BID AND PAYMENT:

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

14. BID VALIDITY:

The validity of the Proposal should be six (6) months from the Bid Deadline. However, GCTCPL may request the bidders for extension of validity of the proposal. GCTPCL reserves the right to reject any Proposal which does not meet this requirement.

15. BID SECURITY / EARNEST MONEY DEPOSIT:

Rs. 5,00,000.00 (Rupees Five Lakhs) only Earnest Money / Bid Security is to be deposited in the form of irrevocable Bank Guarantee from any Scheduled Bank with validity 28 days beyond the validity of the Bid in the format given in the Bid document. Demand Drafts will also be acceptable as Earnest Money/Bid Security drawn in favour of “GVK Coal (Tokisud) Company Private Limited” payable at Hyderabad. Earnest Money / Bid Security of the unsuccessful bidder shall be refundable as promptly as possible after opening of Price Bid and finalisation of the tender and shall bear no interest.

The EMD shall be forfeited in the following cases:

- a) In case the Bidder withdraws its Proposal after the Bid Deadline;
- b) In case the Preferred Bidder fails to provide the Performance Bank Guarantee prior to execution of the Agreement, and / or fails to execute the Agreement within the stipulated time or any extension thereof provided by GCTCPL.
- c) In case any information or document furnished by the Bidder turns out to be misleading or untrue in any material respect.

16. ALTERNATIVE PROPOSALS BY BIDDERS:

- a) Bidders shall submit offers that comply with the requirements of the Bidding documents, including the basic technical design as indicated in the drawings and specifications. Alternatives will not be considered, unless specifically allowed in the Bidding Data. If so allowed, Sub-Clause (b) shall govern.
- b) If so allowed in the bid document, Bidders wishing to offer technical alternatives to the requirements of the bidding documents must also submit a Bid that complies with the requirements of the Bidding documents, including the basic technical design as indicated in the drawings and specifications. In addition to submitting the basic Bid, the Bidder shall provide all information necessary for a complete evaluation of the alternative by the Employer, including design calculations, technical specifications, and breakdown of prices proposed construction methods and other relevant details. Only the technical alternatives, if any, of the lowest evaluated Bidder conforming to the basic technical requirements stipulated in the bidding document shall be considered by the Employer.

17. FORMAT AND SIGNING OF BID:

- a) The bidder shall prepare the bidding documents comprising the Bid as described in Clause 11 of these instructions to Bidders.

- b) All documents of the bid shall be typed or written in indelible ink and shall be signed by a person duly authorized to sign on behalf of the Bidder. The person signing the Bid shall initial in indelible ink in all pages of the Bid document.

18. SEALING, MARKING AND SUBMISSION OF BIDS:

- a) The Bidder shall seal the Bid in three inner sealed envelopes and one outer sealed envelope, duly marking the inner envelopes in the following manner:
 - i. 1st inner sealed envelope will be marked “Part I-Bid for “”comprising of Bid security / EMD with qualification information.”
 - ii. 2nd inner sealed envelope will be marked as “Part II – Technical and Commercial part for “”.
 - iii. 3rd inner sealed envelope will be marked “Part III – Price Bid for “”.
 - iv. Outer Sealed envelope will be marked as “Bidding Documents for “.....”.
- b) The inner envelopes placed in the outer envelopes shall be addressed to the Employer at the following address and submitted accordingly before the deadline for submission of bid as indicated in Clause 19:

Vice President – Project Development
GVK Coal (Tokisud) Company Pvt Ltd (GCTCPL)
Paigah House, 156-159, Sardar Patel Road,
Secunderabad- 500 003, India.

19. DEADLINE FOR SUBMISSION OF BIDS:

- 1) Bids shall be delivered to the employer at the address specified above not later than **12th April 2012** up to **16.00 Hrs.** In the event of the specified date for the submission of bids being declared a holiday for the Employer, the Bids will be received up to the appointed time on the next working day.
- 2) The Employer may extend the dead line for submission of Bids by issuing an amendment in accordance with Clause 9, in which case all rights and obligations of the Employer and the Bidders previously subject to the original deadline will then be subject to the new deadline.

20. LATE BIDS:

Any Bid received by the Employer after the deadline prescribed in Clause 19 due to any reason whatsoever will not be accepted.

21. MODIFICATION AND WITHDRAWAL OF BIDS:

Bidders are allowed to withdraw the Proposal before the Bid Deadline. In case a Bidder wishes to amend the Proposal submitted by it before the Bid Deadline, it can do so by withdrawing the original Proposal submitted by it and resubmitting a fresh Proposal before the Bid Deadline.

22. BID OPENING:

The received Proposals shall be opened on the same day at 17.00 hours at the above mentioned address. The Bidder's representative may choose to be present at the time of opening of the Proposals for which they have to submit the authorisation certificate or letter from the respective Bidder. In the event, the specified date for the submission of bids being declared as holiday for GCTCPL, the bid will be received up to the appointed time on the next working day.

23. PROCESS TO BE CONFIDENTIAL:

Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall not be disclosed to Bidders or any other persons not officially concerned with such process until the award to the successful Bidder has been announced. Any effort by a Bidder to influence the Employer's processing of Bids or award decisions may result in rejection of his bid.

24. CLARIFICATION OF BIDS:

No document presented by the Bidder after closing date and time of the bid will be taken into account by the Evaluation Committee unless otherwise called for during technical scrutiny by the tender committee as clarification. This However will have no bearing with the price quoted in the price bid.

25. EXAMINATION OF BIDS AND DETERMINATION OF RESPONSIVENESS:

- a. Prior to the detailed evaluation of Bids, the Employer will determine whether each Bid :
 - meets the eligibility criteria defined in Clause 3
 - has been properly signed
 - is accompanied by the required securities ; and
 - Is substantially responsive to the requirements of the Bidding documents.

- b. A substantially responsive Bid is one which conforms to all the terms, conditions & specifications of the Bidding documents without material deviation or reservation. A material deviation or reservation is one:
- which affects in any substantial way the scope, quality, or performance of the works
 - which limits in any substantial way, inconsistent with the Bidding documents, the Employer's rights or the Bidder's obligations under the Contract ; or
 - whose rectification would affect unfairly the competitive position of other Bidders presenting substantially responsive Bids
- c. If a Bid is not substantially responsive, it may be rejected by the Employer at its sole discretion.

26. AWARD CRITERIA:

The Employer will award the Contract to the best qualified Bidder whose Bid has been determined to be substantially responsive to the Bidding documents and who has offered the lowest evaluated Bid Price. Employer shall be the sole judge in this regard.

27. EMPLOYER'S RIGHT TO ACCEPT ANY BID AND TO REJECT ANY OR ALL BIDS:

Notwithstanding Clause 26, the Employer reserves the right to accept or reject any Bid and to cancel the bidding process and reject all Bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

28. NOTIFICATION OF AWARD AND SIGNING OF AGREEMENT:

- i) The Bidder, whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity period by cable, telex or facsimile confirmed by registered letter. 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, completion and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called "the Contract Price").
- ii) 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 29.

- iii) 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.
- iv) Upon the furnishing by the successful Bidder of the Performance Security / Security Deposit, the Employer will promptly notify the other Bidder that their Bids have been unsuccessful and refund the Bid Security / Earnest Money Deposit.

29. PERFORMANCE SECURITY / SECURITY DEPOSIT / PERFORMANCE GUARANTEE:

- i) Contractor shall submit Performance Guarantee at 5% of contract value in the form of Bank Guarantee of valid till end of successful completion of Defect Liability period as per the format approved by Employer within 15 days of issuance of Letter of Acceptance.
- ii) The Contract Performance Guarantee will be returned to the Contractor without any interest at the end of the Guarantee period.
- iii) The Performance Guarantee shall cover additionally the following guarantees to the Employer:
 - The successful bidder guarantees the successful and satisfactory operation of the equipment furnished and erected under the contract, as per the specifications and documents,
 - The successful Bidder further guarantees that the equipment provided and installed by him shall be free from all defects in design, material and workmanship and shall upon written notice from the employer fully remedy free of expenses to the Employer such defects as developed under the normal use of the said equipment within the period of guarantee specified in the relevant clause of the Conditions of the Contract.

30. EMPLOYMENT OF LOCAL LABOUR:

“Contractors are to employ, to the extent possible, only local project affected people and pay wages not less than the minimum wages fixed by the local Government”.

31. LEGAL JURISDICTION:

The document shall be governed by and interpreted in accordance with laws in force in India and the courts of Hyderabad, Andhra Pradesh, India shall have exclusive jurisdiction over matters relating thereto.

GENERAL TERMS AND CONDITIONS OF CONTRACT

1) ASSIGNMENT AND SUBLETTING OF CONTRACT:

- A.** The Contractor may, after informing the engineer and getting his written approval, assign or sublet the contract or any part thereof other than for raw materials, for minor detail or any part of the plant for which makes are identified in the contract. Suppliers of the equipment not identified in the contract or any change in the identified supplier shall be subject to approval by the engineer. The experience list of the equipment vendors under consideration by the contractor for this contract shall be furnished to the engineer for approval prior to the procurement of all such items / equipments. Such assignment sub-letting shall not relieve the contractor from any obligation, duty or responsibility under the contract. Any assignment as above without prior written approval of engineer shall be void.
- B.** For components / equipments procured by the contractors for the purposes of the contract, after obtaining the written approval of the owner, the contractor's purchase specifications and enquiries shall call for quality plans to be submitted by the suppliers along with their proposals. The quality plans called for from the vendors shall set out, during the various stages of manufacture and installation, the quality practices and procedures followed by the vendor's quality control organization, the relevant reference documents / standards used, acceptance level, inspection documentation raised, etc. Such quality plans of the successful vendor shall be discussed and finalized in consultation with the engineer and shall form a part of the purchase order/contract between the contractor and the vendor. Within 3 weeks of the release of the same purchase order/contracts for such bought out items/components, a copy of the same without price details but together with detailed purchase specifications, quality plans and delivery conditions shall be furnished to the engineer by the contractor.

2) PATENT RIGHTS AND ROYALTIES:

Royalties and fees for patent covering materials, articles, apparatus, devices, equipment or processes used in the works shall be deemed to have been included in the contract price. The contractor shall satisfy all demands that may be made at any time for such royalties or fees and he alone shall be liable for any damages or claims for patent infringements and shall keep the owner indemnified in that regard.

3) TIME - THE ESSENCE OF CONTRACT:

- a.** The time and the date of completion of the works as stipulated in the contractor's proposal and accepted by the owner without or with modifications, if any and so incorporated in the award letter shall be deemed to be the essence of the contract. The contractor shall so organize his resources and perform his work as to complete it not later than the date agreed to.

- b. The contractor shall submit a detailed PERT network within the time frame agreed above consisting of adequate number of activities covering various key phases of the works such as design, procurement, manufacturing, shipment and field erection activities within fifteen (15) days after the date of acceptance of tender. This network shall also indicate the interface facilities to be provided by the owner and the dates by which such facilities are needed.
- c. The above PERT network shall be reviewed and periodic review reports shall be submitted by the contractor as directed by the engineer.
- d. Subsequent to the award of the contract, the contractor shall make available to the engineer, a detailed manufacturing programme, in line with the agreed contract network. Such manufacturing programme shall be reviewed, updated and submitted to the Engineer, once every two month thereafter.

4) CONTRACT PRICE:

The lump sum prices quoted by the contractor in his bid with additions and deletions and as may be agreed before signing of the contract, for the entire scope of the work including furnishing and erection of equipment covered under the specifications and documents and shall be treated as the contract price.

5) CHANGED QUANTITY:

The owner reserves the right to vary the quantities of items or groups of items to be ordered as specified in the accompanying technical specifications, as may be necessary, during the execution of contract, but such variations unless otherwise specified in the accompanying technical specifications shall be limited to plus or minus twenty percent (20%) of the original quantity ordered.

6) DEDUCTION FROM CONTRACT PRICE:

All costs, damages or expenses which the owner may have paid, for which under the contract the contractor is liable, will be claimed by the owner. All such claims shall be billed by the owner to the contractor regularly as and when they fall due. Such bills shall be supported by appropriate and certified vouchers or explanations, to enable the contractor to properly identify such claims. Such claims shall be paid by the contractor within fifteen (15) days of the receipt of the corresponding bills and if not paid by the contractor within the said period, the owner may then deduct the amount, from any moneys due or becoming due by him to the contractor under the contract or may be recovered by actions of law or otherwise, if the contractor fails to satisfy the owner of such claims.

7) PACKING, FORWARDING AND SHIPMENT:

- a. The contract, wherever applicable, shall after proper painting, pack and crate all equipment in such a manner as to protect them from deterioration and damage during rail and road transportation to the site and storage at the site till the time of erection. The contractor shall be held responsible for all damages due to improper packing.
- b. The contractor shall notify the owner of the date of each shipment from his works, and the expected date of arrival at the site for the information of the owner.
- c. The contractor shall prepare detailed packing list of all packages and containers, bundles and loose material forming each consignment dispatched to site. The contractor shall further be responsible for making all necessary arrangements for loading, unloading and other handling right from his works up to the site and also till the equipment is erected, tested and commissioned. He shall be solely responsible for proper storage and safe custody of all equipment.

8) DEMURRAGE, WHARFAGE, ETC.

All demurrage, wharf age and other expenses incurred due to delayed clearance of the material or any other reason shall be to the account of the contractor.

9) INSURANCE:

- a. The contractor shall arrange, secure and maintain insurance as may be necessary and for all such amounts to protect his interests and the interests of the owner, against all risks as detailed herein in the joint names of the Owner and the Contractor with the condition that payments against all claims shall be payable by insurers to the owner as elaborated at clause 13.5. All premiums and other charges of the said insurance policies shall be paid by the contractor. The form and the limit of such insurance as defined herein together with the under –writer thereof in each case shall be acceptable to the owner. However, irrespective of such acceptance, the responsibility to maintain adequate insurance coverage on comprehensive all risks basis at all time during the period of contract shall be that of the contractor alone. The contractor’s failure in this regard shall not relieve him of any of his contractual responsibilities and obligations.
- b. Any loss of damage to the equipment, during handling, transporting, storage and erection, till such time the plant is taken over by the owner, shall be to the account of the contractor. The contractor shall be responsible for preferring of all claims and make good for the damage or loss by way of repairs and /or replacement of the portion of the works damaged or lost. The transfer of title shall not in any way relieve the contractor of the above responsibilities during the period of the contract. The contractor shall provide the owner with a copy of

all insurance policies and documents taken out by him in pursuance of the contract. Such copies of document shall be submitted to the owner immediately after such insurance coverage. The contractor shall also inform the owner in writing at least sixty (60) days in advance, regarding the expiry, cancellation and/or change in any of such documents and ensure revalidation/renewal, etc. as may be necessary well in time.

- c. the risk that are to be covered under the insurance shall include, but not be limited to, the loss or damage in transit, theft, pilferage, riot, civil commotion, weather conditions, accidents of all kinds, fire, etc. The scope of such insurance shall cover the entire value of the works from time to time.
- d. All costs on account of insurance liabilities covered under the contract will be on contract's account and will be included in contract price. However, the owner may from time to time, during the pendency of the contract, ask, the contractor in writing to limit the insurance coverage risks and in such case, the parties to the contract will agree for a mutual settlement for reduction in contract price to the extent of reduced premium amounts.
- e. All insurance claims, payable by the insurers, shall be paid to the Owner which shall be released to the contractor in instalments as may be certified by 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.
- f. The clause entitled insurance under the section erection terms and conditions of contract of this volume covers the additional insurance requirements for the portion of the works to be performed at the site of work.

10) LIABILITY FOR ACCIDENTS AND DAMAGES:

Under the contract, the contractor shall be responsible for loss or damage to the plant until the plant is taken over in accordance with clause entitled 'Taking Over' in section technical terms and conditions of contract of this volume.

11) LIQUIDATED DAMAGES FOR DELAY IN COMPLETION:

- a. If the contractor fails to maintain the required progress in terms of the agreed time and progress chart or to complete the work and clear the site on or before the date of completion of contract or extended date of completion, he shall without prejudice to any other right or remedy available under the law to the company on account of such breach, pay as compensation/ Liquidated Damages @ one percent (1%) of the contract price per week of delay. The aggregate of such compensation / compensations shall not exceed 20(twenty) % of the total value as shown in the contract.

- b. This will also apply to items or group items for which separate period of completion have been specified. 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.
- c. 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 one percent of the contract value of the works for each week or part of the week subject to a ceiling of 20% of the contract price.
- d. 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.
- e. 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.
- f. In the event of such termination of the contract as described in clauses e or d or both, the company, shall be entitled to recover L.D. up to twenty percent (20%) of the contract value and forfeit the security deposit made by the contractor besides getting the work completed by other means at the risk and cost of the contractor.
- g. The company may waive the payment of compensation, depending upon merit of the case, on request received from the contractor if the entire work is completed within the date as specified in the contract or as validly extended without stipulating any penalty.

12) CONTRACTOR'S DEFAULT:

- a. If the contractor shall neglect to execute the works with the diligence and expedition or shall refuse or neglect to comply with any reasonable orders given to him, in writing by the engineer in connection with the works or shall contravene the provisions of the contract, the owner may give notice in writing to the contractor to make good the failure, neglect or contravention complained of. Should the contractor fail to comply with the notice within thirty (30) days from the date of service thereof, then and in such case the owner shall be at liberty to employ other workmen and forthwith execute such part of the works as the contractor may have neglected to do or if the owner shall think fit, it shall be lawful for him, without prejudice to any other

right he may have under the contract, to take the works wholly or in part thereof and in that event the owner shall have free use of all contractor's equipment that may have been at the time on the site in connection with the works without being responsible to the contractor for fair wear and tear thereof and to the exclusion of any right of the contractor over the same, and the owner shall be entitled to retain and apply any balance which may otherwise be due on the contract by him to the contractor, or such part thereof as may be necessary, the payment of the cost of executing the said part of the works or of completing the works as the case may be. If the cost of completing the works or executing a part thereof as aforesaid shall exceed the balance due to the contractor, the contractor shall pay such excess. Such payment of excess amount shall be independent of the liquidated damages for delay which the contractor shall have to pay if the completion of work is delayed.

- b. In addition, such action by the owner as aforesaid shall not relieve the contractor of his liability to pay liquidated damages for delay in completion of works as defined in clause 11.0 of this section.
- c. The termination of the contract under this clause shall not entitle the contractor to reduce the value of the performance bank guarantee nor the time thereof. The performance guarantee shall be valid for the full value and for the full period of the contract including guarantee period.
- d. The bidding documents will clearly state that, if the contractor fails to complete the work and the order is cancelled, the amount due to him on account of work executed by him, if payable, shall be paid to him only after due recoveries as per the provisions of the contract and that too after alternative arrangements to complete the work has been made.

13) FORCE MAJEURE:

- a. Force majeure is herein defined as any cause which is beyond the control of the contractor or the owner as the case may be which they could not foresee or with a reasonable amount diligence could not have foreseen and which substantially affect the performance of the contract, such as:
 - i. Natural phenomena, including but not limited to floods, drought, earthquakes, and epidemics:
 - ii. Acts of any government, including but not limited to war, declared or undeclared, priorities, quarantines, embargoes, provided either party shall within fifteen (15) days from the occurrence of such a cause notify the other in writing of such causes.
- b. 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 causes of Force Majeure and neither company nor the bidder shall be liable to pay extra costs (like increase in rates, remobilisation advance, idle charges for labour and machinery etc.) Provided it is mutually established that the Force Majeure conditions did actually exist.

- c. If any of the Force Majeure conditions exists in the place of operation of the bidder even at the time of submission of bid he will categorically specify them in his bid and state whether they have been taken into consideration in their quotations.
- d. The contractor or the owner shall not be liable for delays in performing his obligations resulting from any force majeure cause as referred to and/or defined above. The date of completion will, subject to hereinafter provided, be extended by a reasonable time even though such cause may occur after contractor's performance of his obligations has been delayed for other causes.

14) DELAYS BY OWNER OR HIS AUTHORISED AGENT:

- a. In case the contractor's performance is delayed due to any act of omission on the part of the owner or his authorized agents, the contractor shall be given due extension of time for the completion of the works, to the extent such omission on the part of the owner has caused delay in the contractor's performance of his work. Regarding reasonableness or otherwise of the extension of time, the decision of the engineer shall be final.
- b. In addition, the contractor shall be entitled to claim demonstrable and reasonable compensation if such delays have resulted in any increase in the cost of work. The owner shall examine the justification for such a request for claim, and if satisfied, the extent of compensation shall be mutually agreed depending upon the circumstances at the time of such an occurrence.
- c. Any delay in finalisation of mutual agreement in regard to any of the contractor's claim/compensation against any act of omission on the part of the owners or his authorised agents should not result in any work stoppage/further delay on the part of the contractor.

15) EXTENSION OF DATE OF COMPLETION:

- a. On happening of any events causing delay as stated hereinafter, the contractor shall intimate immediately in writing the Engineer-in-charge:
 - i. due to any reason defined as Force Majeure
 - ii. non-availability of stores which are the responsibilities of the owner to supply
 - iii. non-availability or breakdown of tools and plant to be made available or made available by the owner

- iv. delay on the part of the contractors or tradesmen engaged by the owner not forming part of the contract, holding up further progress of the work
 - v. non-availability of working drawings/work programme in time, which are to be made available by the company during progress of the work
 - vi. Any other causes which, at the sole discretion of the company is beyond the control of the contractor.
- b. A “Hindrance Register” shall be maintained by both the Company and the Contractor at site to record various hindrances, as mentioned above, encountered during the course of execution.
- c. The contractor may request the company in writing for extension of time within 14 days of happening of such event causing delay stating also, if practicable, the period of which extension is desired. The company may, considering the eligibility of the request, give a fair and 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 month of the date of receipt of such request. The contractor shall however use his best efforts to prevent or make good the delay by putting his endeavours constantly as may be reasonably required of him to the satisfaction of the Engineer-in-charge.

16) TERMINATION, SUSPENSION, CANCELLATION & FORECLOSURE OF CONTRACT:

- a. The owner shall, in addition to other remedial steps to be taken as provided in the conditions of contract, be entitled to cancel the contract in full or in part, if the contractor
- i. 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**
- ii. 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**
- iii. 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**
- iv. 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 the company.

OR

- v. shall try to obtain a contract with the company by way of ring tendering or other non-bonafide method of competitive tendering

OR

- vi. Transfers, sublets, assign the entire work or any person 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.
- b. The owner shall in such an event give 15 (fifteen) days notice in writing to the contractor of his decision to do so.
 - c. The contractor upon receipt of such notice shall discontinue the work on the date and to the extent specified in the notice, make all reasonable efforts to obtain cancellation of all orders and contracts to the extent they are related to the work terminated and to the terms satisfactory to the owner, stop all further sub-contracting or purchasing activity related to the work terminated, and assist the owner in maintenance, protection, and disposition of the works acquired under the contract by the owner.
 - d. On cancellation of the contract or on termination of the contract, the Engineer-in - charge shall have powers
 - to take possession of the site and any materials, constructional plant, implements, stores etc., thereon
 - to carry out the incomplete work by any means at the risk of the contractor
 - to determine the amount to be recovered from the contractor for completing the remaining work or in the event the remaining work is not to be completed the loss / damage suffered, if any, by the company after giving credit for the value of the work executed by the contractor up to the time of termination / cancellation less on a/c payments made till date and value of contractor's materials, plant, equipment etc., taken possession of after termination / cancellation.
 - To recover the amount determined as above, if any, from any moneys due to the contractor or any account or under any other contract and in the event of any shortfall, the contractor shall be called upon to pay the same on demand.

17) Suspension of work:

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

extension of time shall be allowed by the company equal to the period of such suspension. Any necessary and demonstrable cost incurred by the contractor as a result of such suspension of the works will be paid by the owner, provided such costs are substantiated to the satisfaction of the engineer.

- b. The owner shall not be responsible for any liabilities if suspension or delay is due to some default on the part of the contractor or his sub contractor.
- c. The work shall, throughout the stipulated period of contract, be carried out with all due diligence on the part of the contractor. In the event of termination or suspension of the contract, on account of default on the part of the contractor, as narrated hereinbefore, the security deposit and other dues of this work or any other work done under this company shall be forfeited and brought under the absolute disposal of the company provided, that the amount so forfeited shall not exceed 20% of the contract value.

18) Foreclosure of contract in full or in part:

If at any time after acceptance of 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. In the event of abandonment / reduction in the scope of work, the company shall be liable:

- a. To pay the contractor at the contract rates full amount for the works executed and measured at site up to the date of such abandonment / reduction in the work.
- b. 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 supply for the work including supply to labour / staff quarters, office etc.
- 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 part if so desired by him and to be transported by the contractor from site to his place.
- 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 issued price less allowance for any deterioration or damaged 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.

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 amount payable in terms of Para 18.0(b), (c) and (e) above, the contractor shall not have any claim for compensation whatsoever either for abandonment or for reduction in the scope of work, other than those as specified above.

19) NO WAIVER OF RIGHTS:

Neither the inspection by the owner or the engineer or any of their officials, employees or agents nor any order by the owner or the engineer for payment of money or any payment for or acceptance of , the whole or any part of the works by the owner or by the engineer , nor any extension of time, nor any possession taken by the engineer shall operate as a waiver of any provision of the contract, or of any power herein reserved to the owner, or any right to damages herein provided, nor shall any waiver or any breach in the contract be held to be a waiver of any other subsequent breach.

20) LANGUAGE AND MEASURES:

All documents pertaining to the contract including specifications, schedules notices, correspondence, operating and maintenance instructions, drawings or any other writing shall be written in English language. The metric system of measurement shall be used exclusively in the contract.

21) RELEASE OF INFORMATION:

The contractor shall not communicate or use in advertising, publicity, sales releases or any other medium photographs or other reproduction of the works under this contract, or descriptions of the site, dimension, quantity, quality or other information, concerning the works unless prior written permission has been obtain from the owner.

22) CONSTRUCTION OF THE CONTRACT:

- a. Notwithstanding anything stated elsewhere in the bid documents, the contract to be entered into will be treated as divisible supply and erection contract. The supply portion of the contract will relate to the supply of equipment and materials and the erection portion will relate to the handling at the site, storage, erection, construction, testing, commissioning etc. as defined in the bid documents. The contractor will pay the sales tax for the supply of equipment and materials in accordance with law and the same will be reimbursed by the owner as a part of the total contract price on actual. The Sales tax should be

included in the total bid price in the proposal and should also be indicated separately.

- b. In case of divisible supply and erection contract, or where the owner hands over his equipment to the contractor for executing, then the contractor shall at the time of taking delivery of the equipment/despatch documents be required to execute an indemnity bond in favour of the owner in the form acceptable to the owner for keeping the equipment in safe custody and to utilise the same exclusively for the purposes of the said contract.
- c. The contract shall in all respects be construed and governed accordingly to Indian Laws.
- d. It is clearly understood that the total consideration for the contract(s) has been broken up into various components only for the convenience of payment of advance under the contract(s) and for the measurement of deviations or modifications under the contracts(s).

23) COMPLETION OF CONTRACT:

Unless otherwise terminated under the provisions of any other relevant clause, this contract shall be deemed to have been completed at the expiration of the guarantee period as provided for under the clause entitled 'Guarantee' in this section.

24) ENFORCEMENT OF TERMS:

The failure of either party to enforce at any time of the provisions of this contract or any rights in respect there to or to exercise any option herein provided, shall in no way be construed to be a waiver of such provisions, rights or options or in any way to affect the validity of contract. The exercise by either party of any of its rights herein shall not preclude or prejudice either party from exercising the same or any other right it may have hereunder.

25) CO-OPERATION WITH OTHER CONTRACTORS AND CONSULTING ENGINEERS:

The contractor shall agree to co-operate with the owner's other contractors and consulting engineers and freely exchange with them such technical information as is necessary to obtain the most efficient and economical design and to avoid unnecessary duplication of efforts. The engineer shall be provided with three copies of all correspondence addressed by the contractor to other sub-contractors and consulting engineers in respect of such exchange of technical information.

26) GUARANTEE:

- a. The contractor shall warrant that the equipment will be new and in accordance with the contract documents and be free from defects in material and workmanship for a period of twelve (12) calendar months commencing immediately upon the satisfactory completion of the trial operations.
- b. The contractor's liability shall be limited to the replacement of any defective parts in the equipment of his own manufacture or those of his sub-contractors, under normal use and arising solely from faulty design, materials, and / or workmanship provided always that such defective parts are repairable at the site and are not in the meantime essential in the commercial use of the plant.
- c. Such replaced defective parts shall be returned to the contractor unless otherwise arranged. No repairs or replacements shall normally be carried out by the engineer when the plant is under the supervision of the contractor's supervisory engineers.

27) REPLACEMENT OF DEFECTIVE PARTS AND MATERIALS:

- a. If during the progress of the works the engineer shall decide and inform in writing to the contractor, that the contractor has manufactured any plant or part of the plant unsound or imperfect or has furnished any plant inferior than the quality specified, the contractor on receiving details of such defects or deficiencies shall at his own expense within seven (7) days of his receiving the notice, or otherwise, within such time as may be reasonably necessary for making it good, proceed to alter, re-construct or remove such work and furnish fresh equipment up to the standards of the specifications.
- b. In case the contractor fails to do so, the engineer may on giving the contractor seven (7) days notice in writing of his intentions to do so, proceed to remove the portion of the works so complained of and, at the cost of the contractor, perform all such work or furnish all such equipment provided that nothing in this clause shall be deemed to deprive the owner of or affect any rights under the contract which the owner may otherwise have in respect of such defects and deficiencies.
- c. The contractor's full and extreme liability under this clause shall be satisfied by the payments to the owner of the extra cost, of such replacement procured, including erection, as provided for in the contract, such extra cost being the ascertained difference between the price paid by the owner for such replacements and the contract price portion for such defective plant and repayments of any sum paid by the owner to the contractor in respect of such defective plant. Should the owner not so replace the defective plant, the contractor's extreme liability under this clause shall be limited to repayment of all sums paid by the owner under the contract for such defective plant

28) LIMITATIONS OF LIABILITIES:

The final payment by the owner in pursuance of the contract shall mean the release of the contractor from all his liabilities under the contract. Such final payment shall be made only at the end of the guarantee period as detailed in clause 26 above and till such time as the contractual liabilities and responsibilities of the contractor, shall prevail. All other payments made under the contract shall be treated as on account payments.

29) PROGRESS REPORTS AND PHOTOGRAPHS:

During the various stages of the works in the pursuance of the contract, the contractor shall at his own cost submit periodic progress reports as may be reasonably required by the engineer with such materials as charts, net-works, photographs, test certificates, etc. such progress report shall be in the form and size as may be required by the engineer and shall be submitted in at least three (3) copies.

30) LONG TERM AVAILABILITY OF SPARES:

- a. The contractor shall guarantee the long term availability of spares to the owner for the full life of the equipments covered under the contract. The contractor shall guarantee that before going out of production of spare parts of the equipment covered under the contract, he shall give the owner at least twelve (12) months advance notice so that the latter may order his bulk requirement of spares, if he so desires. The same provision will also be applicable to sub-contractor. Further, in case of discontinuance of manufacture of any spares by the contractor or his sub-contractors the contractor will provide the owner two years in advance, with full manufacturing drawings, material specifications and technical information required by the owner for the purpose of manufacture of such items.
- b. Further, in case of discontinuance of supply of spares by the contractor or his subcontractors the contractor will provide the owner with full information for replacement of such spares with other equivalent makes, if so required by the owner.
- c. The contractor shall provide the owner with a “directory” of his sub-contractors giving the addresses and other particulars of his sub-contractors. The owner, if he so desires, shall have the right to procure the spares directly from sub-contractors.
- d. Notwithstanding anything stated elsewhere in the bid documents, the prices of all spares which may be procured to cover long term requirements beyond the 2 years maintenance and operational requirements will be generally in accordance with the mutually agreed prices.

- e. The contractor will indicate in advance the delivery period of the items of spares, which the owner may procure in accordance with the sub-clause 40.4. In case of emergency requirements of spares, the contractor would make every effort to expedite the manufacture and delivery of such spares on the basis of mutually agreed time schedule.
- f. The procedure specified in clause 40.4 and 40.5 shall apply for future procurement of items included in stand by spare list, mandatory spares lists, optional spares list and special tools, plants and equipment list, if any, specified in the bid documents.

31) PAYMENT:

The payment to the contractor for the performance of the work under the contract will be made by the owner as per the guidelines and conditions specified herein. All payment made during the contract shall be on account payments only. The final payment will be made on completion of all the works and on fulfilment by the contractor of all his liabilities under the contract.

32) CURRENCY OF PAYMENT:

All payments under the contract shall be in Indian Rupees only.

33) DUE DATES FOR PAYMENT:

Owner will make progressive payment as and when the payment is due as per the terms of payment set forth in the accompanying technical specifications. Payment will become due and payable by the owner within thirty (30) days from the date of receipt of contractor's bill/invoice/debit note by the owner, provided the documents submitted are complete in all respects.

34) PAYMENT SCHEDULE:

The contractor shall prepare and submit to the engineer for approval, a break-up of the contract price. This contract price break-up shall be interlinked with the agreed detailed PERT network of the contractor setting forth his starting and completion dates for the various key phases of works prepared as per condition of the section. Any payment under the contract shall be made only after the contractor's price breakup is approved by the engineer. The aggregate sum of the contractor's price break-up shall be equal to the lump sum contract price.

35) MODE OF PAYMENT:

The payments due on receipt of equipment and materials, and those for the inland transportation and the erection portion of the works shall be made direct to the contractor by the owner.

36) SETTLEMENT OF DISPUTES:

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

37) SALES TAX ON WORKS CONTRACTS:

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

GENERAL TECHNICAL CONDITIONS

1) GENERAL:

- a. This part covers technical conditions pursuant to the contract and will form an integral part of the contract. The following provisions shall supplement all the detailed technical specifications and requirements brought out in the accompanying technical specifications.
- b. The contractor's proposal shall be based on the use of equipment and materials complying fully with the requirements, specified herein. It is recognised that the contractor may have standardised on the use of certain components, materials, processes or procedures different than those specified herein.
- c. Alternate proposals offering similar equipment based on the manufacturer's standard practice will also be considered provided such proposals meet the specified designs, standard and performance requirements and are acceptable to the owner.

2) LIMIT OF CONTRACT:

- a. Equipment furnished shall be complete in every respect with all mountings, fittings, fixtures and standard accessories normally provided with such equipment and/or needed for erection, completion and safe operation of the equipment as required by applicable codes though they may not have been specifically detailed in the technical specifications unless included in the list of exclusions.
- b. All similar standard components / parts of similar standard equipment provided shall be inter-changeable with one another.

3) EQUIPMENT PERFORMANCE GUARANTEE:

- a. The performance tests of the equipment under the scope of the contract are detailed in the technical specifications. These guarantees shall supplement the general performance guarantee provisions covered under general terms & conditions of contract in clause entitled "Guarantee".
- b. Liquidated damages for not meeting performance guarantee during the performance and guarantee tests shall be assessed and recovered from the contractor, as detailed in the technical specifications. Such liquidated damages shall be without any limitation whatsoever and shall be in addition to damages, if any, payable under any other clauses of conditions of contract.

4) ENGINEERING DATA:

- a. The furnishing of engineering data by the contractor shall be in accordance with the schedule for each set of equipment as specified in the technical specifications.
- b. The review of these data by the engineer will cover only general conformance of the data to the specifications and documents interfaces with the equipment provided under the specifications, external connections and of the dimensions which might affect plant layout.
- c. This review by the engineer may not indicate a thorough review of all dimensions, quantities and details of the equipment, materials, any devices of items indicated or the accuracy of the information submitted. This review and/or approval by the engineer shall not be construed by the contractor, as limiting any of his responsibilities and liabilities for mistakes and deviations from the requirements, specified under these specifications and documents.
- d. All engineering data submitted by the contractor after final process including review and approval by the engineer shall form part of the contract documents and the entire works covered under these specifications shall be performed in strict conformity, unless otherwise expressly requested by the engineer in writing.

5) DRAWING:

- a. All drawings submitted by the contractor including those submitted at the time of bid shall be sufficiently detailed to indicate the type, size, arrangement, weight of each component, break-up for packing and shipment the external-connections, fixing arrangements required, the dimensions required for installation and inter-connections with other equipment and materials, clearances and spaces required between various portions of equipment and any other information specifically requested in the specifications.
- b. Each drawing submitted by the contractor shall be clearly marked with the name of the owner, the unit designation, the specifications title, the specifications number and the name of the project. If standard catalogue pages are submitted the applicable items shall be indicated therein. All titles, nothings, markings and writings on the drawing shall be in English. All the dimensions should be in metric units.
- c. The owner may use a 35 mm microfilm system in processing drawings. All drawings shall be suitable for microfilming; Drawings which are not suitable for microfilming will not be accepted. A copy of each drawings reviewed will be returned to the contractor as stipulated herein. The owner may also accept and use floppies/disks for computer based drawings.

- d. The drawings submitted by the contractor shall be reviewed by the engineer as far as practicable within two (2) weeks and shall be modified by the contractor if any modifications and/or corrections are required by the engineer. The contractor shall incorporate such modifications and/or corrections and submit the final drawings for approval. Any delay arising out of failure by the contractor to rectify the drawings in good time shall not alter the contract completion date.
- e. The drawings sent for approval to the engineer shall be in quintuplicate. One print of such drawings will be returned to the contractor by the engineer marked approved / approved with corrections. The contractor shall thereupon furnish the owner with nine prints and one reproducible original of the drawings after incorporating all corrections.
- f. Further work by the contractor shall be in strict accordance with these drawings and no deviation shall be permitted without the written approval of the engineer, if so required.
- g. All manufacturing and fabrication work in connection with the equipment prior to the approval of the drawings shall be at the contractor's risk. The contractor may make any changes in the design which are necessary to make the equipment conform, to the provisions and intent of the contract and such changes will again be subject to approval by the engineer. Approval of contractor's drawings or work by the engineer shall not relieve the contractor of any of his responsibilities and liabilities under the contract.
- h. Drawings shall include all installation and detailed piping drawings wherever applicable. All piping 100 mm and larger shall be routed in detail and smaller pipe shall be shown schematically or by isometric drawings. All drawings shall be fully corrected to agree with actual as built construction.
- i. Operating and Maintenance Manual: If "as built" drawings and/or operating and Maintenance Manuals are required the contract shall supply them by the dates stated in the contract data.
- j. If the Contractor does not supply the drawings and/or Manuals by the dates stated in the contract data or they do not receive the Nodal Officer or his Nominee's approval, the Nodal Officer or his Nominee shall withhold the amount stated in the contract data from payments due to the contractor.

6) INSTRUCTION MANUALS:

- a. The contractor shall submit to the engineer, preliminary instruction manuals for all the equipment covered under the contract within the time agreed upon between the owner & the contractor. The final instruction manuals complete in all respects shall be submitted by the contractor thirty (30) days before the first shipment of the equipment. The instruction manuals shall

contain full details and drawings of all the equipment furnished, the erection procedures, these instruction manuals shall be submitted in the form of one (1) reproducible original and two copies. Testing procedures, operation and maintenance procedures of the equipment.

- b. If after the commissioning and initial operation of the plant, the instruction manuals require any modifications/additions/changes, the same shall be incorporated and the updated final instruction manuals in the form of one (1) reproducible original and two copies shall be submitted by the contractor to the owner.
- c. The contractor shall furnish to the owner, two sets of spare parts catalogue.

7) FIRST FILL OF CONSUMABLE, OILS AND LUBRICANTS:

All the first fill of consumable such as oils, lubricants and essential chemicals etc, which will be required to put the equipment covered under the scope of the specifications, into successful trial operation, shall be furnished by the contractor unless specifically excluded under the exclusions in the specifications and other documents.

8) MANUFACTURING SCHEDULE:

- a. The contractor shall submit to the engineer his manufacture and delivery schedules for all equipment within thirty (30) days from the date of the letter of acceptance of tender.
- b. Such schedules shall be in line with the detailed net-work for all phases of the work of the contractor. Such schedules shall be reviewed up-dated and submitted to the engineer, once every two (2) months thereafter, by the contractor. Schedule shall also include the materials and equipment purchased from outside suppliers.

9) DESIGN IMPROVEMENT:

- a. The engineer or the contractor may propose changes in the specification of the equipment or quality thereof and if the parties agree upon any such changes the specification shall be modified accordingly.
- b. If any such agreed upon change is such that it affects the price and schedule of completion, the parties shall agree in writing as to the extent of any change in the price and/or schedule of completion before the contractor proceeds with the change. Following such agreement the provision thereof, shall be deemed to have been amended accordingly.

10) QUALITY ASSURANCE:

10.1. Quality Assurance Programme.

- a. To ensure that the equipment and services under the scope of this contract whether manufactured or performed within the contractor's works or at his sub-contractor's premises or at the owner's site or at any other place of work are in accordance with the specifications, the contractor shall adopt suitable quality assurance programme to control such activities at all points necessary.
- b. Such programme shall be outlined by the contractor and shall be finally accepted by the engineer after discussions before the issue of letter of acceptance of tender.

10.2. Quality Assurance Documents.

The contractor shall be required to submit the following Quality Assurance Documents within three weeks after despatch of the equipment:

- a. All non-destructive examination procedures stress relief and weld repair procedure actually used during fabrication.
- b. Welder and welding operator qualification certificates.
- c. Welder identification list, listing welders and welding operator's qualification procedure and welding identification symbols.
- d. Material mill test reports on components as specified by the specification.
- e. The inspection plan with verification, inspection plan check points, verification sketches, if used and methods used to verify that the inspection and testing points in the inspection plan were performed satisfactorily.
- f. Sketches and drawings used for indicating the method of traceability of the radiographs to the location on the equipment.
- g. All non-destructive examination result reports including radiography interpretation reports.
- h. Stress relief time temperature charts.
- i. Factory test results for testing required as per applicable codes and standard referred in the specifications.
- j. The engineer or his duly authorised representative reserves the right to carry out quality audit and quality surveillance of the systems and procedures of the contractor/his vendor's quality management and control activities.

11) ENGINEER'S SUPERVISION:

- a. To eliminate delays and avoid disputes and litigation it is agreed between the parties to the contract that all matters and questions shall be referred to the engineer and his decision shall be final.

- b. The work shall be performed under the direction and supervision of the engineer. The scope of the duties of the engineer, pursuant to the contract, will include but not be limited to the following :
 - i) Interpretation of all the terms and conditions of these documents and specification.
 - ii) Review and interpretation of all the contractor's drawings, engineering data etc.
 - iii) Witness or authorise his representative to witness tests and trials either at the manufacturer's works or at site, or at any place where work is performed under the contract.
 - iv) Inspect, accept or reject any equipment, material and work under the contract.
 - v) Issue certificate of acceptance and/or progressive payment and final payment certificates.
 - vi) Review and suggest modifications and improvements in completion schedules from time to time.
 - vii) Supervise the quality assurance programme implementation at all stages of the works.
 - viii) To receive and endorse the despatch documents enabling the contractor to clear the consignments.

12) TEST:

12.1 Start up.

- a. On completion of erection of the equipment and before start-up, each item of the equipment shall be thoroughly cleaned and then inspected jointly by the Engineer and the contractor for correctness and completeness of installation and acceptability of start-up, leading to initial pre-commissioning tests at site. The list of pre-commissioning tests to be performed shall be as mutually agreed and included in the contractor's quality assurance programme.
- b. The contractor's commissioning/start-up engineers specifically identified as far as possible shall be responsible for carrying out all the pre-commissioning tests. On completion of inspection, checking and after the pre-commissioning tests are satisfactorily over, the complete equipment shall be placed on initial operation during which period the complete equipment shall be operated integral with sub-systems and supporting equipment as a complete plant referred hereinafter as plant.

12.2 Trial Operation.

- a. The plant shall then be on trial operation during which period all necessary adjustments shall be made while operating over the full load-range enabling the plant to be made ready for performance and guarantee tests.

- b. The duration of trial operation of the complete equipment shall be fourteen(14) days out of which at least seventy two (72) hours shall be continuous operation on full load or any other duration as may be agreed to, between the engineer and the contractor.
- c. The trial operation shall be considered successful, provided that each item of the equipment can operate continuously at the specified operating characteristics, for the period of trial operation.
- d. For the period of trial operation, the time of operation with any load shall be counted. Minor interruptions not exceeding four (4) hours at a time, caused during the continuous operation shall not affect the total duration of trial operation. However, if in the opinion of the engineer, the interruption is long, the trial operation shall be prolonged for the period of interruption.
- e. A trial operation report comprising of observations and recordings of various parameters to be measured in respect of the above trial operation shall be prepared by the contractor.
- f. This report, besides recording the details of the various observations during trial run, shall also include the dates of start and finish of the trial operations and shall be signed by the representatives of both the parties.

12.3 Performance and guarantee test.

- a. The final test as to the performance and guarantees shall be conducted at site, by the owner. Such tests will be commenced within a period of two (2) months after successful completion of trial operations. Any extension of time beyond the above two (2) months shall be mutually agreed upon.
- b. These tests shall be binding on both the parties of the contract to determine compliance of the equipment with the performance guarantees.
- c. The available instrumentation and control equipment will be used during such tests and the engineer will calibrate all such measuring equipment and devices as far as practicable. However, un-measurable parameters shall be taken into account in a reasonable manner by the engineer, for the equipment of these tests. The tests will be conducted at the specified load points and as near the specified cycle condition as practicable. The engineer will apply proper corrections in calculation, to take into account conditions which do not correspond to the specified conditions.
- d. Any special equipment, tools and tackles required for the successful completion of the performance and guarantee tests shall be provided by the contractor, free of cost.

- e. The guaranteed performance figures of the equipment shall be proved by the contractor during these performance and guarantee tests. Should the results of these tests show any decrease from the guaranteed values, the contractor shall modify the equipment as required to enable it to meet the guarantees. In such case, performance and guarantee tests shall be repeated within one month, from the date of equipment is ready for re-tests and all cost for modifications including labour, materials and the cost of additional testing to prove that the equipment meets the guarantees, shall be borne by the contractor. Duration of performance guarantee tests will be of one month of which six (6) days continuous on load operation is the minimum requirement and in case it fails, the process of performance guarantee tests will be repeated.
- f. The specific tests to be conducted on equipment have been brought out in the technical specifications.
- g. Performance and guarantee test shall make allowance for instrumentation errors as may be decided by the engineer-in-charge.

12.4 TEST CODES:

The provisions outlined in the ASME performance test codes or other international and Indian approved equivalents shall generally be used as a guide for all the above test procedures unless otherwise specified in the technical specifications.

13) PACKING:

- a. All the equipment shall be suitably protected, coated, covered or boxed and created to prevent damage or deterioration during transit, handling and storage at site till the time of erection.
- b. While packing all the materials, the limitation from the point of view of availability of railway wagon sizes in India should be taken into account. The contractor shall be responsible for any loss or damage during transportation, handling and storage due to improper packing.

14) PROTECTION:

- a. All coated surfaces shall be protected against abrasions, impact, discoloration and any other damages. All exposed threaded portions shall be suitable protected with either a metallic or a non-metallic protecting device.
- b. All ends of all valves and piping and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage.

- c. The parts which are likely to get rusted, due to exposure to weather, should also be properly treated and protected in a suitable manner.

15) PRESERVATIVE SHOP COATING:

- a. All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings.
- b. All surfaces which will not be easily accessible after the shop assembly, shall beforehand be treated and protected for the life of the equipment.
- c. All surfaces shall be thoroughly cleaned of all mill scale, oxide and other coatings and prepared in the shop. The surfaces that are to be finish painted after installation or require corrosion protection until installation, shall be shop painted with at least two coats of primer.
- d. Transformers and other electrical equipment if included shall be shop finished with two coats of primer and two coats of high grade resistance enamel. The finished colours shall be as per manufacturer's standards, to be selected and specified by the engineering at a later date.
- e. Shop primer for all steel surfaces which will be exposed to operating temperature below 95⁰ C shall be selected by the contractor, after obtaining specific approval of the engineer regarding the quality of primer proposed to be applied.
- f. Special high temperature primer shall be used on surfaces exposed to temperatures higher than 95⁰ C and such primers shall also be subject to the approval of the engineer.
- g. All other steel surfaces which are not to be painted shall be coated with suitable dust preventive compound subject to the approval of the engineer.

16) PROTECTIVE GUARDS:

- a. Suitable guards shall be provided for protection of personnel on all exposed rotating and/or moving machine parts. All such guards with necessary spares and accessories shall be designed for easy installation and removal for maintenance purposes.

17) DESIGN CO-ORDINATION:

- a. The contractor shall be responsible for the selection and design of appropriate equipment to provide the best co-ordinated performance of the entire system.

- b. The basic design requirements are detailed out in Technical Specifications. The design of various components, sub-assemblies and assemblies shall be so done, so that it facilitates easy field assembly and maintenance.
- c. All the rotating components shall be so selected that the natural frequency of the complete unit is not critical at or close to the operating range of the unit.

18) DESIGN CO-ORDINATION MEETING:

The contractor will be called upon to attend design co-ordination meetings with the engineer, other contractors and the consultants of the owner during the period of contract. The contractor shall attend such meetings at his own cost at mutually agreed venue as and when required and fully co-operate with such persons and agencies involved during those discussions.

19) TOOLS AND TACKLES:

The contractor shall supply with the equipment one complete set of all special tools and tackles for the erection, assembly, dis-assembly and maintenance of the equipment. However, these tools and tackles shall be separately packed and brought on to site.

20) NOISE LEVEL:

The equivalent 'A' weighted sound level measured at a distance of 1.5 meters above floor level in elevation and one meter horizontally from the base of any equipment furnished and installed under these specifications, expressed in decibels to a reference of 0.0002 microbar, shall not exceed 85 dBA.

21) TAKING OVER:

- a. Upon successful completion of all the tests to be performed at site on equipment furnished and erected by the contractor, the engineer shall issue to the contractor a taking over certificate as a proof of the final acceptance of the equipment.
- b. Such certificate shall not unreasonably be withheld nor will the engineer delay the issuance thereof, on account of minor omissions or defects which do not affect the commercial operation and/or cause any serious risk to the equipment.
- c. Such certificate shall not relieve the contractor of any of his obligations which otherwise survive, by the terms and conditions of the contract after issuance of such certificate.

22) INDIAN STANDARDS:

Normally Indian Standards as published by BUREAU OF INDIAN STANDARDS shall be followed. Wherever relevant Indian Standard is not published by the BIS, International Standards or American Standard or German Standard or British Standard, as decided by the Engineer in consultations with the Consultants employed by the Owner, shall be followed.

23) WELDING:

If the manufacturer has special requirements relating to the welding procedures for welds at the terminals of the equipment to be procured by the owner under separate specifications, the requirements shall be submitted to the engineer in advance of commencement of erection work.

24) LUBRICATION:

Equipment shall be lubricated by systems designed for continuous operation. Lubricant level indicators shall be furnished and marked to indicate proper levels under both stand-still and operating conditions.

25) EQUIPMENT BASES:

A cast iron or welded steel base plate shall be provided for all rotating equipment which is to be installed on a concrete /structural steel base unless otherwise agreed to by the engineer. Each base plate shall support the unit and its drive assembly, shall be of a neat design with pads for anchoring the units, shall have a raised lip all around, and shall have threaded drain connections.

26) RATING PLATES, NAME PLATES AND LABELS:

- a. Each main and auxiliary items of plant is to have permanently attached to it in a conspicuous position a rating plate of non corrosive material upon which is to be engraved the manufacturer's name, equipment, type or serial numbers, together with details of the loading conditions under which the item of plant in question have been designed to operate, and such diagram plates as may be required by the engineer.
- b. Each item of plant is to be provided with a nameplate or label designating the service of the particular equipment. The inscriptions are to be approved by the engineer or shall be as detailed in the appropriate sections of the technical specification.
- c. Such nameplates or labels are to be of white non-hygroscopic material with engraved black lettering or alternatively, in the case of indoor circuit breakers, starters etc of transparent plastic material with suitably coloured lettering engraved on the back.

- d. Items of plant such as valves, which are subject to handling are to be provided with an engraved chromium plated nameplate or label with engraving filled with enamel.
- e. All such name plates, instruction plates, lubrication charts etc. shall be bilingual with Hindi inscription first, followed by English. Alternatively two separate plates one with Hindi and the other with English inscriptions may be provided.

27) COLOUR CODE FOR PIPE SERVICES:

All pipe services wherever applicable are to be painted in accordance with the owner's standard colour scheme, by the contractor.

ERECTION CONDITIONS OF CONTRACT

1) GENERAL:

- a. The following shall supplement the conditions already contained in the other parts of these specifications and documents and shall govern that portion of the work of this contract to be performed at site.
- b. The contractor upon signing of the contract shall, in addition to a project co-ordinator, nominate another responsible officer as his representative at site suitably designated for the purpose of overall responsibility and co-ordination of the works to be performed at site. Such person shall function from the site office of the contractor during the pendency of contract.

2) REGULATION OF LOCAL AUTHORITIES AND STATUES:

- a. The contractor shall comply with all the rules and regulations of local authorities during the performance of his field activities.
- b. He shall also comply with the minimum wages act, 1948 and the payment of wages act (both of the Government of India and the local State Government) and the rules made there under in respect of any employee or workman employed or engaged by him or his sub-contractor.
- c. The contractor shall make all 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 Schemes and CMPF and Miscellaneous Provisions Act 1948 or Employees Provident Fund and Miscellaneous Provision Act 1952 as the case may be.
- d. All registration and statutory inspection fees, if any, in respect of his work pursuant to this contract shall be to the account of the contractor.
- e. The Contractor shall provide all the technical parameters and specifications along with drawings etc. to concerned Project/Area to process for approval of D.G.M.S./Statutory authority by Project Authority.
- f. The Electrical Works shall be done under the supervision of H.T Electrical Licensed Contactor/Supervisor. The contractor shall be responsible for approval of the Complete System (Electrical & Mechanical etc.) by D.G.M.S. / Statutory authority.

3) OWNER'S LIEN ON EQUIPMENT:

The owner shall have lien on all equipment including those of the contractor brought to the site for the purpose of erection, testing and commissioning of

the plant. The owner shall continue to hold the lien on all such equipment throughout the period of contract. No material brought to the site shall be removed from the site by the contractor and/or his sub-contractors without the prior written approval of the engineer.

4) INSPECTION, TESTING AND INSPECTION CERTIFICATES:

- a. The provisions of the clause entitled inspection testing and inspection certificates under section GTC shall also be applicable to the erection portion of the works.
- b. The engineer shall have the right to re-inspect any equipment though previously inspected and approved by him, at the contractor's works, before and after the same are constructed and/or erected at site.
- c. If by the above inspection, the engineer rejects any work or equipment, the contractor shall make good for such rejection either by replacement or modifications /repairs as may be necessary, to the satisfaction of the engineer. Such replacement will also include the replacement or re-execution of such of those works of other contractors and/or agencies, which might have got damaged or affected by the replacements or re-work done to the contractor's work.

5) ACCESS TO SITE AND WORKS ON SITE:

- a. Suitable access to and possession of the site shall be accorded to the contractor by the owner in reasonable time.
- b. The works so far as it is carried out on the owner's premises, shall be carried out at such time as the owner may approve and the owner shall give the contractor reasonable facilities for carrying out the works.
- c. In the execution of the works, no persons other than the contractor or his duly appointed representative, sub-contractor and workmen, shall be allowed to do work on the site, except by the special permission, in writing of the engineer or his representative.

6) CONTRACTOR'S SITE OFFICE ESTABLISHMENT:

The contractor shall establish a site office at the site and keep posted an authorised representative for the purpose of the contract. Any written order or instruction of the engineer or his duly authorised representative shall be communicated to the said authorised resident representing the contractor and the same shall be deemed to have been communicated to the contractor at his legal address.

7) CO-OPERATION WITH OTHER CONTRACTORS:

- a. The contractor shall co-operate with all other contractors or tradesmen of the owner, who may be performing other works on behalf of the owner and the workmen who may be employed by the owner and doing work in the vicinity of the works under the contract.
- b. The contractor shall also so arrange to perform his work as to minimise, to the maximum extent possible, interference with the work of other contractors and his workmen.
- c. Any injury or damage that may be sustained in the employees of the other contractors and the owner, due to the contractor's work shall promptly be made good at his own expense.

8) DISCIPLINE OF WORKMEN:

- a. The contractor shall adhere to the disciplinary procedure set by the engineer in respect of his employees and workmen at site.
- b. The engineer shall be at liberty to object to the presence of any representative or employees of the contractor at the site, if in the opinion of the engineer such employee has mis-conducted himself or be incompetent or negligent or otherwise undesirable and then the contractor shall remove such a person objected to and provide in his place a competent replacement.

9) CONTRACTOR'S FIELD OPERATION:

- a. The contractor shall keep the engineer informed in advance regarding his field activity plans and schedules for carrying out each part of the works.
- b. The contractor shall have complete responsibility for the conditions of the work site including the safety of all persons employed by him or his sub-contractor and all the properties under his custody during the performance of the work.
- c. This requirement shall apply continuously till the completion of the contract and shall not be limited to normal working hours. The construction review by the engineer is not intended to include review of contractor's safety measures in, on or near the work-site, and their adequacy or otherwise.

10) PHOTOGRAPHS AND PROGRESS REPORT:

- a. The contractor shall furnish three (3) prints each to the engineer of progress photographs of the work done at site. Photographs shall be taken as and when indicated by the engineer or his representative. Photographs shall be adequate in size and number to indicate various stages of erection. Each

photograph shall contain the date, the name of the contractor and the title of the photograph.

- b. The above photographs shall accompany the monthly progress report detailing out the progress achieved on all erection activities as compared to the schedules. The report shall also indicate the reasons for the variance between the scheduled and actual progress and the action proposed for corrective measures wherever necessary.

11) MAN-POWER REPORT:

- a. The contractor shall submit to the engineer, on the first day of every month, a man hour schedule for the month, detailing the man hours scheduled for the month, skill wise and area-wise.
- b. The contractor shall also submit to the engineer on the first day of every month, a man power report of the previous months detailing the number of persons scheduled to have been employed and actually employed, skill-wise and areas of employment of such labour.

12) PROTECTION WORK:

- a. The contractor shall have total responsibility for protecting his works till it is finally taken over by the engineer.
- b. No claim will be entertained by the owner or the engineer for any damage or loss to the contractor's works and the contractor shall be responsible for the complete restoration of the damaged works to its original condition to comply with the specifications and drawings.

13) EMPLOYMENT OF LABOUR:

- a. The contractor will be expected to employ on the work only his regular skilled employees with experience of his particular work. For daily rated, preference shall be given to local persons. No female labour shall be employed after darkness no persons below the age of eighteen years shall be employed.
- b. All travelling expenses including provisions of all necessary transport to and from site lodging allowances and other payments to contractor's employees shall be the sole responsibility of the contractor.
- c. Contractor's employees shall wear identification badges while on work on site.
- d. In case the owner becomes liable to pay any wages or dues to the labour or to any Government agency under any of the provisions of the Minimum Wages Act, Workmen compensation Act. Contract Labour Regulation

Abolition Act, CMPF Act/EPF Act or any other law due to act of omission of the contractor, the owner may make such payments and shall recover the same from the contractor's bills.

14) FACILITIES TO BE PROVIDED BY THE OWNER:

a) SPACE :

1. The contractor shall advise the owner within thirty(30) days from the date of acceptance of the letter of award, about his exact requirement of space for his office, mess-rooms storage area, pre-assembly and fabrication areas, labour colony area, toilets, etc.
2. The above requirement shall be reviewed by the engineer and space will be allotted to the contractor for construction of his temporary structures like office, storage sheds, labour and staff colony and other utilities etc. for his own as well as his sub-contractor's use.

15) FACILITIES TO BE PROVIDED BY THE CONTRACTOR:

a) Tools, tackles and scaffoldings

- i. The contractor shall provide all the construction equipment, tools, tackles and scaffoldings required for pre-assembly, erection, testing and commissioning of the equipment covered under the contract.
- ii. He shall submit a list of all such materials to the engineer before the commencement of pre-assembly at site. These tools and tackles shall not be removed from the site without the written permission of the engineer.

b) Electricity & Water:

- i. The contractor has to make his own arrangements by arranging required DG sets for Electricity to construction and lighting.
- ii. The contractor has to make his own arrangements for water.

c) First-aid:

- i. The contractor shall provide necessary first-aid facilities for all his employees, representatives and workmen working at the site. Enough number of contractor's personnel shall be trained in administering first-aid.
- ii. The owner will provide the contractor in case of an emergency, the services of an ambulance for transportation to the nearest hospital.

d) Cleanliness:

- i. The contractor shall be responsible for keeping the entire area allotted to him clean and free from rubbish, debris etc. during the period of contract. The contractor shall employ enough number of special personnel to thoroughly clean his work area at least once in a day.
- ii. All such rubbish and scrap material shall be stacked or disposed in a place to be identified by the engineer.
- iii. Materials and stores shall be so arranged to permit easy cleaning of the area in areas where equipment might drip oil and cause damage to the floor surface, a suitable protective cover of a flame resistant, oil proof sheet shall be provided to protect the floor from such damage.

16) LINES AND GRADES:

- a. All the works shall be performed to the lines, grades and elevations indicated on the drawings. The contractor shall be responsible to locate and layout the works.
- b. Any work done without being properly located may be removed and/or dismantled by the engineer at contractor's expense.

17) FIRE PROTECTION:

- a. The work procedures that are to be used during the erection shall be those which minimize fire hazards to the extent practicable.
- b. Combustible materials, combustible waste and rubbish shall be collected and removed from the site at least once each day. Fuels, oils and volatile or flammable materials shall be stored away from the construction and equipment and materials storage areas in safe containers.
- c. The contractor shall provide enough fire protection equipment of the types and number for the ware-houses, office, temporary structures, labour colony area etc. Access to such fire protection equipment, shall be easy and kept open at all times.
- d. All the contractor's supervisory personnel and sufficient number of workers shall be trained for fire-fighting and shall be assigned specific fire protection duties. Enough of such trained personnel must be available at the site during the entire period of the contract.

18) SECURITY:

- a. The contractor shall have total responsibility for all equipment and materials in his custody stored, loose, semi-assembled and/or erected by him at site.
- b. The contractor shall make suitable security arrangements including employment of security personnel to ensure the protection of all materials, equipment and works from theft, fire, pilferage and any other damages and loss. All materials of the contractor shall enter and leave the project site only with the written permission of the engineer in the prescribed manner.

19) CONTRACTOR'S AREA LIMITS:

- a. The engineer will mark-out the boundary limits of access roads, parking spaces, storage and construction areas for the contractor and the contractor shall not trespass the areas not so marked out for him.
- b. The contractor shall be responsible to ensure that none of his personnel move out of the areas marked out for his operations. In case of such a need for the contractor's personnel to work out of the areas marked out for him, the same shall be done only with the written permission of the engineer.

20) PRE-COMMISSIONING TRIALS AND INITIAL OPERATIONS:

- a. The pre-commissioning trials and initial operations of the equipment furnished and erected by the contractor shall be the responsibility of the contractor as detailed in relevant clauses in section GTC.
- b. The contractor shall provide, in addition, test instruments, calibrating devices, etc. and the labour required for the successful performance of these trials. It is anticipated that the above test may prolong for a long time, the contractor's workmen required for the above test shall always be present at site during such trials.

21) MATERIALS HANDLING AND STORAGE:

- a. All the equipment furnished under the contract and arriving at site shall be promptly received, unloaded and transported and stored in the storage spaces by the contractor.
- b. Contractor shall be responsible for examining all the shipment and notify the engineer immediately or any damage, shortage, discrepancy, etc. for the purpose of engineer's information only.
- c. However, the contractor shall be solely responsible for any shortages or damage in transit, handling and/or in storage and erection of the equipment

at the site. Any demurrage, wharfage and other such charges claimed by the transporters, railways etc shall be to the account of the contractor.

- d. All electrical panels, control gear, motors and such other devices shall be properly dried by heating before they are installed and energised. Motor bearings, slip rings, commutators and other exposed parts shall be protected against moisture ingress and corrosion during storage and periodically inspected. Heavy rotating parts in assembled conditions shall be periodically rotated to prevent corrosion due to prolonged storage.
- e. The consumable and other supplies likely to deteriorate due to storage must be thoroughly protected and stored in a suitable manner to prevent damage or deterioration in quality by storage.
- f. All the materials stored in the open or duty location must be covered with suitable weather-proof and flameproof covering materials wherever applicable.
- g. The contractor shall be responsible for making suitable indoor storage facilities to store all equipment which require indoor storage. Normally, all the electrical equipment such as motors, control gear generators, exciters and consumable like electrodes, lubricants etc shall be stored in the closed storage space.

22) PROTECTION OF PROPERTY AND CONTRACTOR'S LIABILITY:

- a. The contractor shall be responsible for any damage resulting from his operations. He shall also be responsible for protection of all persons including members of public and employees of the owner and the employees of other contractors and sub-contractors and all public and private property including structures, buildings, other plants and equipment and utilities either above or below the ground.
- b. The contractor will ensure provision of necessary safety equipment such as barriers, sign-boards, warning lights and alarms, etc. to provide adequate protection to persons and property.
- c. The contractor shall be responsible to give reasonable notice to the engineer and the owners of public or private property and utilities when such property and utilities are likely to get damaged or injured during the performance of his works and shall make all necessary arrangements with such owners, related to removal and or replacement or protection of such property and utilities.

23) PAINTING:

- a. All exposed metal parts of the equipment including pipings, structure railing etc. wherever applicable, after installation unless otherwise surface protected, shall be first painted with at least one coat of suitable primer which matches the shop primer paint used, after thoroughly cleaning all such parts of all dirt, rust, scales, greases, oils and other foreign materials by wire brushing, scarping or sand blasting, and the same being inspected and approved by the engineer for painting.
- b. Afterwards, the above parts shall be finished with two coats of alloyed resin machinery enamel paints. The quality of the finish paint shall be as per the standards of ISI or equivalent and to be of the colour as approved by the engineer.

24) INSURANCE:

- a. In addition to the conditions covered under the clause entitled insurance in general terms and conditions of contract of this volume-1, the following provisions will also apply to the portion of the works to be done beyond the contractor's own or his subcontractor's works.
- b. **Workmen's compensation insurance:** This insurance shall protect the contractor against all claims applicable under the Workmen's Compensation Act 1948 (Government of India).
- c. **Comprehensive Automobile Insurance:** This insurance shall be in such a form to protect the contractor against all claims for injuries, disability, disease and death to members of public including the owner's men and damage to the property of others arising from the use of motor vehicles during on or off the site operations, irrespective of the ownership of such vehicles.
- d. **Comprehensive General Liability Insurance:** This insurance shall protect the contractor against all claims arising from injuries, disabilities disease or death of members of public or damage to property of others, due to any act or omission on the part of the contractor, his agents, his employees, his representatives and sub-contractors or from riots, strikes and civil commotion.

25) UNFAVOURABLE WORKING CONDITIONS:

- a. The contractor shall confine all his field operations to those works which can be performed without subjecting the equipment and materials to adverse effects, during inclement weather conditions, like monsoon, storms, etc. and during other unfavourable construction conditions.

- b. No field activities shall be performed by the contractor under conditions which might adversely affect quality and efficiency thereof, unless special precautions or measures are taken by the contractor in a proper and satisfactory manner in performance of such works and with concurrence of the engineer.
- c. Such unfavourable construction conditions will in no way relieve the contractor of his responsibility to perform works as per the schedule.

26) WORK AND SAFETY REGULATIONS:

- a. The contractor shall ensure proper safety of all the workmen, materials plant and equipment belonging to him or the Company or to others, working at or near the site. The contractor shall also be responsible for provision of all safety notices and safety equipment required both by the relevant legislation and the engineer-in-charge as he may deem necessary.
- b. The contractor shall provide suitable safety equipment of prescribed standard to all employee and workmen according to the need, as may be directed by engineer-in charge who will also have right to examine these safety equipment to determine their suitability, reliability, acceptability and adaptability.
- c. The contractor shall provide safe working conditions to all workmen and employees at the site including safe means of access, railing, stairs, ladders, scaffoldings etc. The scaffoldings, stairs, ladders etc shall be erected under the control and supervision of an experienced and competent person. For erection, good and standard quality of material only shall be used by the contractor.
- d. The contractor shall employ necessary number of qualified, full time electricians/electrical supervisors to maintain in his temporary electrical installation.

27) FOUNDATION DRESSING AND GROUTING:

- a. The surfaces of foundations shall be dressed to bring the top surface of the foundations to the required level, prior to placement of equipment/equipment bases on the foundations.
- b. All the equipment bases and structural steel base plates shall be grouted and finished as per these specifications unless otherwise recommended by the equipment manufacturer.
- c. The concrete foundation surfaces shall be properly prepared by chipping, grinding as required to bring the type of such foundation to the required

level, to provide the necessary roughness for bondage and to assure enough bearing strength. All laitance and surface film shall be removed and cleaned.

28) CHECK OUT OF CONTROL SYSTEMS / POWER SUPPLY:

- a. After completion of wiring, cabling furnished under separate specifications and laid and terminated by the owner, the contractor shall check out the operation of all control system for the equipment furnished and installed under these specifications and documents.
- b. The contractor shall get the drawings pertaining to the control system, power supply etc. approved from Directorate General of Mine Safety (DGMS) or any other appropriate authority as necessary, wherever required as per the rules and regulations of the of Indian Mines Act Governed by D.G.M.S.

29) COMMISSIONING SPARES:

The contractor shall make arrangement for an adequate inventory at site of necessary commissioning spares prior to commissioning of the equipment furnished and erected so that any damage or loss during these commissioning activities necessitating the requirements of spares will not come in the way of timely completion of the works under the contract.

30) CABLING:

- a. All cables shall be supported by conduits or cable tray run in air or in cable channels.
- b. Each cable, whether power or control, shall be provided with a metallic or plastic of an approved type, bearing a cable reference number indicated in the cable and conduit list (prepared by the contractor), at every 5 meter run or part thereof and at both ends or the cable adjacent to the terminations.
- c. Sharp bending and kinking of cables shall be avoided.
- d. In each cable run some extra length shall be kept at a suitable point to enable one to two straight through joints to be made should the cable develop fault at a later date.
- e. The connectors for control cables shall be covered with a transparent insulating sleeve so as to prevent accidental contact with ground or adjacent terminals and shall preferably terminate Elmex terminals and washers.

BASIC DATA & SYSTEM DESCRIPTION

SYSTEM PARAMETERS AND OPERATIONS OF CHP

1.00 Design of Plant & Machinery for setting up of 1000 TPH CHP for Tokisud Project, Jharkhand state.

2.00 PARAMETERS:

2.01 Scope:

Planning, Design, Engineering, Procuring, Construction, Fabrication, Supply, Erection, Commissioning & Trial Run of 1000 TPH Coal Handling Plant at Tokisud North OCP, South Karanpur Area, Hazaribagh Dist. complete with Civil, Structural, Electrical & Mechanical works of Conveyor System along with allied auxiliary facilities such as Dust Suppression System, Fire fighting System, Plant Cleaning System, Illumination & Communication System, Construction of Utility Buildings & Compound Wall, Lying of approach Roads in CHP area, etc. as per given layout of requirement on Turnkey basis.

Bidders desirous of supplying Feeder Breakers, Secondary Crushers, Belt conveyors, drives etc., can also submit the bids against this NIT.

1. Annual Capacity to be handled : 3.00 MTPA (ROM Coal)
2. Feed size of ROM Coal : 1200 mm
3. Final Product size : -100 mm
4. Designated Area for CHP : 3.55 Ha
5. No. of Working days per Annum : 330
6. No. of working Shifts : 3
7. Duration of Shift : 8 Hours
8. No. of receiving Pit bunkers : 2 x 150 Tons
9. Loading Equipment : 50 T Dumpers
10. Size of grill on receiving Pits top : - 450 mm
11. Screens required in the circuit : 100 mm size
12. Capacity of Bunker after crushers : 2 x 2500 T GL with Tripper conveyor
13. Cap. & No. of Truck loading Hoppers: 2 x 300 tons bunkers with 4 outlets

2.02 SYSTEM:

Coal handling plant (CHP) at quarry side is designed for 1000 TPH with input ROM coal size 1200 mm and final size -100mm with dispatch arrangements of coal through trucks from CHP to the nearby Tokisud Railway station.

1)	PRIMARY CRUSHING	.
	500TPH Feeder Breakers with Rock breaker attachment	2 No.
2)	Vibratory screens 500TPH First Layer screen mesh: 100mm Material: Anti-wear manganese steel Size: 6000X2000mm	2 No.
3)	SECONDARY CRUSHING	
	300TPH Double roll crusher	2 No.
4)	COAL CONVEYOR SYSTEM	
	A. Primary to Secondary Crusher	
	1. Design Capacity	500TPH each
	2. Rated Capacity	400 TPH each
	3. Belt width	900 mm
	4. Belt speed	1.5m/sec (shale picking)
	5. Drive Head Capacity	1x22 KW
	B. Primary Crusher to GL bunker	
	1. Design Capacity	500TPH each
	2. Rated Capacity	400 TPH each
	3. Belt width	900 mm

	4. Belt speed	2.50m/sec
	5. Drive Head Capacity	1x55 KW
	C. GL bunker to 300T steel bunkers	
	1. Design Capacity	1200TPH
	2. Rated Capacity	1000 TPH
	3. Belt width	1200 mm
	4. Belt speed	2.75m/sec
	5. Drive Head Capacity	2x125 KW
	D. Tripper Car arrangement over bunkers	
	1. Design Capacity	1000TPH
	2. Rated Capacity(Guaranteed)	800 TPH
	3. Capacity	30KW
5)	Shale Conveyors	
	1. Design Capacity	200TPH each
	2. Belt width	900 mm
	3. Belt speed	2.50m/sec
	1. Drive Head Capacity	1x15 KW, 1x22KW
6)	Surge Bunkers	
	a) 5000 T GL Bunker(Circular)	1 No
	b) 400TPH Reciprocating Feeders	4 No.
	c) 300T steel bunkers	2 No.
	d) Hydraulic chutes for steel bunkers	4 Nos
	e) Pyjama Chute structure over 300Te bunkers	1 No
7)	Electronic Truck weigh Bridges	

	1. Capacity	30T
	2. Quantity	2 No.
8)	Shale Picking arrangements	
	a) Shale Bunker 25Te Cap.	1 No.
	b) Shale carrying Conveyors	2 No.
9)	Tramp Iron magnet separator (Suspended type)	2 No.
10)	Online Ash analyzer	1 No
11)	Water Pumps	2 Set (One stand by)

2.03 Belting and Pulleys (Drums)

(a) Belt ratings shall be selected in such a way that there are two ratings of belting PVC Type-3 & 6.

(b) For Pulley, following minimum parameters shall be followed:

- (1) Shell thickness : 20 mm (Min.)
- (2) End disc plate thickness : 30 mm (Min.)
- (3) Maximum allowable deflection of shaft at hubs : 5 Minutes (Angle)
- (4) Diameter:
 - (i) All drive Pulleys (Drums) : 800mm dia (min.)
 - (ii) All balance Pulleys (Drums)
 - Discharge : 630 dia (min.)
 - Tail end : 500 dia (min.)

Further approval from belt manufacturers shall be obtained by the contractor regarding the adequacy of the pulley diameters.

2.04 Dust Control System

The capacity of the dust control system shall adequately sized and fool proof. The capacity of the offered system shall not be less than the specified values below.

(a) **Dust Suppression System**

- | | |
|----------------------------|---|
| (1) Operation | : Water sprayed with fogging Nozzle |
| (2) Location of spray | : All coal loading and discharge Point on the conveyor |
| (3) Capacity / Pressure at | : 2.0 lpm / 2.5 kg/cm ² (min.) inlet of spray head |

2.05 Service Water System

Service water connections are to be provided in conveyor galleries at 50 meter interval and one (1) no. on each floor of Transfer Points and minimum two (2) No.. on each floor of Pre-Weigh bin.

- | | |
|--|--|
| (a.) Flow at each valve | : 5 cub. m/hr |
| (b.) Minimum discharge Pressure at tap point | : 2 kg/sq.cm |
| (c.) No of pumps | : 2 No. (1 working + 1 standby) at CHP |

2.06 Ventilation System

A Mechanical Ventilation System

- | | |
|---------------------|---|
| i. Underground Area | : Minimum 15 supply air changes and minimum 7 exhaust air changes per hour. |
| ii. Other Areas | : Minimum 10 supply air changes per hour. |

2.07 Chutes

Minimum clear cross section of chute shall be 1800 mm x 1200 mm (inside both ways).

2.08 Hoists

Suitable hoists as specified shall be provided for erection & servicing of all major equipment. The equipment to be covered shall include (but not limited to) all conveyor drive units, all Pulleys(Drums), in line magnetic separators, sampling units various DS/service water/potable water pumps, gravity take up units, lifting of belt drum at all Transfer Points including Pre-weigh bin top.

2.10 OPERATION AND CONTROLS

2.10.01 This section is intended to cover design, engineering manufacture, supply, erection, testing and commissioning of the complete control and instrument panel/desk with annunciation panel, etc. as complete in all respects, required for complete coal handling plant.

2.10.02 General Requirements

The instruments and controls to be furnished and erected under this specification are required for safe and satisfactory operation of the Coal Handling System those are outlined in the specifications.

2.10.03 Standards / Codes

All construction, installation, workmanship, design & equipment shall conform to acts, rules & regulations of the jurisdiction within which the project is to be located, and to the current edition of the following or equivalent standards or codes, in so far as they apply:

American Iron & Steel Institute (AISI)

American Society for Mech. Engineers (ASME)

American Society for Testing & Materials (ASTM)

American Wire Gauge (AWG)

Institute of Electrical & Electronic Engineers (IEEE)

Instrument society of America (ISA)

National Electrical Code (NEC)

National Electrical Manufacturers Association (NEMA)

United States of America standards (USAS)

Bureau of Indian Standards (BIS)

Conveyor Equipment Manufacturers Association (CEMA)

3.00 General Construction and Design

3.01.01 General Construction

Control desks/panels and annunciation system shall be provided as per the requirement of electrical Section. Annunciations, indications, electrical meters and instrumentation shall be provided as specified. Ammeters shall be provided on control desk for all motors rated 30 kW and above and for all equipment in coal conveying path.

3.02.00 OPERATION AND CONTROL

The coal handling system shall be controlled from the following control points.

3.02.01 Coal Handling Plant Main Control Room

Overall operation of the following equipment of Coal Handling Plant shall be controlled from the CHP control room, preferably to be located near to the Transfer House

- a) Conveyors, feeders
- b) Complete Dust Suppression system & service water system.
- c) Ventilation system (group/individual control as required).
- d) In line Magnetic separators (ON/OFF control with indication).
- e) Metal Detectors (ON/OFF control with indication).
- f) Coal Sampling Units

3.02.02 Local Control Panels

Local control stations for the following equipment's shall be provided

- a) Metal detectors
- b) Electric hoist - wall mounted control box with pendent push button controls.
- c) In line magnetic separators
- d) Coal Sampling Units
- e) Dust suppression system

All the above local control panels shall be accessible and located near their respective equipment and shall be complete with all the required controls, interlocks, annunciation's etc.

3.02.03 In addition to the remote control of various equipments, local stop push button station shall be provided.

3.02.04 Telephone communication system (with EPABX) shall be provided between main CHP control room, transfer houses and Pre-weigh bin.

Public address system shall also be provided between main CHP Control Room and the following locations:

- (i) Transfer House
- (ii) Conveyor drive floor

Telephone and PA systems shall be of rugged design suitable for use in the dusty atmosphere.

3.02.05 Facility shall be provided in the CHP control desk for display/annunciation of Loading Pre-weigh bin level.

3.02.06 The control of Coal Handling Plant shall take into consideration of coal flow path. But control logic shall be prepared considering future requirements & accordingly space provision in control desk & PLC capacity with I/Os to be provided.

3.03.00 System Operation

3.03.01 Operation of the plant, in general, shall be elaborated as below:

- a) Coal flow path selection shall be done from CRT/Keyboard to select any one of the following conveying paths.

Conveyor Stream – A to 5000 Te GL bunker

- (1.) Feeder Breaker-1 to Secondary Crusher-1 (Shale Picking Conveyor) **(BC-1A)**.
- (2.) Feeder breaker-1 to Tripping Car conveyor over 5000 Te GL bunker **(BC-1B)**.

Conveyor Stream – B to 5000 Te GL bunker

- (1.) Feeder Breaker-2 (PFB2) to Secondary Crusher-2(Shale Picking Conveyor) **(BC-2A)**.
- (2.) Feeder breaker-2 to Tripping Car conveyor over 5000 Te GL bunker **(BC-2B)**.

Combination of above.

b) Conveyor stream from 5000Te GL Bunker to 300Te Steel Bunkers

3.03.02 Conveyor System

- (a) Each conveyor shall be protected against damage to the edge of the belt due to excessive sideways movement by providing an adequate number of belt sway switches.
- (b) All the conveyors shall be protected from reverse running due to power failure by providing mechanical or electrical locking system.
- (c) The starting sequence of the conveyors shall follow a direction opposite to that of flow of material i.e. start from Pre-weigh bin feeding conveyor and end up with conveyors originating at Rly. Siding, and from 100T Steel bunkers to Feeder breakers at CHP side.
- (d) Any individual equipment (belt conveyor etc.) should not be allowed to start unless the equipment immediately following the same in the direction of flow of material is already in operation.
- (e) Stop/tripping of any equipment from running condition shall trip all preceding equipment in the system, but shall not effect succeeding ones which shall continue to operate.
- (f) Adequate number of pull-cord switches shall be provided at suitable intervals along the length of each belt conveyor, which shall enable the respective conveyor to be stopped immediately. Each pull chord switch shall be identified by a specific number on CRT in the main control room.
- (g) Means shall be provided to pre-warn personnel working nearby when starting any conveyor.
- (h) Interlocking of various conveyors shall be achieved with limit.
- (i) Motors shall start only when the brake if-provided, is in "not applied" condition. This signal shall be obtained from limit switch provided for that purpose.

3.03.03 Interlocking

- (a.) The following conveyors / equipment will come under interlock scheme :-

- (1.) All conveyors
- (2.) Metal detectors
- (3.) Magnetic Separators
- (4.) Dust suppression system
- (5.) Coal sampling system

(b.) The following equipment will not come under interlock of the conveyor scheme.

(1.) Service water system.

(2.) Ventilation systems

(c.) All conveyors and equipment will have local push button stations each consisting of :

Start and stop push button for other equipment

(d.) The dust suppression systems will be energized as soon as the conveyors are energized.

(e.) Coal handling plant shall be tripped in case of detection of fire.

(f.) Interlock for H.T. Motor :

H.T. motors used will continue to run on no load by disengaging the fluid coupling in case of operation of any process trip interlock. The H.T. motors will however be tripped in case of any motor fault like O/L, high motor winding temperature etc.

(g.) The following are the various safety interlocks for the conveyors and other equipment. This list is indicative only.

Conveyors

- a). Pull - Chord switch - not operated
- b). Belt sway switch - not operated
- d). Motor protection - not tripped
- e). Local stop PB – reset
- f). Chute Block switch - not operated.
- g). Brakes for conveyor – not operated.
- h). Trip circuits healthy.
- i). Temp. of fluid coupling oil - not high

Magnetic Separators / Metal Detectors

- a). O/L / fault relay - not tripped.
- b). Stop PB (Local & Remote) reset.
- c). Metal detector reset

3.03.04 The lists of indications and audio-visual annunciation given in subsequent clauses are indicative only.

Following individual status indications shall be provided.

- (a.) Conveyor 'ON'
- (b.) Belt sway switch operated for each conveyor
- (c.) Pull cord switch operated for each conveyor.
- (d.) Rapid loading Pre-weigh bin coal level

3.03.05 Annunciation System:

The Control desk shall be provided with adequate number of facia type annunciation windows operating through PLC for the following audio-visual fault annunciation purposes.

- (a) 3.3 kV Breaker Tripping (Group)
- (b) 415 V MCC Breaker Tripping (Group)
- (c) Bus under voltage for LT MCC & HT switchgear buses (Group).
- (d) Following group wise annunciation shall be provided for transformers :
 - (1.) Buchholz alarm
 - (2.) Winding/oil temperature high alarm
 - (3.) Oil level low alarm
 - (4.) Buchholz trip
 - (5.) Winding/oil temperature high trip
- (e) A.C Control Supply failure.
- (f) D.C. Control Supply failure.
- (g) Annunciation supply failure.
- (h) H.T. motor overload alarm (Group)
- (i) HT motor bearing/ winding temp. high alarm (group) and trip (group)
- (j) HT motor trip on electrical fault (Group)

- (k) LT motor overload tripped (Group).
- (l) Belt sway switch operated (Group)
- (m) Pull cord switch operated (Group)
- (n) Chute plugged (Group)
- (o) Loading Pre-weigh bin level switches (high / low) (Group)
- (p) Magnetic separator fault and cleaning belt trip.
 - (i) Metal Detector fault (Group)
 - (ii) Metal detected / MD not reset (Group)
- (q) Sampling system faults and trips (Group)
- (r) Dust suppression/service water system faults and trips (system wise)
- (s) Water level low in tanks (group)

For identification of the fault for a particular conveyor or equipment, status indication against that conveyor / equipment in the mimic will start fast flickering and the annunciation window will be blinking against that particular fault. In addition, a buzzer (alarm) will start sounding. After acknowledgement of the fault, the buzzer will stop, but the fast flickering on the mimic and the steady glow on the annunciation window will continue until the fault is cleared and the Reset push button is pressed. When the fault is cleared and the Reset push button is pressed, the status indication of that conveyor / equipment on the mimic will start slow blinking if it is on selected path otherwise it will go off and the steady glow in the annunciation window will go off. However, pressing of the Reset push button before clearance of the fault, will have no effect on the lamps.

At the time of a fault, the faulty conveyor / equipment, as well as the preceding conveyors / equipment in the interlock sequence, will stop except H.T. motors for which only scoop coupling will be disengaged and motor will continue to run for process fault. In case of motor fault, H.T. motor will trip but the succeeding conveyors / equipment will continue to run. The status indication against the preceding conveyors / equipment will start slow blinking while the faulty conveyor / equipment will be fast blinking.

Start command shall not be initiated unless reset button is pressed after clearance of fault.

The sequence of operation of the annunciation system shall be as follows:-

Condition		Status
Normal	: Ann. Window	: Off

	Status indication	:	Steady glow
	Buzzer	:	Off
Fault	Ann. Window	:	Blinking
	Status indication	:	Fast blinking
	Buzzer	:	Sounding
Press	Ann. Window	:	Steady glow
Accept. PB.			
	Status indication	:	Fast blinking
	Buzzer	:	Off
Press Reset PB (When fault is cleared)	Ann. Window	:	Off
	Status indication	:	i) Steady blinking (if selected path is ON)
			ii) Off (if selected path is OFF)
	Buzzer	:	Off

3.03.06 Dust Suppression System

Conveyors / Equipment

- (1.) It shall be possible to spray the water on to coal stream only when corresponding conveyors/equipment are running with material.
- (2.) If a running pump trips stand-by pump shall start automatically. It shall be possible to select any of the pumps as auto standby from main CHP control room.
- (3.) Pump/pumps shall trip with a time delay, if discharge valves fail to open. Suitable pressure/flow switch shall be provided to sense this condition.
- (4.) Pumps shall trip in case of low level of water in tank.
- (5.) All feeding pumps to tank shall trip in case of reaching high level in tank.

(6.) All the controls shall be through PLC.

3.03.07 Metal detectors

(a.) It shall be possible to start the conveyors only after energizing the metal detector. Once the metal is detected, the corresponding conveyor shall trip.

It shall be possible to restart the conveyors, after local resetting of metal detector and putting back the marker in position. Metal detector ON/OFF push buttons shall be provided in main control room also.

(b.) In case of tripping of conveyor system, metal-detector shall get de-energized after a time lag.

(c.) Following individual indications shall be provided on local control panel.

- (1.) Metal detector 'ON'
- (2.) Metal detected
- (3.) Metal detector 'reset'.
- (4.) Metal detector faulty.

3.03.08 Coal Sampling system

(a) Coal Sampling Unit shall be controlled through main coal handling plant PLC. Controls and interlocks for proper material flow shall be provided similar to conveyor system. Mimic shall be provided in the Operator Work Station (OWS) at main CHP control room.

(b) Only one start/stop push button along with selector switches for various modes of operation of coal sampling system shall be provided for automatic operation of complete coal sampling system. This control facility shall be provided at main CHP control desk as well as locally. In any case, local push button stations shall be provided for all individual equipment of coal sampling system near the equipment.

(c) All necessary automatic controls shall be provided for meeting the requirements of ASTM-D-2234.

(d) Following indications shall be provided on local control panel
System ON/OFF/TRIP

3.03.09 Magnetic separator (Suspended type)

It shall be possible to start the conveyor only after energizing the magnet. Further, if conveyor system trips magnetic separators shall get de-energized after a time

lag. Also if drive motor of cleared belt of Magnetic separator trips, magnetic separator shall not get de-energized, but conveyor system shall trip and audio-visual annunciation shall appear at main CHP control room.

Following individual indications shall be provided on local control panel

- (a.) Magnetic separator ON.
- (b.) Incoming supply ON
- (c.) 'Under current relay' operated
- (d.) Created belt motor ON/OFF/TRIP

3.03.10 Service water, Cooling Water and potable water pumps

- (a) These pumps shall be started from main CHP control room
- (b) Pump shall trip in case of low water level in tank.
- (c) Following individual inputs shall also be provided to PLC system for alarms/indications :
 - (1.) Motor ON/OFF/TRIP
 - (2.) Discharge water pressure low
 - (3.) Water level low in tank
 - (4.) Water level high in tank

APPROVED VENDORS LIST FOR MECHANICAL & ELECTRICAL EQUIPMENT

The makers of various equipments are listed out hereunder. It is essential that bidder/ contractor shall source its equipment from any of the makes listed against that particular equipment in the list. In case the bidder/ contractor intends to add any particular make of equipment by a make other than that listed hereunder, he shall clearly bring out the same in his bid along with justification and indicate the alternative makes offered by him. Only those names of vendors should be included who have supplied such equipment (which are successfully operating for more than two years) in similar capacity bulk handling plant operating in Mines/ Power Plants /Ports. It would be the prerogative of the Employer to accept or reject the alternative makes so offered.

MECHANICAL EQUIPMENT:

Sl.No.	Item Description	Name of Approved Manufacturers
A	CONVEYOR COMPONENTS	
1	Conveyor Idlers	L&T /ELECON / TRF/THYSSEN-KRUPP/BENGAL TOOLS LTD
2	Conveyor Pulleys	L&T /ELECON / TRF/THYSSEN-KRUPP/BENGAL TOOLS LTD
3	Gear Box	L&T /ELECON / TRF/ /BENGAL TOOLS LTD/PREMIUM/GEARS INDIA
4	Coupling (Flexible / Geared)	ELECON/FENNER/NAW
5	Belt Conveyor	FENNER/PHOENIX/INTERNATIONAL CONVEYORS LTD/NRC INDUSTRIES LTD
6	Conveyor Belt Structures	ELECON/BENGAL TOOLS LTD/APHMEL/SANJAY INDUSTRIES
B	FEEDER BREAKER	ATLAS COPCO/ ELECON/L&T /A.P.HEAVY MACHINERY & ENGG. LTD/SANDWIK/MBE/TRF
C	APRON FEEDER	ATLAS COPCO/ ELECON/L&T /A.P.HEAVY MACHINERY & ENGG. LTD/SANDWIK/MBE/TRF
D	PLOUGH FEEDER	ATLAS COPCO/ ELECON/L&T /A.P.HEAVY MACHINERY & ENGG. LTD/SANDWIK/MBE/TRF
E	SECONARY CRUSHER	ATLAS COPCO/ ELECON/L&T /A.P.HEAVY MACHINERY & ENGG. LTD/SANDWIK/MBE/TRF
F	PUMPS	MATHER & PLATT/KIRLOSKAR/GREAVES COTTON/KSB
G	VIBRATING SCREEN	Reputed Co.
H	WEIGH BRIDGE	AVERY/SCHNCK PROCESS INDIA LTD/
I	DUST SUPPRESSION	
J	FIRE FIGHTING SYSTEM	MINI-MAX/THERMAX/VIJAY
K	SAMPLING SYSTEM	

ELECTRICAL EQUIPMENT

Sl.No.	Item Description	Name of Approved Manufacturers
1	Motor (LT)	KIRLOSKAR/BHEL/SIEMENS/CROMPTON GREAVES/ABB
2	Motor (HT)	KIRLOSKAR/BHEL/SIEMENS/CROMPTON GREAVES/ABB
3	Power Transformer	KIRLOSKAR/BHEL/SIEMENS/CROMPTON GREAVES/ABB/BHARAT BIJEE/ANDREW YULE
4	Lighting Transformer	KIRLOSKAR/BHEL/SIEMENS/CROMPTON GREAVES/ABB/BHARAT BIJEE/ANDREW YULE
5	Control Transformer	L&T/SIEMENS/JYOTI/GE INDUSTRIAL/KIRLOSKAR
6	Switchgear	KIRLOSKAR SYSTEMS/BHEL/JYOTI/SIEMENS/ABB/GE INDUSTRIAL/ANDREW YULE
7	Lt Switch Board Panel/ Motor Control Centre/ACB/MCCB/MCB/RCCB	L&T/ANDREW YULE/GE INDUSTRIAL/JYOTI/SIEMENS/ABB/CROMPTON GREAVES
8	Power Cables & conductors	CABLE CORPORATION/UNIVERSAL CABLES/NICCO/INCAB/HINDUSTAN CABLES/HAVELLS.

PART II

TECHNO COMMERCIAL OFFER (TECHNICAL PACKAGE)

DATA TO BE FURNISHED BY THE TENDERER

1. INTRODUCTION
2. STANDARDS
3. SYSTEM DESCRIPTION
4. GENERAL SCOPE OF WORK

Plant description as envisaged

- System drawings of the plant
- Sample GA drawing of conveyor system indicating plan, elevation, belt profile with idler location & switches, foundation plan.
- System drawings of other associated systems like dust suppression, fire fighting & plant cleaning, power supply, illumination, control, communication etc.
- Scope of supply
- List of spares forming part of scope of supply
- Deviations from the NIT, if any
- Manufacturer's pamphlet of different equipment indicating technical details
- List of spares for next one year operations
- Any additional alternative provisions.

4.1 Design and Engineering

4.2 Supply of Equipment / item

4.3 Erection, Testing and Commissioning

4.4 Method of Work

4.5 Program of Work

4.6 Erection Water

4.7 Erection Power

4.8 Broad Scope of Work

4.8.1 Scope of Work – Mechanical

4.8.2 Scope of Work – Civil & Structural

4.8.3 Scope of Work – Electrical, Instrumentation & Control System

4.9 Battery Limit

4.10 Temporary Facilities for Construction

4.11 Services

4.12 Air Conditioning and Ventilation System

4.13 Fire Fighting System

5. DELIVERY AND COMPLETION OF SCHEDULE (BAR CHART)

6. TECHNICAL SPECIFICATION – MECHANICAL

7. SPARES, CONSUMABLES, TOOLS & TACKLES

8. QUALITY ASSURANCE

9. TEST & INSPECTION

10. PERFORMANCE GUARANTEE

11. GUARANTEE AND WARRANTY

12. DRAWINGS AND DOCUMENTS

13. SERVICE BUILDINGS

13.1 Size and details of all Service Buildings

14. MISCELLANEOUS

14.1 Details of plant cleaning system

14.2 Details of approach road, internal road, drains & culverts.

14.3 Details of facilities provided at site for testing of construction materials.

14.4 Details of plantation

14.5 Details of water supply & sanitary arrangement

15. ANY OTHER DETAILS

PART III

FINANCIAL BID

(PRICING FORMAT)

BILL OF QUANTITIES

SI No.	Item Description	Unit	Amount (Rs.)	Amount in Words
1	Planning, Design, Engineering, Procuring, Construction, Fabrication, Supply, Erection, Commissioning & Trial Run of 1000 TPH Coal Handling Plant at Tokisud North OCP, South Karanpur Area, Hazaribagh Dist. complete with Civil, Structural, Electrical & Mechanical works of Conveyor System along with allied auxiliary facilities such as Dust Suppression System, Fire fighting System, Plant Cleaning System, Illumination & Communication System, Construction of Utility Buildings & Compound Wall, Lying of approach Roads in CHP area, etc. as per given layout of requirement on Turnkey basis.	Lump Sum		
	Total			

Note:

- 1) The price should be quoted inclusive of all taxes and duties.
- 2) The bidders may quote their bid either Item-Wise or Broad Head-Wise as given in the following sheets.

BROAD HEAD - WISE OF CHP

Sl. No.	Particulars	No. of Units	Unit	Total
			Landing Cost (in Lakhs)	Cost (in Lakhs)
A)	<u>BELT CONVEYORS</u>			
1	Belt conveyor unit- 900mm wide, 46m long 7 m lift, 500 TPH, 22 KW, 1.50m/sec complete with drive, structure, electricals and Belt of PVC Type 3, B1 & B2 (2 No. of Streams from Pry. Cr to Sec. Cr) Drive	2		
	Structure (46m+46m) (in Meters) @Rs./-per meter	92		
	Belt (2*(46*2+46)) m (in Meters) @ Rs./-per meter	276		
2	Belt conveyor unit -900mm wide, 135m long 11 m lift, 500 TPH, 55 KW, 2.50m/sec complete with drive, structure, electrical and Belt of PVC Type 3, B3A & B4A (2 Streams from Pry. Cr to GL bunker.) Drive	2		
	Structure (135m+135m) (in Meters) @ Rs./-per meter	270		
	Belt (2*(135*2+46)) m (in Meters) @Rs./-per meter	632		
3	Belt conveyor unit -1200mm wide, 200m long 28 m lift,1200 TPH, 2x125 KW, 2.75m/sec complete with drive, structure, electricals and Belt of PVC Type 3, B5 (Single Stream from GL bunker to Steel bunkers) Drive	1		
	Structure (200m) (in Meters) @Rs./-per meter	200		
	Belt (2*200+46) m (in Meters) @Rs./-per meter	446		
4	Belt conveyor unit -1200mm wide,90m long 2 m lift,1000 TPH, 30 KW,2.50m/sec complete with drive, structure, electricals and Belt of PVC Type 3, TC-1 (Tripper Car over 5000 Te GL bunker) Drive	1		
	Structure (90m) (in Meters) @ Rs./-per meter	90		
	Belt (2*90+46) m (in Meters) @ Rs./-per meter	226		
	<u>Shale Picking Belts</u>			
5	Belt conveyor unit -900mm wide, 45m long 3 m lift, 200 TPH, 15 KW 3.00 m/Sec complete			

	with drive, structure, electricals and Belt of			
	PVC Type 3, B6 (Shale picking)			
	Drive	1		
	Structure (45m) (in Meters) @Rs./-per meter	45		
	Belt (2*45+46) m (in Meters) @ Rs./-per meter	136		
6	Belt conveyor unit -900mm wide, 90m long			
	12m lift, 200 TPH, 22 KW, 3.00m/sec complete			
	with drive, structure, electricals and Belt of			
	PVC Type 3, B7 (Shale belt to Steel bunker)			
	Drive	1		
	Structure (90m) (in Meters) @Rs./-per meter	90		
	Belt (2*90+46) m (in Meters) @ Rs./-per meter	226		
7	Chutes	LS		
B)	<u>Crushers</u>			
a)	500 TPH Feeder Breaker complete with crusher consisting of Electric Motors, Reduction gear boxes, Chain conveyor, Dust suppression system etc.	2		
b)	Vibrating Screen 500TPH (FOB: \$16800.00)	2		
c)	300 TPH Double Roll Crusher consisting of 2 Nos. 40HP 1440 RPM 400/440 V 50 Hz. 3 Ph. A.C Supply TEFC Sq. Cage Induction Motors and 1 No. Soft Starter Panel.	2		
C)	<u>Miscellaneous</u>			
a)	DUST SUPPRESN & FOG SPRAY SYSTEM (incl erection & Commissioning)	1		
b)	On line Ash Analyser before lorry loading bunkers	1		
c)	Interlocking arrangement (Sequence control panels for belts)	LS		
d)	Signalling (Pre-start alarms with power sources for belt Conveyors)	LS		
e)	Tramp Magnetic separators Suspended type(FOB \$ 1500)	2		
f)	Pull cord switches & Cable	LS		
g)	Reciprocating feeders 400TPH	4		
h)	Hydraulic chutes for 300T Steel Bunkers (incl. power pack)	LS		
D)	<u>CIVIL WORKS</u>	-		
a)	Electronic Truck Weigh-bridge (with Civil works)	2		
b)	GL Bunker 5000T (Circular)	1		
c)	300T Steel Bunkers	2		
d)	Shale bunker 25T	1		
	Gantries			
e)	Prim Cr (7m end height) to Sec Cr (in meters)	45		
f)	Sec Cr to GL (11m end height) (in meters)	56		
g)	GL bunker to 300T Steel bunkers (18m end height)(in m)	92		
h)	Shale collecting bunker (end height 10M)	43		
i)	GL Bunkers Roofing Structure (20x30m)	600		

	Roads & Walls			
j)	Retaining wall Primary Crushers for Dumpers Unloading (40m&30m)	70		
k)	CC Approach Road for Unloading (240m x7m)	1680		
l)	Unloading CC Platform (40mx15M)	600		
m)	Compund wall with height 2.00m , 9" wall for 770 m length@`/meter	770		
	Foundation Beds for Crushers			
n)	Primary Overall width 4515 mm (Hopper) 9417 mm (Complete machine) Overall height 2530 mm (for standard Hopper)	2		
o)	Secondary (1.5mx2.0M)	2		
	Foundation Beds for Gear Head beds			
p)	CHP side (6mx3m)	7		
	Buildings & miscellaneous			
q)	Over Head tank, 50,000 Gallons Cap	1		
r)	Office building 350 Sq m	350		
s)	Canteen 35 Sq m	35		
t)	Rooms for Technicians 100Sq m	100		
u)	Store Shed 50 Sq m	50		
v)	Substation(Out door & Indoor)	LS		
E)	ELECTRICALS			
a)	1000KVA Transformers 33KV/6.6KV	2		
b)	33 KV Lightning Arrestor	6		
c)	33 KV Isolators	2		
d)	33 KV MOCB/SF6 Circuit breakers with control panels	2		
e)	6.6 KV Circuit breaker panel comprising NFLP VCBs	3		
f)	6.6KV Capacitor bank with automatic p.f. correction relays	1		
g)	315 KVA transformer 3.3KV/550-415V NFLP	1		
h)	550/440V Distribution board with ACBs	LS		
i)	33 KV outdoor sub-station structure, busbar, earthing, lighting protection, etc.	LS		
j)	Lighting	LS		
k)	Cables	LS		
l)	Miscellaneous	LS		
	Total for CHP			

APPENDIX - 1

FORMS OF BID AND QUALIFICATION INFORMATION

Form of Bid

Date: _____

To

Vice President – Project Development
GVK Coal (Tokisud) Company Pvt Ltd (GCTCPL)
Paigah House, 156-159, Sardar Patel Road,
Secunderabad- 500 003, India
Fax: 040-27902665

Dear Sir,

Sub: Planning, Design, Engineering, Procuring, Construction, Fabrication, Supply, Erection, Commissioning & Trial Run of 1000 TPH Coal Handling Plant at Tokisud North OCP, South Karanpur Area, Hazaribagh Dist. complete with Civil, Structural, Electrical & Mechanical works of Conveyor System along with allied auxiliary facilities such as Dust Suppression System, Fire fighting System, Plant Cleaning System, Illumination & Communication System, Construction of Utility Buildings & Compound Wall, Lying of approach Roads in CHP area, etc. as per requirement on Turnkey basis.

Ref: GVK/Tokisud coal/CHP/NIT/010 dated 09 March 2012.

Being duly authorized to represent and act on behalf of M/s _____. I, the undersigned, having reviewed and fully understood all of the Proposal requirements and information provided hereby submit the Proposal for the Project referred above.

I am enclosing the Financial Proposal, with the details as per the requirements of this NIT, for your evaluation. The Proposal shall be valid for a period of one hundred and Eighty (180) days from the Proposal Due Date.

1. Having inspected the Site, examined NIT including its Terms and Conditions of Contract, and it's annexure including addendum thereto (if any) issued by the GVK Projects and Technical Services Limited for the construction of the above mentioned Works, we hereby offer to construct and complete the whole of the said Works on Lump Sum basis within the completion period and remedying any defects therein, in conformity with the above documents for the sum Rs _____ Rupees _____

_____ Only) and appended hereto.

2. We undertake:

- (a) To keep this Tender open for acceptance without unilaterally varying or amending its terms for the period stated in Notice of Invitation to Tender hereto the withdrawal of any member or any other change in the composition of the partnership / joint venture / consortium on whose behalf this Tender is submitted shall constitute a breach of this undertaking; and
 - (b) If this Tender is accepted, to provide Guarantees, Undertakings & Warranties for the due performance of the Contract as stipulated in the NIT and it's annexure and
 - (c) To hold in confidence all documents and information whether technical or commercial supplied to us at any time by or on behalf of the Employer in connection with this Tender and shall not be disclosed.
 - (d) Without your written authority except as otherwise required by law.
3. Unless and until a formal agreement is prepared and executed, this Tender together with your written acceptance thereof, shall constitute a binding contract between us.
4. We understand that you are not bound to accept the lowest or any tender you may receive.
5. This Tender shall be governed by and construed in all respects according to the laws for the time being in force in India. The courts in Hyderabad will have exclusive jurisdiction in the matter.

Yours faithfully,

For and on behalf of M/s _____

Signature:

Name:

Designation:

Date:

Place:

Witness:

1. _____

Name:

Designation:

Address:

2. _____

Name:

Designation:

Address:

APPENDIX TO FORM OF BID

1.	Contract Period	12 Months from Date of Commencement of Works.
2.	Performance Security	5% of Contract Value in the form of Bank Guarantee.
3.	Mobilization Advance	5% of Contract Sum against submission of Bank Guarantee for an equivalent amount.
4.	DLP/Warranty Period	24 months from issue of Completion Certificate.
5.	Payments	Monthly Progress Bills
6.	Retention Money	5% of gross work done of each RA bill subject to maximum of 5%
8.	Renderer's Particulars	Contact Person : Designation : Ph : Fax : Mobile :
		Registered Office Address :

Yours faithfully,

For and on behalf of M/s _____

Signature :

Name :

Designation :

Date :

Place :

QUALIFICATION INFORMATION

(The information to be submitted by all the Bidders)

1.1. Business profile of the Bidder**1.2. For Bidders who are companies or firms, state the following:**

1.2.1. Name of Company:

1.2.2. Legal status: (e.g. incorporated private company, unincorporated business, etc.)

1.2.3. Registered address:

1.2.4. Year of incorporation:

1.2.5. Principal place of business:

1.2.6. Name and Address of the Company

Contact Person:

Telephone No:

Fax No:

E- Mail Address:

1.3 Details of the turnover:

Annual Turnover Data - Contract Work (During last three years)		
Year	Turnover in Rupees	Remarks

1.4 Details of experience for similar nature and complexity of work in last 05 (Five) years: Use a separate sheet for each contract:

1	Number of Contract:	
	Name of Contract:	
2	Name of the employer	
3	Employer's address	
4	Nature of work and special features if any:	
5	Contract role (Check out)	
	1. Sole Contractor	

	2. Sub Contractor 3. Partner in joint venture	
6	Value of the total Contract:	
7	Date of award:	
8	Date of completion with original schedule and slippage if any	
9	Specified requirements: (a) concrete : (b) Structural steel works : (c) equipment	

NB : Performance Certificate shall be submitted by bidder after obtaining the same from the customer for the completed job(s). However if required Concerned Technical Department may also seek/verify the Performance Certificate from the issuing authority of the work order(s) or a committee may visit the site of the customer to verify and certify about the satisfactory performance after approval of competent authority. In case of unsatisfactory performance received from the customer in whom the bidder is qualifying in eligibility criteria, the offer of the bidder shall be rejected.

1.5 Information on Bid Capacity (Works for which bids have been submitted and work which are yet to be completed) as on the date of this bid:

a) Total value of contract work executed in last five years (year wise):

Year					
Executed contract Value (Rs.in Lakh)					

b) Details of existing commitments and ongoing works during the next 24 months :

Description of work	Place & State	Contract No.& Date	Name and address of Employer	Value of Contract (Rs. in lakhs)	Stipulated period of completion	Value of works remaining to be completed	Anticipated date of completion

1.6 Financial reports of the last five years: Balance sheets, profit and loss statement, Auditors report etc. (Copies to be submitted and the following format be filled up).

Financial information in Indian Rupees.					
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1. Total assets					
2. Current assets					
3.Total Liabilities					
4. Current liabilities					
5. Profits Before Tax					
6. Profits after Tax					

1.7 Evidence of access to financial resources to meet the qualification requirements: Cash in hand, lines of credit and other financial means etc. sufficient to meet the construction cash flow copies to be submitted and the following format to be filled up).

Source of financing	Amount in Indian Rupees
1	
2	

1.8 Details of bankers:

A.

Banker	Name of the banker
	Address of the banker
	Account No. (Required to receive payment)
	Type : Branch Code :
	Telephone: Contact name & title:
	Fax: Telex

B. The Bank mandate in duplicate in the prescribed format for e-Payment through Electronic Fund Transfer / Internet Banking (SBI-Net / RTGS Transfer) is needed before issue of LOA

1.9 Information about litigations, if any, in which bidder is involved:

Year	Award FOR or AGAINST applicant	Name of the client, Clause of litigation and matter of dispute	Disputed amount in Rupees

2.0 Details of major construction equipment to be used for the work:

Sl.No	Equipment type and capacity	Make and model	Minimum number

2.1 Permanent Income Tax Account No. (PAN)

2.2 DETAILS OF EARNEST MONEY / BID SECURITY:

Deposit of Earnest Money by :

Draft No :

Drawn on :

Amount (Rs.) :

Or

Bank Guarantee Details

Name of the Bank :

Amount of B.G. :

Bank Guarantee valid upto:

2.3 OTHER DETAILS:

Certificate of registration as per statutory requirements under Sales Tax, Service Tax and Contract Labour Laws etc. as may be applicable.

- 2.4** Acceptance by the Bidder of conditions of contract as per Tender Documents (Attach signed & sealed copies of the bid document issued to them along with the offer as proof of acceptance).

Signature of Bidder with name & Seal

Note: Separate sheets may be attached to furnish details, if necessary.

BILL OF QUANTITIES

SI No.	Item Description	Unit	Amount (Rs.)	Amount in Words
1	Planning, Design, Engineering, Procuring, Construction, Fabrication, Supply, Erection, Commissioning & Trial Run of 800 TPH Coal Handling Plant at Tokisud North OCP, South Karanpur Area, Hazaribagh Dist. complete with Civil, Structural, Electrical & Mechanical works of Conveyor System along with allied auxiliary facilities such as Dust Suppression System, Fire fighting System, Plant Cleaning System, Illumination & Communication System, Construction of Utility Buildings & Compound Wall, Lying of approach Roads in CHP area, etc. as per given layout of requirement on Turnkey basis.	Lump Sum		
	Total			

Note:

- 1) The price should be quoted inclusive of all taxes and duties.
- 2) The bidders may quote their bid either Item-Wise or Broad Head-Wise as provided in the Financial Bid (Part III) Price formats.

[On Rs 100/- Stamp Paper /]

POWER OF ATTORNEY

Know all men by these presents, we _____ (name of the firm and address of the register office) do hereby irrevocably constitute, nominate, appoint and authorize Mr/Ms (name) _____ son/daughter/wife of _____ and presently residing at _____, who is [presently employed with us and holding the position of _____] as our true and lawful attorney (hereinafter referred to as the "Attorney") to do in our name and on our behalf, all such acts, deeds and things necessary or required, in connection with or incidental to submission of our bid for Project **"Planning, Design, Engineering, Construction, Fabrication, Supply, Erection, Commissioning & Trial Run of 800 TPH Coal Handling Plant at Tokisud North OCP, South Karanpur Area, Hazaribagh Dist. complete with Civil, Structural, Electrical & Mechanical works of Conveyor System along with allied auxiliary facilities such as Dust Suppression System, Fire fighting System, Plant Cleaning System, Illumination & Communication System, Construction of Utility Buildings & Compound Wall, Lying of approach Roads in CHP area, etc. as per given layout of requirement on Turnkey basis."** includes signing and submission of all documents and writings, participate in negotiation and providing information/response to the **GVK COAL (TOKISUD) COMPANY PVT LTD** (hereinafter called **GCTCPL**), representing us in all matter before the GCTCPL, and undertaking consequent acceptance of our bid, and generally dealing with the GCTCPL in all matters in connection with or relating to or arising out of our bid for the said project and/or upon award thereof to us till the entering into of the Sub-Contract agreement, signing and execution of Sub-Contract with the GCTCPL.

AND we hereby agree to ratify and confirm and do hereby ratify and confirm all acts, deeds and things lawfully done or caused to be done by our said Attorney pursuant to and in exercise of the powers conferred by this Power of Attorney and that all acts, deeds and things done by our said Attorney in exercise of the powers hereby conferred shall and shall always be deemed have been done by us.

IN WITNESS WHEREOF WE _____, THE ABOVE NAMED PRICIPAL HAVE EXXECUTED THIS POWER OF ATTORNEY ON THIS DAY OF _____ 2011.

For _____

(Signature)

(Name, Title and Address)

Accepted

(Signature)

(Name, Title and Address of Attorney)

Witness

Format

(Certificate to be furnished by the bidder in case the tender document is downloaded from Website)

CERTIFICATE

(only for Bidder using downloaded tender document from Website)

We undertake that the tender submitted by us is downloaded from Website “(www.gvk.com)” and is same in content and form (verbatim), and any deviation, if detected, at any stage, would entitle GCTCPL authority to reject our bidding / offer without assigning any reason or resource to any penal action, and would be legally binding on us.

Signature of Bidder with Seal

(FORMAT FOR EARNEST MONEY DEPOSIT)¹

B.G. NO. :

DATE :

BANK:

VALID UPTO :

1. In consideration of you, the GVK Coal (Tokisud) Company Pvt Ltd (GCTCPL), having its office at Paigah House, 156-159 Sardar Patel Road, Secunderabad- 500 003, India, (hereinafter referred to as the “Authority”, which expression shall unless it be repugnant to the subject or context thereof include its, successors and assigns) having agreed to receive the Bid of (a company registered under the Companies Act, and having its registered office at (hereinafter referred to as the “Bidder” which expression shall unless it be repugnant to the subject or context thereof include its/their executors, administrators, successors and assigns), for the Project as defined in BID SPECIFICATION NO.: **GVK/Tokisud coal/CHP/NIT/010 dated 09 March 2012** (hereinafter referred to as “the Project”) pursuant to the Notice Inviting Tender document, , Technical Information, if any, Clarification, notices and Corrigendum issued by GCTCPL, in respect of the Project (hereinafter collectively referred to as “Bidding Documents”), we(name of the bank) having our registered office at and one of its branches at (hereinafter referred to as the “Bank”), at the request of the Bidder, do hereby in terms of Bidding Documents, irrevocably, unconditionally and without reservation guarantee the due and faithful fulfilment and compliance of the terms and conditions of the Bidding Documents by the said Bidder and unconditionally and irrevocably undertake to pay forthwith to the Authority an amount of Rs. ***** (Rupees ***** only) (hereinafter referred to as the “Guarantee”) as our primary obligation without any demur, reservation, recourse, contest or protest and without reference to the Bidder if the Bidder shall fail to fulfil or comply with all or any of the terms and conditions contained in the said Bidding Documents.
2. Any such written demand made by the Authority stating that the Bidder is in default of the due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents shall be final, conclusive and binding on the Bank.
3. We, the Bank, do hereby unconditionally undertake to pay the amounts due and payable under this Guarantee without any demur, reservation, recourse, contest or protest and without any reference to the Bidder or any other person and irrespective of whether the claim of the Authority is disputed by the Bidder or not, merely on the first demand from the Authority stating that the amount claimed is due to the Authority by reason of

¹ Please note that for Performance Bank Guarantee, same format shall be used. However, the word “Shortlisted Bidder” shall be replaced with “Preferred Bidder”.

failure of the Bidder to fulfil and comply with the terms and conditions contained in the Bidding Documents including failure of the said Bidder to keep its Bid open during the Bid validity period as set forth in the said Bidding Documents for any reason whatsoever. Any such demand made on the Bank shall be conclusive as regards amount due and payable by the Bank under this Guarantee. However, our liability under this Guarantee shall be restricted to an amount not exceeding Rs. ***** (Rupees ***** only).

4. This Guarantee shall be irrevocable and remain in full force for a period of three hundred and sixty (360) days from the Bid Due Date inclusive of a claim period of one hundred and eighty (180) days or for such extended period as may be mutually agreed between the Authority and the Bidder, and agreed to by the Bank, and shall continue to be enforceable till all amounts under this Guarantee have been paid.
5. We, the Bank, further agree that the Authority shall be the sole judge to decide as to whether the Bidder is in default of due and faithful fulfilment and compliance with the terms and conditions contained in the Bidding Documents including, *inter alia*, the failure of the Bidder to keep its Bid open during the Bid validity period set forth in the said Bidding Documents, and the decision of the Authority that the Bidder is in default as aforesaid shall be final and binding on us, notwithstanding any differences between the Authority and the Bidder or any dispute pending before any Court, Tribunal, Arbitrator or any other Authority.
6. If notice of demand is served on the Bank and for this purpose it shall be deemed sufficient if such notice is served on our Branch at..... Hyderabad/Secunderabad (Andhra Pradesh) by the GCTCPL before the expiry of the guarantee, then notwithstanding anything to the contrary herein contained, the liability of the Bank under this guarantee shall be enforceable as due to us.
7. The Guarantee shall not be affected by any change in the constitution or winding up of the Bidder or the Bank or any absorption, merger or amalgamation of the Bidder or the Bank with any other person.
8. In order to give full effect to this Guarantee, the Authority shall be entitled to treat the Bank as the principal debtor. The Authority shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee from time to time to vary any of the terms and conditions contained in the said Bidding Documents or to extend time for submission of the Bids or the Bid validity period or the period for conveying acceptance of Letter of Intent of award by the Bidder or the period for fulfilment and compliance with all or any of the terms and conditions contained in the said Bidding Documents by the said Bidder or to postpone for any time and from time to time any of the powers exercisable by it against the said Bidder and either to enforce or forbear from enforcing any of the terms and conditions contained in the said Bidding Documents or the securities available to the Authority, and the Bank shall not be released from its liability under these presents by any exercise by the Authority of the liberty with reference to the matters aforesaid or by reason of time being given to the said Bidder or any other forbearance, act or omission on the part of the Authority or any indulgence by the Authority to the said Bidder or by any change in the constitution of the Authority or its absorption, merger or amalgamation with any other person or any

other matter or thing whatsoever which under the law relating to sureties would but for this provision have the effect of releasing the Bank from its such liability.

9. Any notice by way of request, demand or otherwise hereunder shall be sufficiently given or made if addressed to the Bank and sent by courier or by registered mail to the Bank at the address set forth herein.
10. We undertake to make the payment on receipt of your notice of claim on us addressed to [name of Bank along with branch address in Hyderabad/Secunderabad] and delivered at our above branch which shall be deemed to have been duly authorised to receive the said notice of claim.
11. It shall not be necessary for the Authority to proceed against the said Bidder before proceeding against the Bank and the guarantee herein contained shall be enforceable against the Bank, notwithstanding any other security which the Authority may have obtained from the said Bidder or any other person and which shall, at the time when proceedings are taken against the Bank hereunder, be outstanding or unrealised.
12. We, the Bank, further undertake not to revoke this Guarantee during its currency except with the previous express consent of the Authority in writing.
13. The Bank declares that it has power to issue this Guarantee and discharge the obligations contemplated herein, the undersigned is duly authorised and has full power to execute this Guarantee for and on behalf of the Bank.
14. For the avoidance of doubt, the Bank's liability under this Guarantee shall be restricted to Rs. *** lakhs (Rupees ***** only). The Bank shall be liable to pay the said amount or any part thereof only if the Authority serves a written claim on the Bank in accordance with paragraph 10 hereof, on or before [*** (indicate date falling 360 days after the Bid Due Date)].

Signed and Delivered by Bank

Dated the.....20

Signature of Authorised Signatory

Name & Designation of Authorised Signatory

Of.....(Bank).....

Seal.....

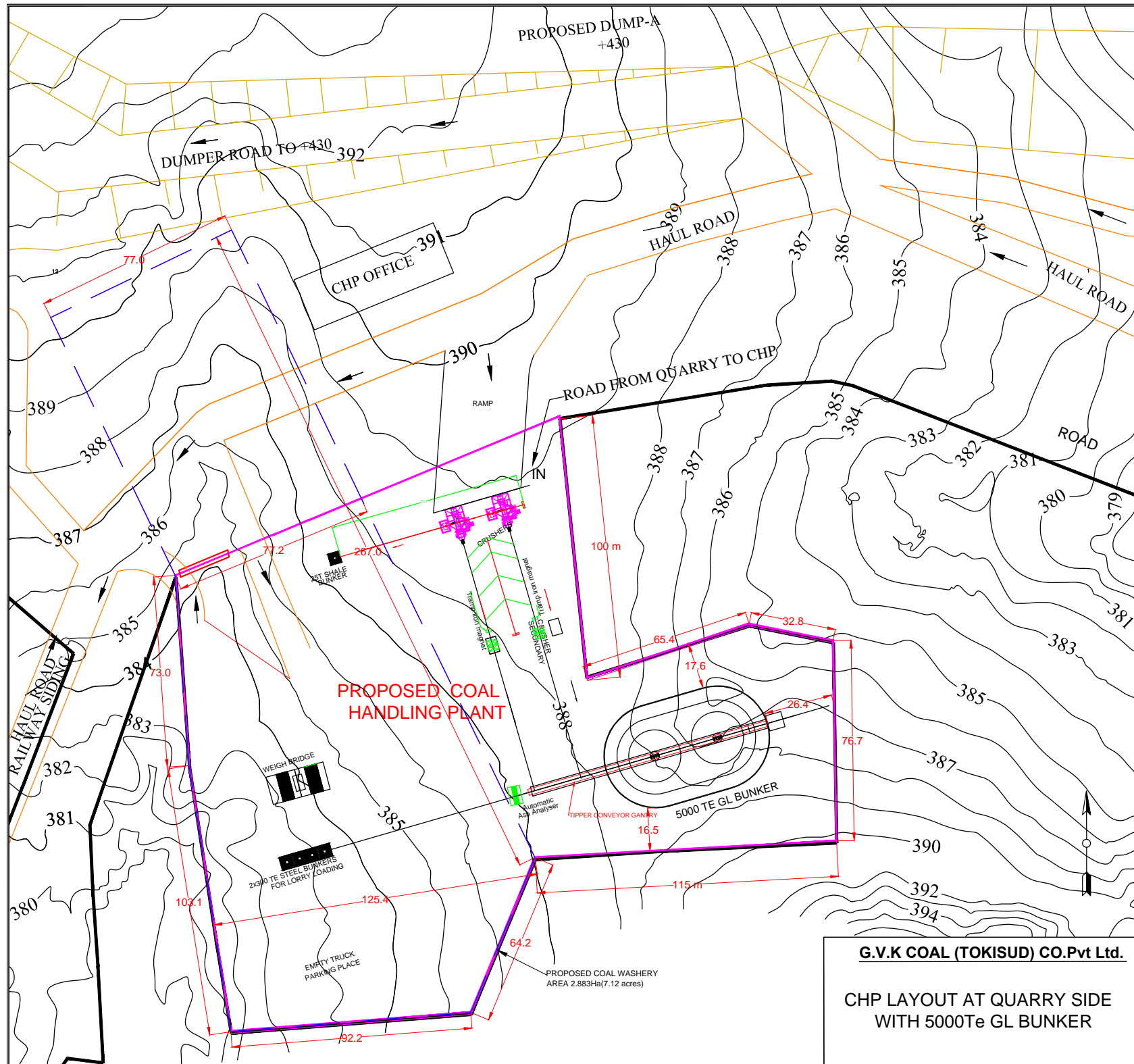
APPENDIX – 2

LIST OF DRAWINGS (Given Separately)

Sl.No.	Item	Plate No.
1	CHP - CONTOURS	1
2	QUARRY CHP PLAN	2
3	CHP SECTIONAL DETAILS	3
4	5000 Te GROUND RCC BUNKERS	4
5	PLAN ELEVATION & SECTION OF 300 Te CAPACITY STEEL BUNKER	5
6	25 Te CAPACITY STEEL BUNKERS AND SECTIONAL DETAILS	6

APPENDIX – 3 – OTHER TECHNICAL REPORTS.

- 1) Soil Testing Report. Given Separately.**



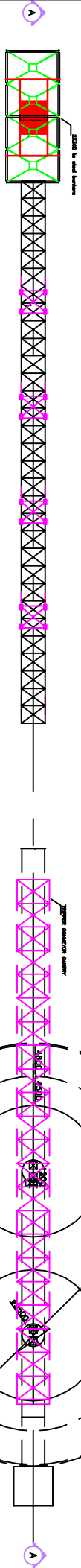
G.V.K COAL (TOKISUD) CO.Pvt Ltd.

**CHP LAYOUT AT QUARRY SIDE
WITH 5000Te GL BUNKER**

+420

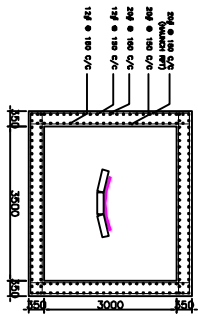


GVK COAL TOKISUD Co.Pvt.Ltd
CHP LAYOUT AT QUARRY SIDE
WITH 5000T_e GL BUNKER

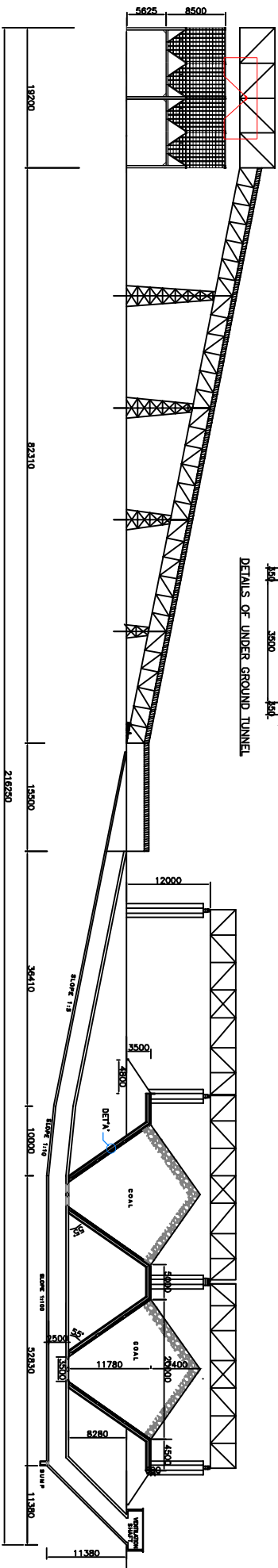


PLAN FROM CIRCULAR SL BUNKERS
TO LORRY LOADING BUNKERS

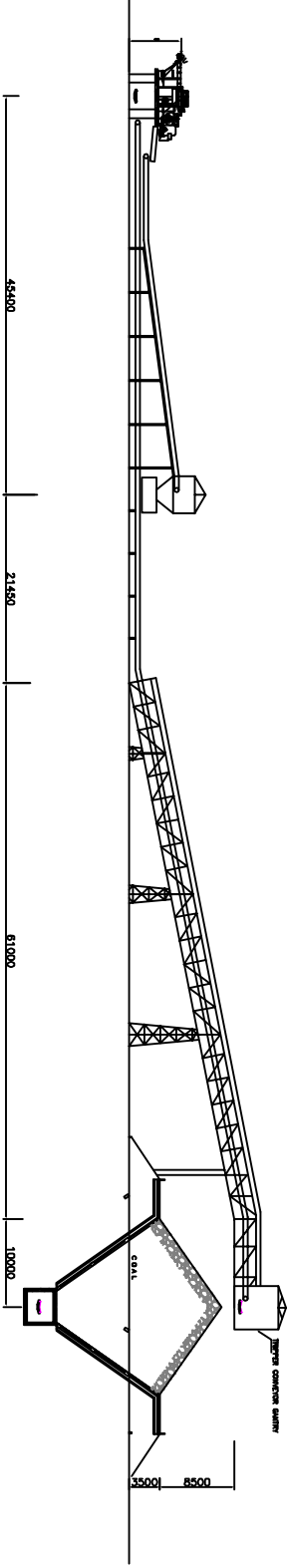
PLAN



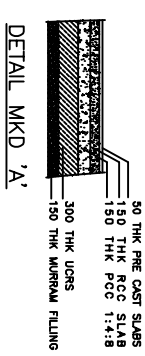
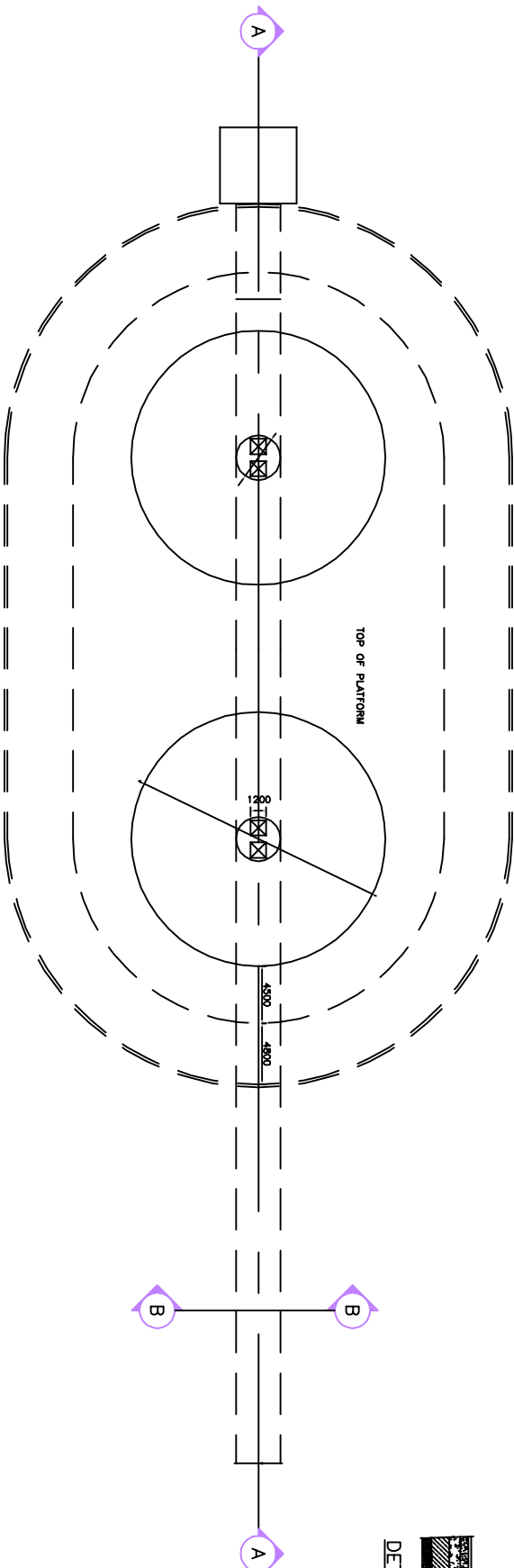
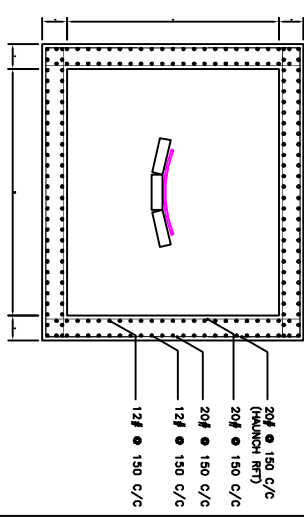
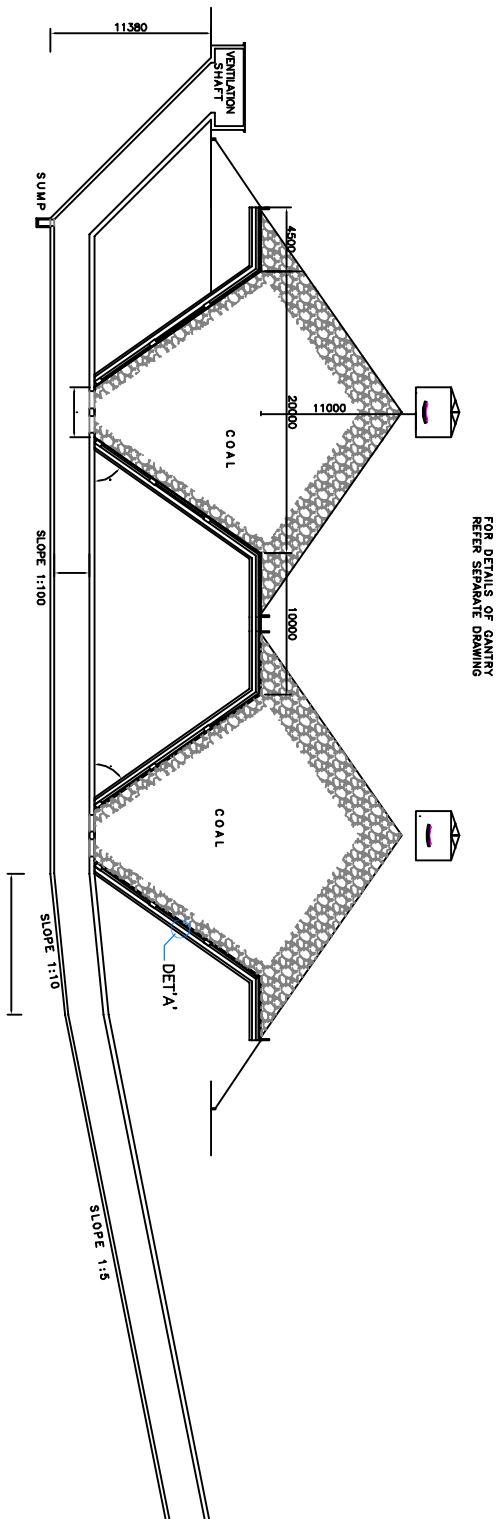
DETAILS OF UNDER GROUND TUNNEL



SECTION A-A



SECTION FROM MAIN CRUSHER TO
CIRCULAR BUNKER



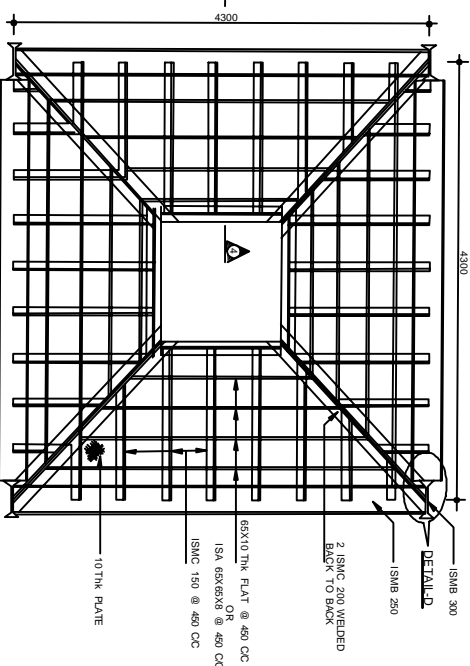
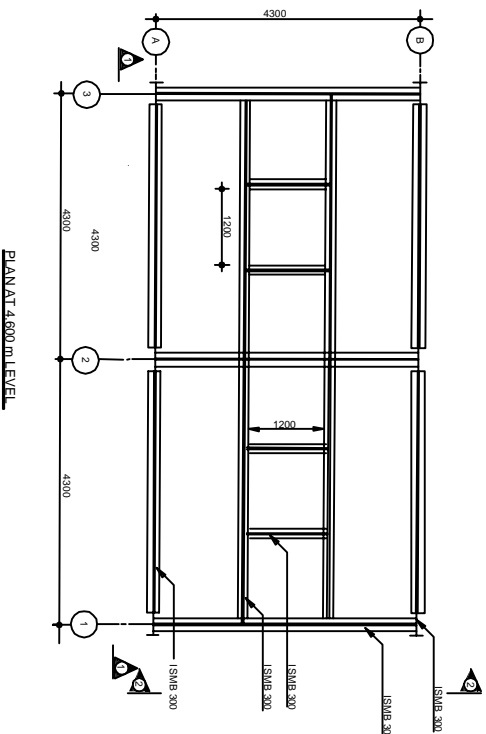
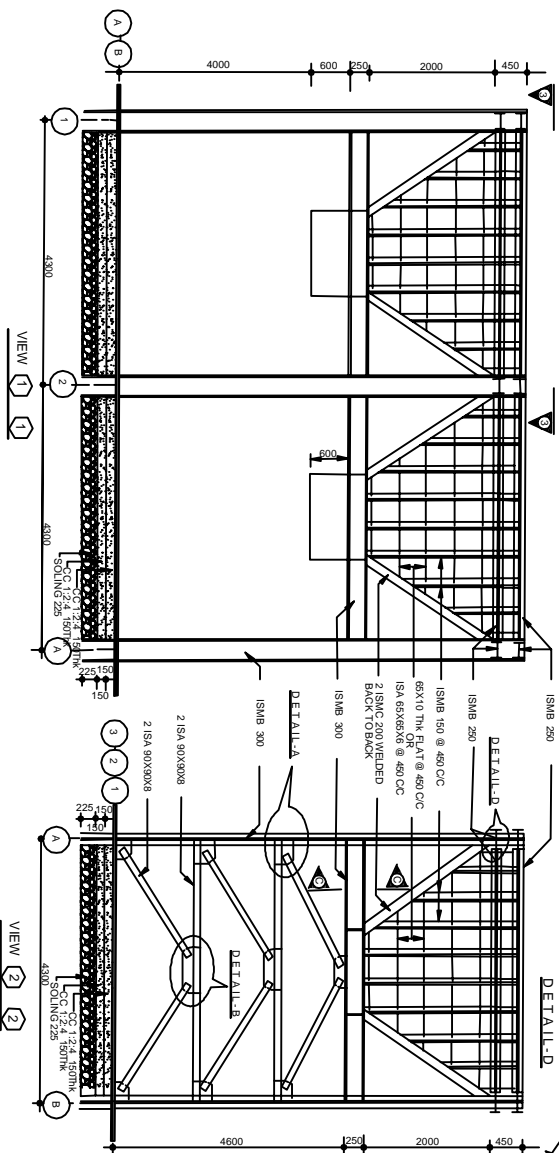
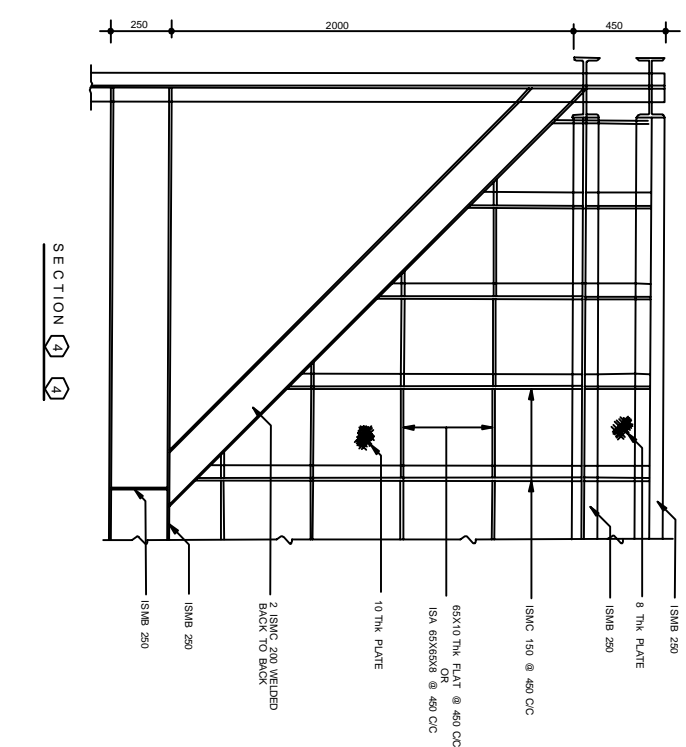
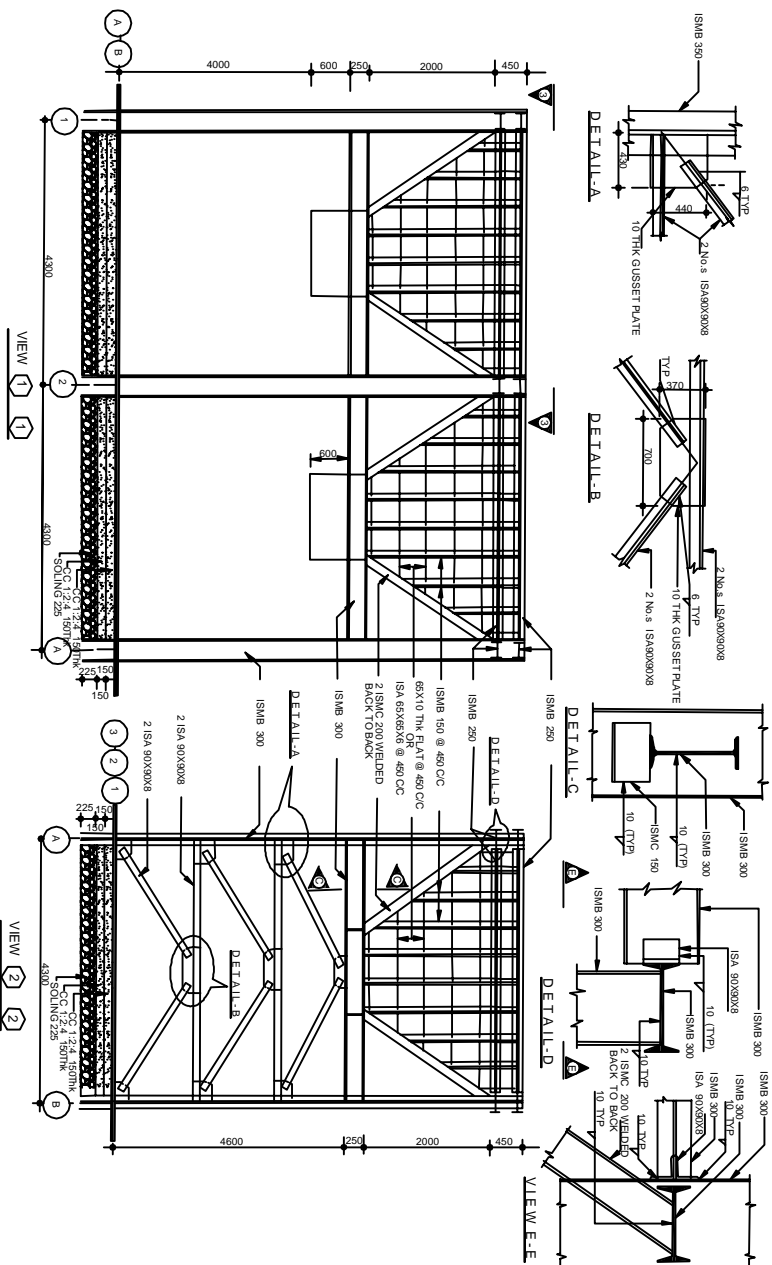
- Notes:-
1. ALL DIMENSIONS ARE IN mm UNLESS SPECIFIED OTHERWISE. ONLY WRITTEN DIMENSIONS TO BE FOLLOWED.
 2. DO NOT SCALE THE DRAWING. ASK FOR CLARIFICATION IN DOUBT.
 3. FOR STRUCTURAL CONCRETE AND GRADE TO BE ADOPTED UNLESS SPECIFIED OTHERWISE.
 4. STEEL OF GRADE FE 415 TO BE ADOPTED UNLESS SPECIFIED OTHERWISE.

GVK GVK COAL (TOKISUD) CO.LTD.

TOKISUD NORTH CAPTIVE COAL MINE

VILLAGE:UREI DIST:HAZARIBAGH STATE:JHARKHAND

5000 Tc. GROUND LEVEL BUNKER



GVK	GVK COAL (TOKISUD) CO Ltd.
TOKISUD NORTH CAPTIVE COAL MINE	
VILLAGE: UREL	DIST: HAZARIBAGH
STATE: JHARKHAND	
25 Tc CAPACITY STEEL BUNKERS AND	
SECTIONAL DETAILS	



RECOMMENDATION FOR NET ALLOWABLE BEARING PRESSURE (GVK/ TOKISUD/ PATRATU)									OGL	383.15
LOCATION	DEPTH (m)	SIZE OF FOUNDATION (m)	RL OF FOUNDATION	SHEAR CRITERIA				SETTLEMENT CRITERIA		RECOMMENDED NET ALLOWABLE BEARING PRESSURE ton/m ²
				C kg/cm ²	φ degree	γ g/cc	Net Safe Bearing Capacity ton/m ²	Average SPT N value	Net Bearing Pressure for Settlement in ton/m2 (40mm settlement)	
S3 (Proposed 300T Lorry loading bunker at mine site CHP)	1.50	3.00	381.65	0.00	25.00	2.00	16	37	32	16.00
		4.00					17	37	30	
		5.00					19	37	28	
		6.00					20	37	28	
	2.00	3.00	381.15	0.00	25.00	2.00	20	57	52	20.00
		4.00					21	57	48	
		5.00					23	57	46	
		6.00					24	57	44	
	3.00	3.00	380.15	0.00	37.00	2.00	127	57	55	40.00
		4.00					136	57	50	
		5.00					145	57	48	
		6.00					154	57	46	
	4.00	3.00	379.15	0.00	37.00	2.00	161	57	55	40.00
		4.00					169	57	52	
		5.00					178	57	49	
		6.00					187	57	47	
	5.00	3.00	378.15	0.00	37.00	2.00	194	57	55	40.00
		4.00					203	57	52	
		5.00					212	57	51	
		6.00					221	57	49	
	6.00	3.00	377.15	0.00	37.00	2.00	228	57	55	40.00
		4.00					237	57	52	
		5.00					245	57	51	
		6.00					254	57	50	

Checked/ Approved



RECOMMENDATION FOR NET ALLOWABLE BEARING PRESSURE (GVK/ TOKISUD/ PATRATU)										OGL	389.75
LOCATION	DEPTH (m)	SIZE OF FOUNDATION (m)	RL OF FOUNDATION	SHEAR CRITERIA				SETTLEMENT CRITERIA		RECOMMENDED NET ALLOWABLE BEARING PRESSURE ton/m ²	
				C kg/cm ²	φ degree	γ g/cc	Net Safe Bearing Capacity ton/m ²	Average SPT N value	Net Bearing Pressure for Settlement in ton/m ² (40mm settlement)		
S4 (proposed 2x2500T G/L Bunker at mine site CHP)	1.50	3.00	388.25	0.00	29.00	2.05	27	39	34	25.00	
		4.00					30	39	31		
		5.00					32	39	30		
		6.00					35	39	29		
	2.00	3.00	387.75	0.00	29.00	2.05	33	57	52	30.00	
		4.00					36	57	48		
		5.00					39	57	46		
		6.00					41	57	44		
	3.00	3.00	386.75	0.00	37.00	2.00	127	57	55	40.00	
		4.00					136	57	50		
		5.00					145	57	48		
		6.00					154	57	46		
	4.00	3.00	385.75	0.00	37.00	2.00	161	57	55	40.00	
		4.00					169	57	52		
		5.00					178	57	49		
		6.00					187	57	47		
	5.00	3.00	384.75	0.00	37.00	2.00	194	57	55	40.00	
		4.00					203	57	52		
		5.00					212	57	51		
		6.00					221	57	49		
	6.00	3.00	383.75	0.00	37.00	2.00	228	57	55	40.00	
		4.00					237	57	52		
		5.00					245	57	51		
		6.00					254	57	50		

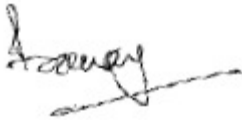
Checked/ Approved

6. Excavation Scheme

The temporary excavation is expected to be through the Silty clay soil / completely weathered Rock

Description of Strata	Recommended Side slopes	Excavation Method
silty gravelly soil	1V:2H	Conventional Excavators
Completely Weathered rocks	2-3V:1H	Drilling / Blasting or needle breaker

For Sun-Tech, Ranchi



(Pranay Kumar)
Geotechnical Consultant

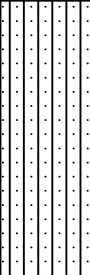

*****END OF REPORT*****

Sun-Tech	Sub-Surface Investigation Report	GVK
PROPOSED LOADING FACILITY AT RAILWAY SIDING & MINE SITE CHP AT TOKISUD, PATRATU, JHARKHAND		CODE:181211

BORE-LOG SHEET	Sun-Tech SOIL & MATERIAL TESTING LAB NABL ACCREDITED (T-1523)				BORE HOLE NO.S3
Project: CHP AREA					Date: 8-12-2011
Type of boring: MANUAL/ MECH. AUGER	Unit meter				starting time:09.0AM
Depth of boring: 6.00m	TEST	No.	Samples	No.	completion time: 6.00 PM
Type of drilling : -	SPT	3	DS	2	Water struck at: not found
Structu: Loading Bunker (300T)	DCPT	0	UDS	1	WT : -
Location: MINE SITE CHP UREJ	VST	0			Done by: S.B.PRASAD
GROUND RL : 383.15	CBR	0			PROJECT CODE: S181211

TEST METHOD: IS 2131:1981

DOC NO. F01(5.4)SF-1

DESCRIPTION	SYMBOL	GRAPHIC LOG	DEPTH	Standard Penetration Test				SAMPLE TYPE % recovery
				15 cm	15 cm	15 cm	N	
Very dense brownish SANDY gravelly , non-plastic , inorganic soil. (0.00-1.50m)	SM		0.0					
			1.0	5	9	12	21	
Very dense weathered rock. (1.50- 6.00m onwards)	WR		2.0		>100 for a penetration of 25cm			
			3.0		>100 for a penetration of 23cm			
			4.0		>100 for a penetration of 12cm			
			5.0		>100 for a penetration of 2cm			
			6.0		>100 for a penetration of 2cm			
			7.0		Termination			

SPT-Standard Penetration Test

WS-Water Sample

WR-weathered Rock

DCPT-Dynamic Cone Penetration Test

UDS-Undisturbed Sample

WE-WATER TABLE

Page no. 25 of 37

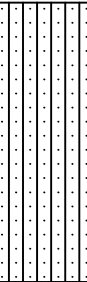

Sig. of Field In-Charge

Tuesday, December 27, 2011

BORE-LOG SHEET	Sun-Tech SOIL & MATERIAL TESTING LAB NABL ACCREDITED (T-1523)				BORE HOLE NO.S4
Project: CHP AREA					Date: 8-12-2011
Type of boring: MANUAL/ MECH. AUGER	Unit meter				starting time:09.0AM
Depth of boring: 6.00m	TEST	No.	Samples	No.	completion time: 6.00 PM
Type of drilling : -	SPT	3	DS	2	Water struck at: not found
Structu: G/L Bunker(2X2500T)	DCPT	0	UDS	1	WT : -
Location: MINE SITE CHP UREJ	VST	0			Done by: S.B.PRASAD
GROUND RL : 389.75	CBR	0			PROJECT CODE: S181211

TEST METHOD: IS 2131:1981

DOC NO. F01(5.4)SF-1

DESCRIPTION	SYMBOL	GRAPHIC LOG	DEPTH	Standard Penetration Test				SAMPLE TYPE % recovery
				15 cm	15 cm	15 cm	N	
Very dense brownish SANDY gravelly , non-plastic , inorganic soil. (0.00-1.50m)	SM		0.0 1.0	7	11	18	29	
Very dense weathered rock. (1.50- 6.00m onwards)	WR		2.0 3.0 4.0 5.0 6.0		>100 for a penetration of 27cm			
					>100 for a penetration of 22cm			
					>100 for a penetration of 6cm			
					>100 for a penetration of 5cm			
								Termination
			7.0					

SPT-Standard Penetration Test

WS-Water Sample

WR-weathered Rock

Sdr, Odr, Qdr, Rmr, Rpr, Rqr

UDS-Undisturbed Sample

Page no. 26 of 37

WS-WATER TABLE

Sig. of Field In-Charge

Tuesday, December 27, 2011

1	Project				CHP/ RAILWAY SIDING AT TOKISUD PATRATU				NOTE: ASSUMING GENERAL SHEAR FAILURE CONDITIONS AS THE SOIL CONDITION IS DENSE.					
2	Location				S3									
3	Structure				OPEN									
Depth (m)	Width (m)	Shape	Cohesion c kg/cm2	Angle of Repose (Degree)	Shape factor			Bulk Density g/cc	Bearing Capacity Factors			Water Table correction	Ultimate Bearing Capacity	Net safe Bearing Capacity
					Sc	Sq	Sy		Nc	Nq	Ny			
1.50	3.00	Square	0.00	25.00	1.30	1.20	0.80	2.00	20.72	10.66	10.88	0.50	47.84	15.95
1.50	4.00	Square	0.00	25.00	1.30	1.20	0.80	2.00	20.72	10.66	10.88	0.50	52.19	17.40
1.50	5.00	Square	0.00	25.00	1.30	1.20	0.80	2.00	20.72	10.66	10.88	0.50	56.54	18.85
1.50	6.00	Square	0.00	25.00	1.30	1.20	0.80	2.00	20.72	10.66	10.88	0.50	60.89	20.30
2.00	3.00	Square	0.00	25.00	1.30	1.20	0.80	2.00	20.72	10.66	10.88	0.50	59.43	19.81
2.00	4.00	Square	0.00	25.00	1.30	1.20	0.80	2.00	20.72	10.66	10.88	0.50	63.78	21.26
2.00	5.00	Square	0.00	25.00	1.30	1.20	0.80	2.00	20.72	10.66	10.88	0.50	68.13	22.71
2.00	6.00	Square	0.00	25.00	1.30	1.20	0.80	2.00	20.72	10.66	10.88	0.50	72.48	24.16
3.00	3.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	381.25	127.08
3.00	4.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	407.73	135.91
3.00	5.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	434.21	144.74
3.00	6.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	460.68	153.56
4.00	3.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	481.86	160.62
4.00	4.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	508.34	169.45
4.00	5.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	534.82	178.27
4.00	6.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	561.29	187.10
5.00	3.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	582.47	194.16
5.00	4.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	608.95	202.98
5.00	5.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	635.42	211.81
5.00	6.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	661.90	220.63
6.00	3.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	683.08	227.69
6.00	4.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	709.55	236.52
6.00	5.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	736.03	245.34
6.00	6.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	762.51	254.17

1	Project				CHP/ RAILWAY SIDING AT TOKISUD PATRATU				NOTE: ASSUMING GENERAL SHEAR FAILURE CONDITIONS AS THE SOIL CONDITION IS DENSE.					
2	Location				S4									
3	Structure				OPEN									
Depth (m)	Width (m)	Shape	Cohesion c kg/cm2	Angle of Repose (Degree)	Shape factor			Bulk Density g/cc	Bearing Capacity Factors			Water Table correction	Ultimate Bearing Capacity	Net safe Bearing Capacity
					Sc	Sq	Sγ		Nc	Nq	Nγ			
1.50	3.00	Square	0.00	29.00	1.30	1.20	0.80	2.05	27.86	16.44	19.34	0.50	80.77	26.92
1.50	4.00	Square	0.00	29.00	1.30	1.20	0.80	2.05	27.86	16.44	19.34	0.50	88.70	29.57
1.50	5.00	Square	0.00	29.00	1.30	1.20	0.80	2.05	27.86	16.44	19.34	0.50	96.63	32.21
1.50	6.00	Square	0.00	29.00	1.30	1.20	0.80	2.05	27.86	16.44	19.34	0.50	104.56	34.85
2.00	3.00	Square	0.00	29.00	1.30	1.20	0.80	2.05	27.86	16.44	19.34	0.50	99.77	33.26
2.00	4.00	Square	0.00	29.00	1.30	1.20	0.80	2.05	27.86	16.44	19.34	0.50	107.70	35.90
2.00	5.00	Square	0.00	29.00	1.30	1.20	0.80	2.05	27.86	16.44	19.34	0.50	115.62	38.54
2.00	6.00	Square	0.00	29.00	1.30	1.20	0.80	2.05	27.86	16.44	19.34	0.50	123.55	41.18
3.00	3.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	381.25	127.08
3.00	4.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	407.73	135.91
3.00	5.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	434.21	144.74
3.00	6.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	460.68	153.56
4.00	3.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	481.86	160.62
4.00	4.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	508.34	169.45
4.00	5.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	534.82	178.27
4.00	6.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	561.29	187.10
5.00	3.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	582.47	194.16
5.00	4.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	608.95	202.98
5.00	5.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	635.42	211.81
5.00	6.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	661.90	220.63
6.00	3.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	683.08	227.69
6.00	4.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	709.55	236.52
6.00	5.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	736.03	245.34
6.00	6.00	Square	0.00	37.00	1.30	1.20	0.80	2.00	55.63	42.92	66.19	0.50	762.51	254.17

Project: **RAILWAY SIDING AND CHP**
Location: **TOKISUD, PATRATU**
Customer: **M/S. GVK (TOKISUD) COAL CO. LTD.**

BORE HOLE: **S3**

Type of Foundation: **ISOLATED**

Max. Allowable Settlement: **40mm**

Position of Water Table: **AT FOOTING LEVEL**

SPT "N" VALUE TAKEN FOR DESIGN **IS:2131-1981**

DEPTH (m)	"N" obser.	Overburden correction	Dilatancy correction	N' design
1.50	21	-	18	18
2.00	100	-	57	57

$$q_{ap} = 3.5 (N - 3) [(B + 0.3) / 2B]^2 R_{w2} R_d (1/m^2)$$

Where,

q_{ap} : Allowable safe bearing pressure based on SPT penetration
"N" in T/m² for 25mm settlement.

N : Average Standard Penetration Resistance

B : Width of Footing (or least lateral dimension) in (m)

D : Depth of foundation below ground level in (m)

R_{w2} : Correction for Water table = $0.5 [1 + (Z_{w2} / B)]$

Z_{w2} : Depth of water table below foundation in (m)

R_d : Correction for depth = $1 + 0.2 (D/B)$ (maximum limited to 1.20)

Depth of Foundation (m)	Width of Foundation (m)	SPT Design Value	water table	depth factor	NET ALLOWABLE BEARING PRESSURE
			correction		for a settlement of 40mm in ton/m ²
1.50	3.00	37.00	0.50	1.10	32
1.50	4.00	37.00	0.50	1.08	30
1.50	5.00	37.00	0.50	1.06	28
1.50	6.00	37.00	0.50	1.05	28
2.00	3.00	57.00	0.50	1.13	52
2.00	4.00	57.00	0.50	1.10	48
2.00	5.00	57.00	0.50	1.08	46
2.00	6.00	57.00	0.50	1.07	44
3.00	3.00	57.00	0.50	1.20	55
3.00	4.00	57.00	0.50	1.15	50
3.00	5.00	57.00	0.50	1.12	48
3.00	6.00	57.00	0.50	1.10	46
4.00	3.00	57.00	0.50	1.20	55
4.00	4.00	57.00	0.50	1.20	52
4.00	5.00	57.00	0.50	1.16	49
4.00	6.00	57.00	0.50	1.13	47
5.00	3.00	57.00	0.50	1.20	55
5.00	4.00	57.00	0.50	1.20	52
5.00	5.00	57.00	0.50	1.20	51
5.00	6.00	57.00	0.50	1.17	49
6.00	3.00	57.00	0.50	1.20	55
6.00	4.00	57.00	0.50	1.20	52
6.00	5.00	57.00	0.50	1.20	51
6.00	6.00	57.00	0.50	1.20	50

Checked/ Approved

Project: RAILWAY SIDING AND CHP
Location: TOKISUD, PATRATU
Customer: M/S. GVK (TOKISUD) COAL CO. LTD.

BORE HOLE: S4

Type of Foundation: ISOLATED

Max. Allowable Settlement: 40mm

Position of Water Table: AT FOOTING LEVEL

SPT "N" VALUE TAKEN FOR DESIGN IS:2131-1981

DEPTH (m)	"N" obser.	Overburden correction	Dilatancy correction	N' design
1.50	29	-	22	22
2.00	100	-	57	57

$$q_{ap} = 3.5 (N - 3) [(B + 0.3) / 2B]^{1/2} R_{w2} R_d \text{ (T/m}^2\text{)}$$

Where,

q_{ap} : Allowable safe bearing pressure based on SPT penetration
"N" in T/m² for 25mm settlement.

N : Average Standard Penetration Resistance

B : Width of Footing (or least lateral dimension) in (m)

D : Depth of Footing below ground level in (m)

R_{w2} : Correction for Water table = $0.5 [1 + (Z_{w2} / B)]$


Z_{w2} : Depth of water table below foundation in (m)

R_d : Correction for depth = $1 + 0.2 (D/B)$ (maximum limited to 1.20)

Depth of Foundation (m)	Width of Foundation (m)	SPT Design Value	water table	depth factor	NET ALLOWABLE BEARING PRESSURE
			correction		for a settlement of 40mm in ton/m ²
1.50	3.00	39.00	0.50	1.10	34
1.50	4.00	39.00	0.50	1.08	31
1.50	5.00	39.00	0.50	1.06	30
1.50	6.00	39.00	0.50	1.05	29
2.00	3.00	57.00	0.50	1.13	52
2.00	4.00	57.00	0.50	1.10	48
2.00	5.00	57.00	0.50	1.08	46
2.00	6.00	57.00	0.50	1.07	44
3.00	3.00	57.00	0.50	1.20	55
3.00	4.00	57.00	0.50	1.15	50
3.00	5.00	57.00	0.50	1.12	48
3.00	6.00	57.00	0.50	1.10	46
4.00	3.00	57.00	0.50	1.20	55
4.00	4.00	57.00	0.50	1.20	52
4.00	5.00	57.00	0.50	1.16	49
4.00	6.00	57.00	0.50	1.13	47
5.00	3.00	57.00	0.50	1.20	55
5.00	4.00	57.00	0.50	1.20	52
5.00	5.00	57.00	0.50	1.20	51
5.00	6.00	57.00	0.50	1.17	49
6.00	3.00	57.00	0.50	1.20	55
6.00	4.00	57.00	0.50	1.20	52
6.00	5.00	57.00	0.50	1.20	51
6.00	6.00	57.00	0.50	1.20	50

Checked/ Approved

LABORATORY TEST RESULTS ON SOIL SAMPLES

M/S. G.V.K COAL (TOKISUD) CO.Pvt Ltd. Secuderabad, AP												Proposed CHP & Railway Siding,Patratu										Proj. Code. :S181211			
BH No.	Sample Type	Sample Number	Depth (m)	Grain Size Distribution				Liquid Limit %	Plastic Limit %	Plasticity Index %	Activity number	Free Swell Index (%)	Classification (IS:1498-1970)	Natural Moisture Content %	Bulk Density (gm/cc)	Specific Gravity	Shear Strength test			Chemical Test			Consolidation Test		
				Gravel %	Sand %	Silt %	Clay %										Type of test	Cohesion (Kg/cm ²)	Angle of internal Friction (Degree)	pH	Chloride (mg/l)	Sulfate (mg/l)	Initial Void ratio (eo)	Co-eff. Of Compression (Cc)	
S1	P	6479	2.00	0.50	37.50	38.00	24.00	50.90	18.70	32.20	-	-	CH	14.95	2.03	2.68	UUT	0.42	11	7.5	112	24	-	-	
	P	6480	4.00	0.96	35.70	42.34	21.00	44.30	18.68	25.62	-	-	CI	15.33	2.1	2.70	UUT	0.31	20	-	-	-	-	-	
	4.0m onwards			WEATHERED ROCK																					
S2	P	6481	1.50	2.46	34.64	32.90	30.00	54.30	18.44	35.86	-	-	CH	-	-	2.73	UUT	0.49	10	7.18	108	14	-	-	
	P	6482	3.50	0.00	9.48	90.52	0.00	58.70	24.67	34.03	-	-	CH	-	-	2.65	UUT	0.16	24	-	-	-	-	-	
	3.50m onwards			WEATHERED ROCK																					
S3	P	6483	1.00	1.66	55.78	42.56	0.00		NP		-	-	SM	14.17	2.02	2.64	UUT	0.00	29.00	7.32	65	-	-	-	
	P	6484	1.50	0.52	68.26	31.22	0.00		NP		-	-	SM	15.03	2.06	2.68	UUT	0.00	28.00	-	-	-	-	-	
	1.50m onwards			WEATHERED ROCK																					
S4	P	6485	1.00	1.10	57.24	41.66	0.00		NP		-	-	SM	14.55	2.00	2.64	UUT	0.00	25.00	7.29	74	-	-	-	
	P	6486	1.50	4.80	51.58	43.62	0.00		NP		-	-	SM	14.92	2.05	2.68	UUT	0.00	29.00	-	-	-	-	-	
	1.50m onwards			WEATHERED ROCK																					
Abbreviation used : UUT : Triaxial Unconsolidated Undrained, TCU : Triaxial Consolidated Undrained, TCD : Triaxial Consolidated Drained, DS : Direct Shear,																									
Consolidation Test not conducted due to sandy nature of soil.																									
Notes: Test Methods Referred to: 1. Grain Size Distribution IS:2720 Part-4-1985 2. Liquid, Plastic & Shrinkage Limit IS:2720 Part-5-1985																									
3. Specific Gravity IS:2720 Part-3-1980 4. Direct Shear Test IS:2720-Part-13 1986 5. Triaxial Test IS:2720 Part-12 1981 6. Consolidation test IS: 2720 Part-15 -1986																									
7. pH of Soil				8. Free Swell Index IS: 2720 part-40 1977																					
Sampling Proc				Bore holes P- SPT SAMPLE U- UN-DISTURBED SAMPLE, D- DISTURBED SAMPLE																					
				Authorized Signatory:																					

Authorized Signatory:

