



अरावली पावर कम्पनी प्राइवेट लिमिटेड
(एनटीपीसी, एचपीजीसीएल एवं आइपीजीसीएल का संयुक्त उद्यम)

Aravali Power Company Private Limited
(A JOINT VENTURE OF NTPC, HPGCL AND IPGCL)

VOLUME - I

CONDITIONS OF CONTRACT

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(This document is meant for the exclusive purpose of bidding against this specifications and shall not be transferred, reproduced or otherwise used for purposes other than that for which it is specifically issued.)

SECTION - INV
INVITATION TO BID

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INSTRUCTIONS TO BIDDERS

SECTION - INB

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INSTRUCTIONS TO BIDDERS

1.0 GENERAL INSTRUCTIONS

- 1.1 The Aravali Power Company Private Limited, New Delhi, hereinafter called 'APCPL'/ 'OWNER' will receive bids in respect of equipment to be furnished and erected as set-forth in the accompanying specifications. All bids shall be prepared and submitted in accordance with these instructions.
- 1.2 Bids submitted after the time and date fixed for receipt of bids as set out in the Invitation to Bid are liable to be rejected and returned to the Bidders.
- 1.3 The 'Works' referred herein shall cover the entire scope of the proposal which includes furnishing and erection of equipment including the successful completion of Performance and Guarantee Tests which the Owner desires to get executed.

2.0 PROJECT INFORMATION

Information regarding the project size, plant capacities, location, approach to Site and meteorological condition as prevailing at the Site are given in the 'Project Synopsis' enclosed with this Volume-1.

3.0 QUALIFYING REQUIREMENTS OF BIDDERS

- 3.1 This bidding is open to any manufacturer who provides satisfactory evidence that he:
 - (a) is a qualified manufacturer who regularly manufactures the equipment of the type specified and has adequate technical knowledge and practical experience;
 - (b) does not anticipate change in the ownership during the proposed period of work. (If such a change is anticipated, the scope and effect thereof shall be defined);
 - (c) has adequate financial stability and status to meet the financial obligations pursuant to the scope of the Works (The Bidders should submit at least 5 copies of their profit and loss account and balance sheet for the last five years);
 - (d) has adequate plant and manufacturing capacity available to perform the Works properly and expeditiously within the time period specified. The evidence shall consist of written details of the installed manufacturing capacities and present commitments (excluding the work under this specification) of the bidder or his principal. If the present commitments are such that the installed capacity results in inadequacy of the manufacturing capacities to meet the requirement of equipment corresponding to this bid, then the details of alternative arrangements to be organised by the Bidder for this purpose and which shall meet the Owner's approval, shall also be furnished;

- (e) has adequate field service organisation to provide the necessary field erection and management services required to successfully erect, test and commission the equipment as required by the specifications and documents; and
- (f) has established quality assurance systems and organisation designed to achieve high levels of equipment reliability, both during his manufacturing and field installation activities.

3.2 In addition, the qualifying requirements stated in the accompanying Technical Specifications for the Works shall also apply.

3.3 The above stated requirements are a minimum and the Owner reserves the right to request for any additional information and also reserves the right to reject the proposal of any Bidder, if in the opinion of the Owner, the qualification data is incomplete or the Bidder is found not qualified to satisfactorily perform the Works.

4.0 SCOPE OF THE PROPOSAL

4.1 The scope of the proposal shall be on the basis of a single Bidder's responsibility, completely covering all the equipment specified under the accompanying Technical Specifications. It will include the following:

- (a) detailed design of the equipment,
- (b) complete manufacture including shop testing,
- (c) providing engineering drawings, data, operation manual, etc. for the Owner's approval,
- (d) packing and transportation from the manufacturer's works to the Site,
- (e) receipt, storage, preservation and conservation of equipment at the site,
- (f) pre-assembly, if any, erection, testing and commissioning of all the equipment,
- (g) reliability tests and performance and guarantee tests on completion of commissioning; and
- (h) furnishing of spares.

Bids not covering the above entire scope of Works may be treated as incomplete and hence rejected.

5.0 TIME SCHEDULE

5.1 The basic consideration and the essence of the Contract shall be in strict adherence to the time schedule for performing the specified Works.

5.2 The Owner's requirements of completion schedule for the Works are mentioned in the accompanying Technical Specifications.

5.3 The completion schedule as stated in the Technical Specifications shall be one of the major factors in consideration of the bids. The Owner reserves the right to request for a change in the work schedule during pre-award discussions with successful Bidder.

6.0 BRAND NAMES

The specific reference in these specifications and documents to any material by trade name, make or catalogue number shall be construed as establishing standard of quality and performance and not as limiting competition. However Bidders may offer other similar equipment provided it meets the specified standard, design and performance requirements. The Bidder shall furnish technical information about the alternative equipment to enable the Owner to determine the acceptability of equipment. The Owner shall be the sole judge of the acceptability of the alternative equipment.

7.0 BID GUARANTEE

7.1 Bid Guarantee of Rs. (Rupees. only)

(in words)

shall accompany each bid in original and four (4) copies of the original in separate sealed envelope, super scribed on the top as under:-

"Original Bid Guarantee for
(Name of Package)

APCPL Specification No. due on
(Date of Bid Opening)

from
(Name of the Bidder)

The Bid Guarantee offered shall be in one of the following alternative forms (all subject to approval of the Owner):

- (a) A crossed bank draft in favour of APCPL payable at Jhajjar from any nationalised or scheduled bank;
- (b) A cheque certified by the Banker as "good for payment" drawn in favour of Aravali Power Company Private Limited, Jhajjar on any nationalised or scheduled bank;
- (c) In lieu of cash desposit to facilitate bidders, an irrevocable Bank Guarantee of any Nationalised or Scheduled Bank in favour of Aravali Power Company Private Limited, Jhajjar. Proforma of the Bank Guarantee is enclosed at Annexure-A (INB) to this Instructions to Bidders:-

- 7.1.1 The Bid Guarantee shall be accompanied with Letter of undertaking on non-judicial paper of appropriate value on APCPL's prescribed format.
- 7.2 The Bid Guarantee shall be made payable without any condition to the Owner 'On demand'. The Bid Guarantee shall be valid for a period of seven (7) calendar months from the date set for opening of the bids i.e. if the bid is due for opening on 1st January, the Bid Guarantee shall be valid upto and inclusive of the following 31st July.
- 7.3 In consideration of the Owner opening and considering the Bid for purposes of award, the Bidder shall keep his Bid valid for a period of six (6) months from the date of opening of the Bid, during which period the Bidder agrees not to vary, alter or revoke his Bid as a whole or in part. If the Bidder, however, fails to keep his Bid valid for 6 (six) months or varies it during the period then the Owner shall be entitled to forfeit the Bid Guarantee amount without any notice or proof of damages etc.
- The Bidder shall submit his Bid as required in the Contract documents along with Letter of Undertaking in the proforma enclosed in the Bid Documents as Annexure-A1 (INB).
- 7.4 The Bid Guarantee of the successful Bidder to whom a contract is awarded will be returned after the said Bidder provides the Contract Performance Guarantee and signs the Contract Agreement as per stipulations elsewhere in the Bid Documents.
- 7.5 If the successful Bidder fails to submit a Contract Performance Guarantee as specified in the Contract Documents within 30 calendar days after the date of Notice of Award of the Contract, or fails to sign the contract agreement in accordance with Clause 5.0 Section-GCC Volume-I, then the Bid Guarantee amount will be forfeited by the Owner, without any notice of proof of damages etc.
- 7.6 The Bid Guarantee of all unsuccessful Bidders except that of the successful Bidder will be returned within thirty (30) days after the Award of the Contract.
- 7.7 Any Bid not accompanied by a Bid Guarantee along with Letter of Undertaking in accordance with above said provisions shall be rejected by the Owner as non-responsive.
- 7.8 No interest will be payable by the Owner on the above Bid Guarantee.

8.0 SUBMISSION OF BIDS

- 8.1 All the bids shall be prepared by typing or printing with indelible black ink in the proposal sheets enclosed as Volume-IA "Bid Proposal Sheets" and Volume-II 'A' "Data Requirements". Two copies of such blank proposal sheets are enclosed herewith for this purpose. Each bidder shall submit his proposal one in original together with five copies thereof, for this purpose, bidder shall use one of the two copies of proposal sheets as original and five copies thereof shall be prepared at Bidders end. Second copy of the proposal sheets may be retained with bidder for their reference and record. The Bidder's bid and the documents attached there to shall be considered for forming part of the contract documents.

- 8.2 The Bidder must submit the qualifying data, in five copies, as required in this Instructions to Bidders in a separate envelope superscribed as under:

QUALIFYING DATA FOR THE WORKS OF

sealed and enclosed in the envelope submitting the proposals. All the proposals must be submitted in a sealed envelope superscribed as under:

PROPOSAL FOR THE WORKS OF

and shall be addressed to:

Contract Services,
Aravali Power Company Private Limited
ASTPP, Jhajjar

- 8.3 The outside of the envelope should also indicate clearly the name of the Bidder and his address. In addition the left hand corner of the envelope or container should indicate the Specification Number and the bid opening date and time.
- 8.4 The bids will be opened at the time and date set for opening of bids, in the presence of those bidders present. Bidder's authorised representatives (upto two persons) may attend the bid opening.
- 8.5 The Bidder has the option of sending the bid by registered post or by submitting the bid in person, so as to reach by the date and time indicated in the Invitation to Bid. Bids submitted by telex/telegram will not normally be accepted.
- 8.6 Bids submitted after the time and date fixed for the receipt of bids as set out in the Invitation to Bid, are liable to be rejected and returned to the bidders.
- 8.7 The Owner reserves the right to reject any bid which is not deposited according to the instructions stipulated above.

9.0 LANGUAGE OF THE BID

All information in the bid shall be in English. Information in any other language shall be accompanied by its translation in English. Failure to comply with this may disqualify a bid. In the event of any discrepancy in meaning, the English language copy of all documents shall govern.

10.0 SIGNATURE OF BIDS

- 10.1 The bid must contain the name, residence and place of business of the person or persons making the bid and must be signed and sealed by the Bidder with his usual signature. The names of all persons signing should also be typed or printed below the signature.
- 10.2 Bid by a partnership must be furnished with full names of all partners and be signed with the partnership name, followed by the signature(s) and designation(s) of the authorised partner(s) or other authorised representative(s).
- 10.3 Bids by Company/Company must be signed with the legal name of the Company. Company by the President, Managing Director or by the Secretary or other person or persons authorised to bid on behalf of such Company/ Company in the matter.
- 10.4 A bid by a person who affixes to his signature the word 'President', 'Managing Director', 'Secretary', 'Agent' or other designation without disclosing his principal will be rejected.
- 10.5 Satisfactory evidence of authority of the person signing on behalf of the Bidder shall be furnished with the bid.
- 10.6 The Bidder's name stated on the proposal shall be the exact legal name of the firm.
- 10.7 Erasures or other changes in the bid documents shall be over the initials of the person signing the bid.
- 10.8 Bids not conforming to the above requirements of signing may be disqualified.

11.0 INFORMATION REQUIRED WITH THE PROPOSAL

- 11.1 The bids must clearly indicate the name of the manufacturer, the type of model of each principal item of equipment proposed to be furnished and erected. The bid should also contain drawings and descriptive materials indicating general dimensions, material from which the parts are manufactured, principles of operation, the extent of pre-assembly involved, major construction equipment proposed to be deployed, method of erection and the proposed erection organisational structure.
- 11.2 The above information shall be provided by the Bidder in the form of separate sheets, drawings, catalogues, etc. in five copies.
- 11.3 Any bid not containing sufficient descriptive material to describe accurately the equipment proposed may be treated as incomplete and hence rejected. Such descriptive materials and drawings submitted by the Bidder will be retained by the Owner. Any major departure from these drawings and descriptive material submitted will not be permitted during the execution of the Contract without specific written permission of the Owner.

- 11.4 Oral statements made by the Bidder at any time regarding quality, quantity or arrangement of the equipment or any other matter will not be considered.
- 11.5 Standard catalogue pages and other documents of the Bidder may be used in the bid to provide additional information and data as deemed necessary by the Bidder.
- 11.6 The Bidder, along with his proposal, shall submit a list of recommended erection equipment and materials which will be required for the purpose of erection of equipment and materials supplied under the contract.
- 11.7 In case the 'Proposal' information contradicts specification requirements, the specification requirements will govern, unless otherwise brought out clearly in the technical commercial deviation schedule.

12.0 UNDERSTANDING AND CLARIFICATIONS ON DOCUMENTS AND SPECIFICATIONS

- 12.1 The Bidder is required to carefully examine the specifications and documents and fully inform himself as to all the conditions and matters which may in any way affect the Works or the cost thereof. If any Bidder finds discrepancies or omissions in the specifications and documents or is in doubt as to the true meaning of any part, he shall at once request in writing for an interpretation/ clarification the Owner in triplicate. The Owner, then, will issue interpretation and clarifications as he may think fit in writing. After receipt of such interpretations and clarifications, the Bidder may submit his bid but within the time and date as specified in the Invitation to Bid. All such interpretations and clarifications shall form a part of the specifications and documents, and accompany the Bidder's proposal
- 12.2 Verbal clarifications and information given by the Owner or his employee(s) or his representative shall not in any way be binding on the Owner.

13.0 LOCAL CONDITIONS

- 13.1 It will be imperative on each Bidder to fully inform himself of all local conditions and factors which may have any effect on the execution of the Works covered under these documents and specifications. The Owner shall not entertain any request for clarifications from the bidders, regarding such local conditions.
- 13.2 It must be understood and agreed that such factors have properly been investigated and considered while submitting the proposals. No claim for financial adjustment to the Contract awarded under these specifications and documents will be entertained by the Owner. Neither any change in the time schedule of the Contract nor any financial adjustments arising thereof shall be permitted by the Owner, which are based on the lack of such clear information or its effect on the cost of the Works to the Bidder.

14.0 PRICE BASIS AND PAYMENTS

- 14.1 The bidders shall quote in their proposals lumpsum price for the entire scope of furnishing and erecting the equipment (covered under the Technical Specifications) as required in the Bid Proposal Sheets on a base price plus escalation basis unless otherwise specified in the Technical Specifications. Bidders quoting a system of pricing other than that specified run the risk of rejection.
- 14.2 Bidder shall indicate bid prices in Indian Rupees only.

15.0 CUSTOMS DUTIES AND TAXES

- 15.1 All custom duties, excise duties, sales taxes and other levies payable by the bidders in respect of the transaction between the bidders and their vendors/sub-suppliers while procuring any sub assemblies, raw-materials and equipment shall be included in the bid price and no claim on this behalf will be entertained by the Owner.
- 15.2 Sales tax, excise duty, local taxes and other levies in respect of the transaction between the Owner and the Contractor under the Contract, if any, shall not be included in the bid price but they should be indicated separately wherever applicable in the Bid proposal sheets.

Whenever ex-works price is quoted exclusive of Excise duty applicable on the transaction between the Owner and the contractor, then the due credit under the

MODVAT (Modified value Added Tax) scheme as per the relevant Government policies wherever applicable, shall be taken into account by the Bidder while quoting bid price.

- 15.3 As regards the Income Tax, surcharge on Income Tax and other corporate taxes the Bidder shall be responsible for such payment to the concerned authorities.

16.0 POLICY FOR BIDS UNDER CONSIDERATION

Bids shall be deemed to be under consideration immediately after they are opened and until such time official intimation of award/rejection is made by the Owner to the bidders. While the bids are under consideration, bidders and/or their representatives or other interested parties are advised to refrain from contacting by any means, the Owner and/or his employees/representatives on matters related to the bids under consideration. The Owner, if necessary, will obtain clarifications on the bids by requesting for such information from any or all the bidders, either in writing or through personal contact as may be necessary. Bidder will not be permitted to change the substance of the bid after the bid has been opened.

17.0 EFFECT AND VALIDITY OF BID

- 17.1 The submission of any bid connected with these documents and specifications shall constitute an agreement that the Bidder shall have no cause of action or claim,

against the Owner for rejection of his bid. The Owner shall always be at liberty to reject or accept any bid or bids at his sole discretion and any such action will not be called into question and the Bidder shall have no claim in that regard against the Owner.

- 17.2 The bid should be kept valid for a period of six (6) calendar months from the date set for opening of bids.

18.0 AWARD OF CONTRACT

- 18.1 Notification of Award of Contract will be made in writing to the successful Bidder by the Owner.

- 18.2 The Contract will be awarded to the best qualified and responsive Bidder offering the lowest evaluated bid in conformity with the requirements of these specifications and documents and the Owner shall be the sole judge in this regard and subject to the provisions of this Instructions to Bidders and other terms and conditions detailed out in these documents and specifications. A responsive bid is one which accepts all terms and conditions of these specifications and documents without any major modifications. A major modification is one which affects in any way the prices, quality, quantity or delivery period of the equipment or which limits in any way the responsibilities or liabilities of the Bidder or any rights of the Owner as required in these specifications and documents. However, the Owner may waive any minor informalities or irregularities in the bid.

- 18.3 The Owner reserves the right to award separate contracts in line with the terms and conditions specified in the accompanying Technical Specifications.

19.0 RAILWAY SIDING

The details of railway siding are given in the Project Synopsis enclosed with this Volume 1.

20.0 SPARE PARTS

- 20.1 In cases where it is mandatory for the bidders to quote certain identified spare parts, the same are included in the accompanying Technical Specifications. In such cases, the itemised price break-up of such spares on FOR Bidder's works basis (for the purposes of payment only) shall be indicated in the bid. The Bidder shall further indicate itemwise price break-up on FOR Site basis. The prices shall be exclusive of sales tax, excise duty and other levies but inclusive of Customs duty, stamp duty and import license fee etc., if any. The prices of such spares shall not be subject to price adjustment on any account whatsoever, and the same shall be suitably taken into consideration for the purposes of bid evaluation. The above prices shall not be included in the lumpsum price but indicated separately in the schedules.

- 20.2 In addition the Bidder shall provide in the form of a schedule given in Volume IA, a complete list of recommended spare parts for three years operation of the equipment covered under his proposal. Such list will also indicate the itemised prices on FOR Bidder's works for each item. No other basis of prices shall be quoted. The prices of these spare parts shall be on firm price basis and will not be taken into consideration for the purposes of bid evaluation. Other relevant terms and conditions of these documents shall also be applicable to such spares.
- 20.3 The Bidder shall also quote his delivery periods for the above spares.
- 20.4 Such spare parts list will be used by the Owner to decide about the additional spares to be procured against his spares requirements for equipment quoted. The quantities of the spares to be procured shall be decided by the Owner and the Bidder shall furnish all spares ordered.
- 20.5 All spares shall be warranted to be new and in accordance with the Contract documents and be free from defects in design, materials and workmanship for **6000 hours** of operation, normal wear excepted, or for a period of **18 months** from the date of their receipt at Site, whichever is later. In case of failure or non-conformance to specifications, the Contractor shall replace them free of cost to the Owner.
- 20.6 In cases where no mandatory spares are indicated, the Bidder shall comply with the requirements indicated in clause 20.2 through 20.4 above.
- 20.7 All the spares (except commissioning spares which will be consigned by the contractor to his own site representative) shall be consigned to the Dy. General Manager (C&M) of the Project.

21.0 **EVALUATION AND COMPARISON OF BIDS**

21.1 **General**

The bids received and accepted will be evaluated by the Owner to ascertain the best and lowest evaluated bid in the interest of the Owner, for the complete Works covered under these specifications and documents.

21.2 **Definitions and Meanings**

For the purposes of the evaluation and comparison of Bids, the following meanings and definitions will apply :

- (a) 'Bid Price' shall mean the base price quoted by each Bidder in his proposal for the complete scope of Works.
- (b) "Differential Price" shall mean the summation of the equalising elements of price while evaluating the bids, for deviations and deficiencies in the Bidder's proposal in reference to the bid document as per the guidelines mentioned in bid document.

- (c) 'Evaluated Bid Price' shall be the summation of Bid Price and Differential Price.

21.3.1 Calculation of Differential Price for Bids

The Differential Price to be added to the Bid Price of each bid during evaluation and comparison shall be derived as under:

Differential Price (DP) = $n_1 F_1 + n_2 F_2 \dots \dots \dots n_n F_n$ where $F_1, F_2 \dots \dots \dots F_n$ are the various factors in Indian Rupees per unit of parameter differential or deficiency in the equipment and services offered as stipulated in these specifications, $n_1, n_2 \dots \dots n_n$ are the respective parameter differential or deficiency in the corresponding units, to be determined from the bidder's proposals. The above factors and corresponding unit of parameter differential are brought out in the Technical Specifications.

- 21.3.2 Deviations from the bid document in so far as practicable, will be converted to a Rupee value and added to the bid price to compensate for the deviation from bid document while evaluating the bids. In determining the Rupee value of the deviations the Owner will use parameters consistent with those specified in the documents and specifications and/or other information as necessary available to the Owner.

22.0 PRICE ADJUSTMENT

- 22.1 Unless otherwise specified in the Technical Specifications the Bidder shall in his proposal quote a base price, which will be subject to price adjustment. The price adjustment provisions herein detailed shall not be taken into consideration for the purposes of bid evaluation.

- 22.2 Only the following components of the bid price will be subjected to price adjustment provisions :

- (a) The ex-factory price component of the equipment (excluding equipment and consumable materials required for erection) subject to a ceiling of twenty (20) percent of ex-works price of equipment and materials (spares excluded) unless otherwise specified in the accompanying Technical Specifications.
- (b) The erection component, subject to a ceiling of **twenty percent (20%) of the erection price** component, unless otherwise specified in the Technical Specifications.

- 22.3 The actual amount of price adjustment shall be determined satisfying the conditions specified in clause 'Price Adjustment' in General Terms and Conditions of Contract of this Volume 1.

- 22.4 The price adjustment formulae for the various components of the bid price, as broken down in clause 22.2 above shall be construed as stipulated hereinafter.

22.4.1 Ex-factory Price Component of the equipment

The formula designed for calculating the price adjustment to be applied to the ex-factory price-component of the equipment shall be as follows :-

$$EC_1 = EC \left(F + \frac{a.A_1}{A_o} + \frac{b.B_1}{B_o} + \frac{c.C_1}{C_o} + \frac{d.D_1}{D_o} + \frac{e.E_1}{E_o} + \frac{I.L_1}{L_o} \right)$$

Where

EC_1 = Adjusted ex-factory price-component of equipment, shipmentwise.

EC = Ex-factory price-component of the bid for equipment shipmentwise.

F = Fixed portion of the ex-factory price-component of equipment, which will not be subjected to any adjustments.

$a, b, c, d,$ and e = Co-efficients for major materials involved in the ex-factory cost of equipment.

A, B, C, D and E = Corresponding published price indices of various materials.

I = Co-efficient of Labour content in the ex-factory cost of equipment.

L = Labour Index.

Subscript 'o' refers to indices as on 30 days prior to date set for opening of bids.

Subscript '1' refers to indices as of :

- (i) One month prior to the date of shipment, for labour; and
- (ii) at the expiry of two-thirds (2/3) period from the date of base index to the date of shipment, for materials.

For the purposes of this clause the date of shipment shall mean Contract date of shipment or actual date of shipment whichever is earlier.

The stipulations regarding the various co-efficients, their values, the name of the materials etc. are brought out in the Technical Specifications.

22.4.2 Erection Component

The formula for calculation of the monthly price variation of the cost for erection portion of the Works is indicated and explained below :

$$E1 = Eo \left(0.25 + \frac{0.75 F_1}{F_o} \right)$$

Where

E1 = Adjusted erection price of each erection billing.

Eo = Value of erection work done in the billing period as established in the Contract.

F = Indian Field Labour Index - namely All India Consumer Price Index for Industrial Workers as Published by Labour Bureau Simla, of the Government of India.

For the purposes of this clause the billing period shall mean the billing period as per Contract time schedule or actual period whichever is earlier.

Note : Subscript 'o' will correspond to 30 days prior to date set for opening of bids and Subscript 'l' will correspond to the month of billing.

22.4.3 In case of shipments which are delayed beyond the schedule date of shipment for reasons attributable to the Contractor, the price adjustment provisions shall not be applicable for the period of time between the schedule date of shipment and the actual date of shipment. For this purpose, the schedule date of shipment shall be as identified in line with provisions of Clauses entitled 'Time - the Essence of Contract' in Section GCC of Volume-1.

22.5 Adjusted Contract Price :

The adjusted Contract Price shall be

$$\Sigma EC1 + \Sigma E1 + \text{other elements of Contract Price, if any.}$$

22.6 Indices of Price Adjustment

The indices shall be clearly named in the Bidder's proposal for each item of escalable material and labour. The indices shall be well established and nationally recognised. If any other index is proposed full justification for its use shall be provided. Preferably only Government indices shall be used. For field labour, the index applicable shall be the All India Consumer Price Index for Industrial Workers as published by the Labour Bureau of the Government of India. The Bidder shall enclose with this proposal authenticated copies of the relevant published indices which reflect the prices as of thirty (30) days prior to the date set for opening of bids.

22.7 However, the successful Bidder may be permitted to suggest modifications in the values of co-efficients or group of co-efficients indicated in the bid in line with the requirements indicated in the above formulae, provided such successful Bidder is able to satisfy the Owner with proper justification for such modifications.

22.8 Bids specifying price adjustment provisions other than those specified in these specifications and documents run the risk of rejection.

23.0 CONTRACT PERFORMANCE GUARANTEE

23.1 As a Contract security, the successful Bidder, to whom the work is awarded, shall be required to furnish a Performance Guarantee from a nationalised bank, in the form attached as Annexure-B (INB) to the Instructions to Bidders, in favour of the Owner. The guarantee amount shall be equal to ten per cent (10%) of the Contract price and it shall guarantee the faithful performance of the Contract in accordance with the terms and conditions specified in these documents and specifications.

The guarantee shall be valid upto (90) days after the end of Guarantee Period. The guarantee amount shall be payable to the Owner without any condition whatsoever.

23.2 The Performance Guarantee shall cover additionally the following guarantees to the Owner:

- (a) the successful Bidder guarantees the successful and satisfactory operation of the equipment furnished and erected under the Contract, as per the specifications and documents;
- (b) 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 Owner fully remedy free of expenses to the Owner such defects as developed under the normal use of the said equipment within the period of guarantee specified in the relevant clause of the General Terms and Conditions in this Volume-I.

23.3 The Contract Performance Guarantee is intended to secure the performance of the entire contract. However, it is not to be construed as limiting the damages under clause entitled "Equipment Performance Guarantee" in section GTC of this Volume-1, and damages stipulated in other clauses in the Bid documents.

23.4 The Performance Guarantee will be returned to the Contractor without any interest at the end of the Guarantee period.

24.0 CONTRACT QUALITY ASSURANCE

24.1 The Bidder shall include in his proposal the Quality Assurance Programme containing the overall quality management and procedures which he proposes to follow in the performance of the Works during various phases as detailed in relevant clause of the General Technical Conditions of this Volume-1.

24.2 At the time of Award of Contract, the detailed Quality Assurance Programme to be followed for the execution of the Contract will be mutually discussed and agreed to and such agreed Programme shall form a part of the Contract.

25.0 INSURANCE

The Bidder's insurance liabilities pertaining to the scope of Works are detailed out in Clauses titled Insurance in General Terms and Conditions of Contract and in Erection Conditions of this Volume-1. Bidder's attention is specifically invited to these clauses. Bid price shall include all the cost in pursuance of fulfilling all the insurance liabilities under the Contract.

26.0 MAINTENANCE TOOLS AND TACKLES

The proposal shall include all special tools and tackles required for the operation and maintenance of the equipment in each equipment package. The Bidder shall indicate all the above items in the proposal sheets in the form of a schedule giving therein the description and the quantity of each item. The lump sum price to be quoted by the Bidder shall include prices of these tools and tackles. These tools and tackles shall be delivered at site along with the last consignment of equipment and in no case earlier than this unless otherwise specified in the Technical Specifications, Volume-II.

27.0 CHECK LIST

The bidders are requested to duly fill in the check list enclosed as a Schedule in Volume-IA. This check list gives only certain important items, to facilitate the Bidder to make sure that the necessary data/information is provided by him in his proposal. This however, does not relieve the Bidder of his responsibility to make sure that his proposal is otherwise complete in all respects.

ANNEXURE - A (INB)

**PROFORMA FOR BANK GUARANTEE IN LIEU OF CASH DEPOSIT
(To be stamped in accordance with Stamp Act)
The non-judicial stamp paper should be in the name of issuing bank**

Ref Bank Guarantee No.
Dated.....

To
Aravali Power Company Private Limited
Indira Gandhi Super Thermal Power Project.
P.O. Jharli, Dist. Jhajjar
Haryana -124125
INDIA

Dear Sirs,

In accordance with your Invitation to Bid under your Specification No. _____
M/s. _____ having its Registered/Head Office at _____
_____ (hereinafter called the "Bidder") wish to participate in the said Bid
for _____ and you, as a special favour, have agreed
to accept an irrevocable and unconditional Bank Bid Guarantee for an amount
of _____ valid upto _____ on behalf of
the Bidder in lieu of Bid deposit required to be made by the Bidder, as a condition precedent for
participation in the said Bid.

We, the _____ Bank at _____ having our Head
Office at _____
(Local Address)

guarantee and undertake to pay immediately on demand by Aravali Power Company Private
Limited the amount of----- without any reservation,
(in figures & words)
protest, demur and recourse. Any such demand made by said 'Owner' shall be conclusive and
binding on us irrespective of any dispute or difference raised by the bidder.

This guarantee shall be irrevocable and shall remain valid upto _____@_____. If any
further extension of this guarantee is required, the same shall be extended to such required
period (not exceeding one year) on receiving instructions from M/s. _____
_____ on whose behalf this guarantee is issued.

@ This date should be 30 days after the date for which bid is valid.

In witness whereof the Bank, through its authorised Officer, has set its hand and stamp on this _____ day of _____ 20__ at _____.

WITNESS :

(Signature)

(Name)

(Official Adress)

Signature -----

(Name)-----

(Designation With Bank Stamp)

Attomey as per

Power of Attomey No-----

Date -----

PROFORMA OF LETTER OF UNDERTAKINGS (To be submitted by the Bidder alongwith his Bid)

(To be executed on non-judicial paper of requisite value)

Ref

Dated

To

Aravali Power Company Private Limited
Indira Gandhi Super Thermal Power Project.
P.O. Jharli, Dist. Jhajjar
Haryana -124125
INDIA

Dear Sirs,

1. I*/We* have read and examined the following bid documents relating to the
(full scope of work).
 - (A) Notice Inviting Tender
 - (B) Conditions of Contract Non-IDA Supply cum Erection* containing section "Invitation to Bid (INV)", Instructions to Bidders (INB), General Terms & Conditions of Contract (GCC), General Technical Conditions (GTC) and Erection Conditions of Contract (ECC).
 - (C) Special Conditions of Contract along with Annexures
to
 - (D) Drawing No.
 - (E) Technical Specifications.

2. I*/We* hereby submit our Bid and undertake to keep our Bid valid for a period of six (6) months from the date of opening of bid i.e. upto I* / We* hereby further undertake that during the said period I*/We* shall not vary/alter or revoke my*/our* Bid.

This undertaking is in consideration of APCPL agreeing to open my Bid and consider and evaluate the same for the purposes of award of Work in terms of provisions of clause entitled "Award of Contract" section INB Conditions of Contract in the Bid Documents.

Should this Bid be accepted, I*/We* also agree to abide by and fulfill all the terms, conditions and provisions of the above mentioned bid documents.

ANNEXURE - A1 (INB)

Signature along with Seal of Company.

(Duly authorised to sign the Tender on behalf of the Contractor).

Witness

Name

Signature

Designaton.....

Date.....

Name of Co

Name & Address

(in block letters)

Date & Postal Address

.....

.....

Telegraphic Address :

.....

Telephone No

Fax No.....

- **Strike out whichever is not applicable.**

ANNEXURE - B (INB)

PROFORMA BANK GUARANTEE FOR CONTRACT PERFORMANCE
(To be stamped in accordance with Stamp Act)
The non-judicial stamp paper should be in the name of issuing bank

Ref.

Bank Guarantee No.
Date.....

To

Aravali Power Company Private Limited
Indira Gandhi Super Thermal Power Project.
P.O. Jharli, Dist. Jhajjar
Haryana -124125
INDIA

Dear Sirs,

In consideration of the Aravali Power Company Private Limited, (hereinafter referred to as the 'Owner', which expression shall unless repugnant to the context or meaning thereof include its successors, administrators and assigns) having awarded to M/s. ----- with its Registered/Head Office at ----- (hereinafter referred to as the Contractor', which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns), a Contract by issue of Owner's Letter of Intent No. ----- dated ----- and the same having been unequivocally accepted by the Contractor resulting in a 'Contract' bearing No. ----- dated ----- valued at ----- for ----- and the Contractor having agreed to provide

(Scope of Contract)

a Contract Performance Guarantee for the faithful performance of the entire Contract equivalent to * ----- % (----- per cent) of the said value of the Contract to the Owner.

We -----, having its Head Office (Name & Address)

at ----- (hereinafter referred to as the 'Bank', which expression shall, unless repugnant to the context or meaning thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the Owner, on demand any and all monies payable by the Contractor to the extent of ----- as aforesaid at any time upto ** ----- (days/month/year) without any demur, reservation, contest, recourse or protest and/or without any reference to the Contractor. Any such demand made by the Owner on the Bank shall be conclusive and binding notwithstanding any difference between the Owner and Contractor or any dispute pending before any court, tribunal or any other authority. The Bank undertakes not to revoke this guarantee during its currency without, previous consent of the Owner and further agrees that the guarantee herein contained shall continue to be enforceable till the Owner discharges this guarantee.

The Owner shall have the fullest liberty without affecting in any way the liability of the Bank under this guarantee from time to time to extend the time for performance of the Contract by the Contractor. The Owner shall have the fullest liberty, without affecting this guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forbear to enforce any covenants, contained or implied, in the Contract between the Owner and the Contractor or any other course of or remedy or security available to the Owner. The Bank shall not be released of its obligations under these presents by any exercise by the Owner of its liberty with reference to the matters aforesaid or any of them or by reason of any other acts of omission or commission on the part of the Owner or any other indulgence shown by the Owner or by any other matters or thing whatsoever which under law, would, but for this provision, have the effect of relieving the Bank.

The Bank also agrees that the Owner at its option shall be entitled to enforce this guarantee against the Bank as a principal debtor, in the first instance without proceeding against the Contractor and notwithstanding any security or other guarantee that the Owner may have in relation to the Contractor's liabilities.

Notwithstanding anything contained herein above our liability under this guarantee is restricted to----- and it shall remain in force up to and including----- and shall be extended from time to time for such period (not exceeding one year), as may desired by M/S----- on whose behalf this guarantee has been given.

WITNESS

Dated this ----- day of -----20---- at-----.

WITNESS : (Signature) -----

----- (Bank's Rubber Stamp)

(Signature) -----(Name)

----- Designation with
(Name) Bank Stamp -----

----- Attorney as per
(Official Address) Power of Attorney No. -----

Dated -----

Note: * This sum shall be ten percent (10%) of the Contract Price.

** The date will be ninety (90) days after the end of the Warranty Period as specified in the Contract.

ANNEXURE - C (INB)

FORM OF EXTENSION OF BANK GUARANTEE (on non-judicial stamp paper of appropriate value)

Ref.No. Date

To
Aravali Power Company Private Limited
Indira Gandhi Super Thermal Power Project.
P.O. Jharli, Dist. Jhajjar
Haryana -124125
INDIA

Dear Sirs,

Sub : Extension of Bank Guarantee No. Dated

for Rs. favoring yourselves, expiring on

on account of M/s in respect of Contract No.

Dt

(hereinafter called original Bank Guarantee)

At the request of M/s , We

..... Bank branch office at and

having its head office at do hereby extend our liability under the above mentioned

Guarantee No. dt.

for a further period of Years/Months from

to expire on

Except as provided above, all other terms and conditions of the original Bank Guarantee

No. Dt. shall remain unaltered and binding.

Please treat this as an integral part of the original guarantee to which it would be attached.

Yours faithfully,

For

Manager/Agent/Accountant

Power of Attorney No.

Dated

SEAL OF BANK

Note : The non-judicial stamp papers of appropriate value be purchased in the name of the bank

who has issued Bank Guarantee :

SECTION - GCC
GENERAL TERMS & CONDITION OF
CONTRACT

SECTION - GCC
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GENERAL TERMS & CONDITIONS OF CONTRACT

1.0 SCOPE OF CONTRACT

- 1.1 The scope of the Contract shall be the design, manufacture, furnishing and erection including testing and commissioning of the equipment in accordance with the specifications and documents, at the site of the proposed Power Station.
- 1.2 The General Terms and Conditions shall form a part of the specifications and documents.

2.0 CONTRACT DOCUMENTS

- 2.1 The term Contract Documents shall mean and include the following which shall be deemed to form an integral part of the Contract:
- (a) Invitation to Bid, Project Synopsis, instructions to Bidders, Contract Agreement, General Terms and Conditions of Contract and all other documents included under Volume-1;
 - (b) Specifications of the equipment to be furnished and erected under the Contract as brought out in the accompanying Technical Specifications;
 - (c) Contractor's bid proposal including the letters of clarifications between the Contractor and the Owner prior to the Award of Contract, to the extent they have been accepted by the Owner;
 - (d) All the materials, literature, data and information of any sort given by the Contractor along with his bid, subject to the approval of the Owner/ Engineer;
 - (e) Any agreed variations to the conditions of the documents and specifications and special terms and conditions of Contract, if any.
- 2.2 In the event of any conflict between the above mentioned documents, the matter shall be referred to the Engineer whose decision shall be final and binding upon the parties.

3.0 DEFINITION OF TERMS

- 3.1 'Owner' shall mean the Aravali Power Company Private Limited (A joint venture company of NTPC Ltd., HPGCL and IPGCL) and shall include their legal representatives, successors and permitted assigns.
- 3.2 'Contractor' or 'Manufacturer' shall mean the Bidder whose bid will be accepted by the Owner for the award of the Works and shall include such successful Bidder's legal representatives, successors and permitted assigns.

- 3.3 Sub-Contractor' shall mean the person named in the Contract for any part of the Works or any person to whom any part of the Contract has been sub-let by the Contractor with the consent in writing of the Engineer and will include the legal representatives, successors and permitted assigns of such person.
- 3.4 'Engineer' shall mean the officer appointed in writing by the Owner to Act as Engineer from time to time for the purposes of Contract.
- 3.5 'Consulting Engineer'/'Consultant' shall mean any firm or person duly appointed as such from time to time by the Owner.
- 3.6 The terms 'Equipment', 'Stores', shall mean and include plant, stores and materials to be provided by the Contractor under the Contract.
- 3.7 'Works', shall mean and include the furnishing of equipment, labour and services, as per the Technical Specifications and complete erection, testing and commissioning of the equipment including all transportation, handling, unloading and storage at the Site as defined in the Contract, intended to be executed on a supply and erection basis.
- 3.8 'Specification' shall mean the Technical Specifications forming a part of the Contract and such other schedules and drawings as may be mutually agreed upon.
- 3.9 'Site' shall mean and include the land and other places on, into or through which the Power Station and the related facilities including the residential colony are to be constructed and any adjacent land, path, street or reservoir which may be allocated or used by the Owner or Contractor in the performance of the Contract.
- 3.10 The term 'Equipment Portion' of the Contract Price shall mean the ex-works value of the equipment.
- 3.11 The term 'Erection Portion' of the Contract Price shall mean the value of field activities of the Contract including erection, testing and commissioning to be performed at Site by the Contractor.
- 3.12 'Manufacturer's Works' or 'Contractor's Works', shall mean the place of work used by the Manufacturer, the Contractor, their Collaborators or Sub-contractors for the performance of the Works.
- 3.13 'Inspector' shall mean the Owner or any person nominated by the Owner from time to time, to inspect the equipment stores or Works under the Contract and/ or the duly authorised representative of the Owner.
- 3.14 'Notice of Award of Contract'/'Letter of Award'/'Telex of Award' shall mean the official notice issued by the Owner notifying the Contractor that his proposal has been accepted.
- 3.15 'Date of Contract' shall mean the date on which both the parties have signed the Contract Agreement.

- 3.16 'Month' shall mean the calendar month. 'Day' or 'days' unless herein otherwise expressly defined shall mean calendar day or days of 24 hours each.
- 3.17 'Writing' shall include any manuscript, type-written or printed statement, under or over signature and/or seal as the case may be.
- 3.18 When the words 'Approved', 'Subject to Approval', 'Satisfactory', 'Equal to', 'Proper', 'Requested', 'As Directed', 'Where Directed', 'When Directed', 'Determined By', 'Accepted', 'Permitted' or words and phrases of like import are used, the approval, judgement, direction etc. is understood to be a function of the Owner/ Engineer.
- 3.19 'Test of Completion', shall mean such tests as prescribed in the Contract to be performed by the Contractor before the Works is taken over by the Owner.
- 3.20 'Start-Up' shall mean the time period required to bring the equipment covered under the Contract from an inactive condition, when construction is essentially complete, to the state ready for trial operation. The start-up period shall include preliminary inspection and checkout of equipment and supporting sub-systems; initial operation of the complete equipment covered under the Contract to obtain necessary pre-trial operation data, perform calibration and corrective action; shut down, inspection and adjustment prior to the trial operation period.
- 3.21 'Initial Operation' shall mean the first integral operation of the complete equipment covered under the Contract with sub-systems and supporting equipment in service or available for service.
- 3.22 'Trial Operation', 'Reliability Test', 'Trial Run', 'Completion Test', shall mean the extended period of time after the start-up period. During this trial operation period the equipment shall be operated over the full load range. The length of Trial Operation shall be as determined by the Engineer, unless otherwise specified elsewhere in the Contract.
- 3.23 'Performance and Guarantee Tests' shall mean all operational checks and tests required to determine and demonstrate capacity, efficiency, and operating characteristics as specified in the Contract Documents.
- 3.24 'Commercial Operation' shall mean the condition of operation in which the complete equipment covered under the Contract is officially declared by the Owner to be available for continuous operation at different loads up to and including rated capacity. Such declaration by the Owner however, shall not relieve or prejudice any of the Contractor's obligation under this contract.
- 3.25 The term 'Final Acceptance' shall mean the Owner's written acceptance of the Works performed under the Contract, after successful completion of Performance and Guarantee Tests.
- 3.26 'Guarantee Period'/'Maintenance Period' shall mean the period during which the Contractor shall remain liable for repair or replacement of any defective part of the Works performed under the Contract.

- 3.27 'Drawing' 'Plans' shall mean all:
- (a) drawings furnished by the Owner/Consultant as a basis for proposals;
 - (b) supplementary drawings furnished by the Owner/Consultant to clarify and to define in greater detail the intent of the Contract;
 - (c) drawings submitted by the Contractor with his proposal provided such drawings are acceptable to the Owner/Consultant;
 - (d) drawings furnished by the Owner/Consultant to the Contractor during the progress of the work; and
 - (e) engineering data and drawings submitted by the Contractor during the progress of the work provided such drawings are acceptable to the Engineer.
- 3.28 'Codes' shall mean the following, including the latest amendments, and/or replacements, if any:
- (a) Indian Boiler Act, 1923, and Rules and Regulations made thereunder.
 - (b) Indian Electricity Act, 1905, and Rules and Regulations made thereunder.
 - (c) Indian Factory Act, 1948, and Rules and Regulations made thereunder.
 - (d) Indian Explosives Act, 1884, and Rules and Regulations made thereunder.
 - (e) Indian Petroleum Act, 1934, and Rules and Regulations made thereunder.
 - (f) A.I.E.E. Test Codes.
 - (g) A.S.M.E. Test Codes.
 - (h) American Society of Materials Testing Codes.
 - (i) Standards of the Indian Standards Institution.
 - (j) Other Internationally approved standards and/or Rules and Regulations touching the subject-matter of the Contract.
- 3.29 Words importing the singular only shall also include the plural and vice-versa where the context so requires.
- 3.30 Words importing 'Person' shall include firms, companies, Companies and associations or bodies of individuals, whether incorporated or not.
- 3.31 Terms and expressions not herein defined shall have the same meaning as are assigned to them in the Indian Sale of goods Act (1930), failing that in the Indian Contract Act (1872) and failing that in the General Clauses Act (1897).

- 3.32 The various Acts and Regulations are normally available for sale from the following address:
Deputy Controller, Publication Department, Government of India
Civil Lines, Delhi-110 54 or
with leading authorised Govt. of India book-sellers

4.0 CONTRACTOR TO INFORM HIMSELF FULLY

The Contractor shall be deemed to have carefully examined all Contract Documents to his entire satisfaction. If he shall have any doubt as to the meaning of any portion of the Contract Documents, he shall, before signing the Contract, set forth the particulars thereof and submit them to the Owner in writing, in triplicate, in order that such doubt may be removed. The Owner will provide such clarifications as may be necessary, in writing, to the Contractor. Any information otherwise obtained from the Owner or the Engineer shall not in any way relieve the Contractor of his responsibility to fulfil his obligations under the Contract.

5.0 CONTRACT AGREEMENT AND PERFORMANCE GUARANTEE

The Contractor shall enter into a Contract Agreement with the Owner within sixty (60) days from the date of acceptance of 'Notice of Award of Contract' or within such extended time as may be granted by the Owner. The Performance Bank Guarantee for the proper fulfillment of the Contract shall be furnished by the Contractor in the prescribed form within thirty (30) days of 'Notice of Award of Contract'. The Performance Guarantee shall be as per terms prescribed in clause 23 of Instructions to Bidders of this Volume-I.

6.0 MANNER OF EXECUTION OF CONTRACT

- 6.1 The Owner, after the issue of the Letter of Award to the Contractor, will send one copy of the final Agreement to the Contractor for his scrutiny and approval.
- 6.2 The Agreement, unless otherwise agreed to, shall be signed within 60 days of the acceptance of the Letter or Award, at the office of the Owner at New Delhi on a date and time to be mutually agreed. The Contractor shall provide for signing of the Contract, Performance Guarantee in six copies, appropriate power of attorney and other requisite materials. In case the Contract is to be signed beyond the stipulated time, the Bid Guarantee submitted with the proposal will have to be extended accordingly.
- 6.3 The Agreement will be signed in six originals and the Contractor shall be provided with one signed original and the rest will be retained by the Owner.
- 6.4 The Contractor shall provide free of cost to the Owner all the engineering data, drawings and descriptive materials submitted with the bid, in at least six (6) copies to form a part of the Contract immediately after issue of Letter of Award.
- 6.5 Subsequent to signing of the Contract, the Contractor at his own cost shall provide the Owner with at least thirty (30) true copies of Agreement within thirty (30) days after the signing of the Contract.

7.0 EFFECT AND JURISDICTION OF CONTRACT

- 7.1 The Contract shall be considered as having come into force from the date of the issue of Letter of Intent/Letter of Award.
- 7.2 The laws applicable to this Contract shall be the laws in force in India. The Courts of Jhajjar shall have exclusive jurisdiction in all matters arising under this Contract.

8.0 ASSIGNMENT AND SUB-LETTING OF CONTRACT

- 8.1 The Contractor may, after informing the Engineer and getting his written approval, assign or sub-let 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 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.
- 8.2 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 organisation, the relevant reference documents/standards used, acceptance level, inspection documentation raised, etc. Such quality plans of the successful vendor shall be discussed and finalised 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.

9.0 PATENT RIGHTS AND ROYALTIES

Royalties and fees for patents covering materials, articles, apparatus, devices, equipments 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. The Contractor shall, at his own cost and expense, defend all suits or proceedings that may be instituted for alleged infringement of any patents involved in the Works, and, in case of an award of damages, the Contractor shall pay for such award. In the event of any suit or other proceedings instituted against the Owner, the same shall be defended at the cost and expense of the Contractor who shall also satisfy/comply any decree, order or award made against the Owner. But it shall be understood that no such machine, plant, work, material or thing has been used by the Owner for any purpose or any manner other than that for which they have been furnished and installed by the Contractor and specified under these specification. Final payment to

the Contractor by the Owner will not be made while any such suit or claim remains unsettled. In the event any apparatus or equipment, or any part thereof furnished by the Contractor, is in such suit or proceedings held to constitute infringement, and its use is enjoined, the Contractor shall, at his option and at his own expense, either procure for the Owner, the right to continue use of said apparatus, equipment or part thereof, replace it with non-infringing apparatus or equipment or modify it, so it becomes non-infringing.

10.0 TIME-THE ESSENCE OF CONTRACT

10.1 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 organise his resources and perform his work as to complete it not later than the date agreed to.

10.2 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 Notice of Award of Contract. This network shall also indicate the interface facilities to be provided by the Owner and the dates by which such facilities are needed. Contractor shall discuss the network so submitted with the Owner and the agreed network which may be in the form as submitted or in revised form in line with the outcome of discussions shall form part of the Contract to be signed within sixty (60) days from the date of acceptance of Notice of Award of Contract. During the performance of Contract, if in the opinion of the Engineer proper progress is not maintained suitable changes shall be made in the Contractor's operations to ensure proper progress.

10.3 The above PERT network shall be reviewed and periodic review reports shall be submitted by the Contractor as directed by the Engineer.

10.4 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 months thereafter.

11.0 CONTRACT PRICE

The lump sum prices quoted by the Contractor in his bid with additions and deletions as may be agreed before signing of the Contract, for the entire scope of the work viz. furnishing and erection of equipments covered under the specifications and documents shall be treated as the Contract Price.

11.1 CHANGE OF QUANTITY

The Owner reserves the right to 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 the 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.

12.0 DEDUCTIONS 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 other-wise, if the Contractor fails to satisfy the Owner of such claims.

13.0 CONTRACT PRICE ADJUSTMENT

- 13.1 All adjustments in the Contract Price shall be computed in accordance with the conditions and formulae prescribed in the relevant clauses of Instructions to Bidders of this Volume-I, the accompanying Technical Specifications and further satisfying the requirements specified herein.
- 13.2 The Contract Price stated in the Contract Agreement is the base price. A certain fixed percentage of the base price as indicated in the Technical Specifications shall not be subject to any price adjustment. The balance percentage viz. the cost portion shall only be subject to price adjustment.
- 13.3 Price adjustment shall be applicable to the cost portion, only if changes in the cost of labour and materials (either increases or decreases) occur during the Contract period, directly affecting the cost portion.
- 13.4 Variations in the cost of labour and materials shall be determined by comparing published labour and material indices as of thirty (30) days prior to the date set for opening of bids with the same indices published during the manufacture at the respective cut off periods for labour and material as specified in clause 22 of Instructions to Bidders of this Volume-I.
- 13.5 The total computed variation in the ex-factory price of equipment alone shall be restricted to a limiting percentage as specified in clause 22 of Section INB of this Volume-I.
- 13.6 The Price adjustment for the erection shall be made on the value of erection work done as indicated in each billing. For this purpose, the All India Consumer Price Index published for the month of work performed shall be taken.
- 13.7 Every three months after the award of Contract, and a month prior to Shipment of equipment (in the case of ex-factory price component of Contract Price), and every month after establishing his Site office (in the case of erection) the Contractor shall submit to the Engineer a written notice of the changes, if any, that have occurred in the specified material and labour indices during the previous reporting period containing the effective date of such change, the amount of change, the amount of Contract Price adjustment and documentary evidence to substantiate the price adjustment.

13.8 The Contract Price adjustment provisions detailed above, shall only be applicable, if so specified in the Technical Specifications.

14.0 PACKING, FORWARDING AND SHIPMENT

The Contractor, 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.

14.1.1 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.

14.1.2 The Contractor shall also give all shipping information concerning the weight, size and content of each packing including any other information the Owner may require.

14.1.3 The following documents shall be sent by registered post to the Owner within 3 days from the date of shipment, to enable the Owner to make progressive payments to the Contractor:

Application for payment in the standard format of the Owner (3 copies)

Invoice (6 copies) Packing list (6 copies)

Pre-despatch clearance certificate, if any (3 copies)

Test certificate, wherever applicable (3 copies)

14.2 The Contractor shall prepare detailed packing list of all packages and containers, bundles and loose material forming each and every consignment despatched to Site. The Contractor shall further be responsible for making all necessary arrangements for loading, unloading and other handling right his works upto 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.

15.0 DEMURRAGE, WHARFAGE, ETC.

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

16.0 INSURANCE

16.1 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. 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 times 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.

- 16.2 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.
- 16.3 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.
- 16.4 All costs on account of insurance liabilities covered under the Contract will be on Contractor'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 a case, the parties to the Contract will agree for a mutual settlement for reduction in contract Price to the extent of reduced premium amounts.
- 16.5 The clause entitled Insurance under the Section ECC of this Volume-I, covers the additional insurance requirements for the portion of the Works to be performed at the field.

17.0 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 GTC of the Volume 1.

18.0 LIQUIDATED DAMAGES FOR DELAY IN COMPLETION

If the Contractor fails to successfully complete the trial operation within the time fixed under the Contract, the Contractor shall pay to the Owner as liquidated damages, not as penalty a sum specified for each specified period of delay. The details of such liquidated damages are brought out in the accompanying Technical Specifications.

- 18.1 The total amount of liquidated damages for delay under the Contract will be subject to a maximum of five percent (5%) of the Contract Price.

19.0 CONTRACTOR'S DEFAULT

- 19.1 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 out of the Contractor's hands and recontract with any other person or persons, complete the Works or any 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 Works is delayed.

19.2 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 18.0 of this section.

19.3 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.

20.0 FORCE MAJEURE

20.1 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 of diligence could not have foreseen and which substantially affect the performance of the Contract, such as:

- (a) natural phenomena, including but not limited to floods, draughts, earthquakes and epidemics;
- (b) 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.

20.2 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.

21.0 DELAYS BY OWNER OR HIS AUTHORISED AGENT

21.1 In case the Contractor's performance is delayed due to any act of omission on the part of the Owner or his authorised agents, then 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.

21.2 In addition, the Contractor shall be entitled to claim demonstrable and reasonable compensation if such delays have resulted in any increase in the cost. 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.

22.0 TERMINATION OF CONTRACT ON OWNER'S INITIATIVE

22.1 The Owner reserves the right to terminate the Contract either in part or in full due to reasons other than those mentioned under clause entitled Contractor's Default. The Owner shall in such an event give fifteen (15) days' notice in writing to the Contractor of his decision to do so.

22.2 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 terms satisfactory to the Owner, stop all further subcontracting 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.

22.3 In the event of such a termination the Contractor shall be paid compensation, equitable and reasonable, dictated by the circumstances prevalent at the time of termination.

22.4 If the Contractor is an individual or a proprietary concern and the individual or the proprietor dies and if the Contractor is a partnership concern and one of the partners dies, then unless the Owner is satisfied that the legal representatives of the individual Contractor or of the proprietor of the proprietary concern and in the case of partnership, the surviving partners, are capable of carrying out and completing the contract the Owner shall be entitled to cancel the Contract as to its incompleting part without being in any way liable to payment of any compensation to the estate of deceased Contractor and/or to the surviving partners of the Contractor's firm on account of the cancellation of the Contract. The decision of the Owner that the legal representatives of the deceased Contractor or surviving partners of the Contractor's firm cannot carry out and complete the Contract shall be final and binding on the parties. In the event of such cancellation the Owner shall not hold the estate of the deceased

Contractor and/ or the surviving partners of the estate of the deceased Contractor and/or the surviving partners of the Contractor's firm liable to damages for not completing the Contract.

23.0 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 a acceptance of, the whole or any part of the Works by the Owner or 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 of any breach in the Contract be held to be a waiver of any other or subsequent breach.

24.0 CERTIFICATE NOT TO AFFECT RIGHT OF OWNER AND LIABILITY OF CONTRACTOR

No interim payment certificate of the Engineer, nor any sum paid on account, by the Owner, nor any extension of time for execution of the Works granted by the Engineer shall affect or prejudice the rights of the Owner against the Contractor or relieve the Contractor of his obligations for the due performance of the Contract, or be interpreted as approval of the Works done or of the equipment furnished and no certificate shall create liability for the Owner to pay for alterations, amendments, variations or additional Works not ordered, in writing, by the Engineer or discharge the liability of the Contractor for the payment of damages whether due, ascertained, or certified or not, or any sum against the payment of which he is bound to indemnify the Owner, nor shall any such certificate nor the acceptance by him of any sum paid on account or otherwise affect or prejudice the rights of the Contractor against the Owner.

25.0 SETTLEMENT OF DISPUTE

25.1 Except as otherwise specifically provided in the Contract all disputes concerning questions of fact arising under the Contract shall be decided by the Engineer subject to a written appeal by the Contractor to the Engineer, whose decision shall be final to parties hereto.

25.2 Any disputes or differences including those considered as such by only one of the parties arising out of or in connection with the Contracts shall be to the extent possible settled amicably between the parties.

25.3 If amicable settlement cannot be reached then all dispute issues shall be settled by arbitration as provided in Clause 26 below.

26.0 ARBITRATION

26.1 If any dispute or difference of any kind whatsoever shall arise between the Owner and the Contractor, arising out of the Contract for the performance of the Work whether during the progress of the Works or after its completion or whether before or after the termination, abandonment or breach of the Contract, it shall, in the first place, be

referred to and settled by the Engineer, who, within a period of thirty (30) days after being requested by either party to do so, shall give written notice of his decision to the Owner and the Contractor.

- 26.2 Save as hereinafter provided, such decision in respect of every matter so referred shall be final and binding upon the parties until the completion of the Works and shall forthwith be given effect to by the Contractor who shall proceed with the Works with all due diligence, whether he or the Owner requires arbitration as hereinafter provided or not.
- 26.3 If after the Engineer has given written notice of his decision to the parties, no claim to arbitration has been communicated to him by either party within thirty (30) days from the receipt of such notice, the said decision shall become final and binding on the parties.
- 26.4 In the event of the Engineer failing to notify his decision as foresaid within thirty (30) days after being requested as aforesaid, or in the event of either the Owner or the Contractor being dissatisfied with any such decision, or within thirty (30) days after the expiry of the first mentioned period of thirty (30) days, as the case may be, either party may require that the matters in dispute be referred to arbitration as hereinafter provided.
- 26.5 All disputes or differences in respect of which the decision, if any, of the Engineer has not become final or binding as aforesaid, shall be settled by arbitration in the manner hereinafter provided.
- 26.6.1 The arbitration shall be conducted by three arbitrators, one each to be nominated by the Contractor and the Owner and the third to be named by the President of the Institution of Engineers, India. If either of the parties fails to appoint its arbitrator within sixty (60) days after receipt of a notice from the other party invoking the Arbitration clause, the President of the Institution of Engineers, India, shall have the power at the request of either of the parties, to appoint the arbitrator. A certified copy of the said President making such an appointment shall be furnished to both the parties.
- 26.6.2 The arbitration shall be conducted in accordance with the provisions of the Indian Arbitration Act, 1940 or any statutory modification thereof. The venue of arbitration shall be New Delhi, India.
- 26.7 The decision of the majority of the arbitrators shall be final and binding upon the parties. The expenses of the arbitration shall be paid as may be determined by the arbitrators. The arbitrators may, from time to time, with the consent of all the parties enlarge the time for making the award. In the event of any of the aforesaid arbitrators dying, neglecting, resigning or being unable to act for any reason, it will be lawful for the party concerned to nominate another arbitrator in place of the outgoing arbitrator.
- 26.8 The arbitrator shall have full powers to review and/or revise any decision, opinion, directions, certification or valuation of the Engineer in consonance with the Contract, and neither party shall be limited in the proceedings before such arbitrators to the evidence or arguments put before the Engineer for the purpose of obtaining the said decision.

26.9 No decision given by the Engineer in accordance with the foregoing provisions shall disqualify him as being called as a witness or giving evidence before the arbitrators on any matter whatsoever relevant to the dispute or difference referred to the arbitrators as aforesaid.

27.0 GRAFTS AND COMMISSIONS ETC.

Any graft, commission, gift or advantage given, promised or offered by or on behalf of the Contractor or his partner, agent, officers, directors, employee or servant or any one on his or their behalf in relation to the obtaining or to the execution of this or any other Contract with the Owner, shall in addition to any criminal liability which it may incur, subject the Contractor to the cancellation of this and all other contracts and also to payment of any loss or damage to the Owner resulting from any cancellation. The Owner shall then be entitled to deduct the amount so payable from any moneys otherwise due to the Contractor under the Contract.

28.0 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.

29.0 RELEASE OF INFORMATION

The Contractor shall not communicate or use in advertising, publicity, sales releases or in any other medium photographs or other reproduction of the Works under this Contract, or descriptions of the Site, dimensions, quantity, quality or other information, concerning the Works unless prior written permission has been obtained from the Owner.

30.0 CONSTRUCTION OF THE CONTRACT

30.1 Notwithstanding anything stated elsewhere in the bid documents, the Contract to be entered into will be treated as a 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 Owner will pay the sales tax for the supply of equipment and materials in accordance with law. The sales tax should not be included in the bid price in the proposal but indicated separately.

30.2 In case of divisible supply and erection contract, or where the Owner hands over his equipment to the contractor for erecting 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 APCPL for keeping the equipment in safe custody and to utilise the same exclusively for the purposes of the said contract. Samples of proforma for the Indemnity bond is enclosed as Annexure - C (GCC) and D (GCC) to this Volume - 1.

30.3 The Contract shall in all respects be construed and governed according to Indian laws.

30.4 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 Contract(s).

31.0 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 Guarantee Period as provided for under the clause entitled 'Guarantee' in this Section of the Volume-I.

32.0 ENFORCEMENT OF TERMS

The failure of either party to enforce at any time any of the provisions of this Contract or any rights in respect thereto 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 the 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.

33.0 ENGINEER'S DECISION

33.1 In respect of all matters which are left to the decision of the Engineer including the granting or with-holding of the certificates, the Engineer shall, if required to do so by the Contractor give in writing a decision thereon.

33.2 If in the opinion of the Contractor, a decision made by the Engineer is not in accordance with the meaning and Intent of the Contract, the Contractor may file with the Engineer within fifteen (15) days after receipt of the decision, a written objection to the decision. Failure to file an objection within the allotted time will be considered as acceptance of the Engineer's decision and the decision shall become final and binding.

33.3 The Engineer's decision and the filing of the written objection thereto shall be a condition precedent to the right to request arbitration. It is the intent of the Agreement that there shall be no delay in the execution of the Works and the decision of the Engineer as rendered shall be promptly observe.

34.0 COOPERATION WITH OTHER CONTRACTORS AND CONSULTING ENGINEERS

The Contractor shall agree to cooperate 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.

35.0 TRAINING OF OWNER'S PERSONNEL

- 35.1 The Contractor shall undertake to train free of cost, engineering personnel selected and sent by the Owner at the works of the Contractor unless otherwise specified in the Technical Specifications. The period and the nature of training for the individual personnel shall be agreed upon mutually between the Contractor and the Owner. These engineering personnel shall be given special training in the shops, where the equipment will be manufactured and/or in their Collaborator's works and where possible, in any other plant where equipment manufactured by the Contractor or his Collaborator is under installation or test, to enable those personnel to become familiar with the equipment being furnished by the Contractor.
- 35.2 All travelling and living expenses for the engineering personnel to be trained during the total period of training will be borne by the Owner. These engineering personnel while undergoing training shall be responsible to the Contractor for discipline.
- 35.3 In the event of the Owner, for any reason, failing to avail of the training facilities, he shall not be entitled for any rebate whatsoever on this account.

36.0 SUSPENSION OF WORK

- 36.1 The Owner reserves the right to suspend and reinstate execution of the whole or any part of the Works without invalidating the provisions of the Contract. Orders for suspension or reinstatement of the Works will be issued by the Engineer to the Contractor in writing. The time for completion of the Works will be extended for a period equal to duration of the suspension.
- 36.2 Any necessary and demonstrable costs 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. 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.

37.0 POWER TO VARY OR OMIT WORK

- 37.1 No alterations, amendments, omissions, suspensions or variations of the Works (hereinafter referred to as 'Variation') under the Contract as detailed in the Contract Documents, shall be made by the Contractor except as directed in writing by the Engineer, but the Engineer shall have full power subject to the provision hereinafter contained from time to time during the execution of the Contract, by notice in writing, to instruct the Contractor to make such Variation without prejudice to the Contract. The Contractor shall carry out such Variation and be bound by the same conditions as far as applicable as though the said Variation occurred in the Contract Documents. If any suggested Variation would, in the opinion of the Contractor, if carried out, prevent him from fulfilling any of his obligations or guarantees under the Contract, he shall notify the Engineer thereof in writing and the Engineer shall decide forthwith, whether or not the same shall be carried out and if the Engineer confirms his instructions, Contractor's obligations and guarantees shall be modified to such an extent as may be mutually agreed. Any agreed difference in cost occasioned by any such Variation shall be added to or deducted from the Contract Price as the case may be.

- 37.2 In the event of the Engineer requiring any Variation, a reasonable and proper notice shall be given to the Contractor to enable him to work his arrangements accordingly, and in cases where goods or materials are already prepared or any design, drawings or pattern made or work done requires to be altered, a reasonable and agreed sum in respect there of shall be paid to the Contractor.
- 37.3 In any case in which the Contractor has received instructions from the Engineer as to the requirements of carrying out the altered or additional substituted work which either then or later on, will in the opinion of the Contractor, involve a claim for additional payments, the Contractor shall immediately and in no case later than thirty (30) days, after receipt of the instructions aforesaid and before carrying out the instructions, advise the Engineer to that effect. But the Engineer shall not become liable for the payment of any charges in respect of any such Variations, unless the instructions for the performance of the same shall be confirmed in writing by the Engineer.
- 37.4 If any Variation in the Works, results in reduction of Contract Price, the parties shall agree, in writing, so to the extent of any change in the price, before in Contractor proceeds with the change.
- 37.5 In all the above cases, in the event of a disagreement as to the reasonableness of the said sum, the decision of the Engineer shall prevail.
- 37.6 Notwithstanding anything stated above in this clause, the Engineer shall have the full power to instruct the Contractor, in writing, during the execution of the Contract, to vary quantities of the items or groups of items in accordance with the provisions of clause entitled 'Change of quantity' in section INB of this Volume-1. The Contractor shall carry out such variations and be bound by the same conditions, as though the said variations occurred in the Contract Documents. However, the Contract Price shall be adjusted at the rates and the prices provided for the original quantities in the Contract.

38.0 GUARANTEE

- 38.1 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. 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. 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.
- 38.2 In the event of an emergency where, in the judgement of the Engineer, delay would cause serious loss or damage, repairs or adjustments may be made by the Engineer or a third party chosen by the Engineer without advance notice to the Contractor and the cost of such work shall be paid by the Contractor, or by the Surety. In the event such action is taken by the Engineer, the Contractor will be notified promptly and he

shall assist wherever possible in making the necessary corrections. This shall not relieve the Contractor's liability under the terms and conditions of the Contract.

- 38.3 If it becomes necessary for the Contractor to replace or renew any defective portions of the plant under this clause, the provisions of this clause shall apply to the portions of the plant so replaced or renewed until the expiration of twelve (12) months from the date of such replacement or renewal. If any defects be not remedied within a reasonable time, the Engineer may proceed to do the work at the Contractor's risk and costs, but without prejudice to any other rights which the Owner may have against the Contractor in respect of such defects.
- 38.4 The repaired or new parts will be furnished and erected free of cost by the Contractor. If any repair is carried out on his behalf at the Site, the Contractor shall bear the cost of such repair.
- 38.5 The cost of any special or general overhaul rendered necessary during the maintenance period due to defects in the plant or defective work carried out by the Contractor shall be borne by the Contractor.
- 38.6 The acceptance of the equipment by the Engineer shall in no way relieve the Contractor of his obligation under this clause.
- 38.7 In the case of those defective parts which are not repairable at Site but are essential for the commercial operation of the equipment, the Contractor and the Engineer shall mutually agree to a programme of replacement or renewal which will minimise interruption to the maximum extent, in the operation of the equipment.
- 38.8 At the end of the Guarantee Period, the Contractor's liability ceases except for latent defects. In respect of goods supplied by Sub-contractors to the Contractor where a longer guarantee (more than 12 months) is provided by such Subcontractors, the Owner shall be entitled to the benefit of such longer guarantees.
- 38.9 The provisions contained in this clause will not be applicable:
- (a) If the Owner has not operated the equipment according to generally approved industrial practices and in accordance with the conditions of operation specified and in accordance with the operating manuals, if any.
 - (b) In cases of normal wear and tear of the parts to be specifically mentioned by the Contractor in the offer.

39.0 **REPLACEMENT OF DEFECTIVE PARTS AND MATERIALS**

- 39.1 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 upto the standards of the specifications. 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.

39.2 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.

40.0 DEFENCE OF SUITS

If any action in Court is brought against the Owner or Engineer or an officer or agent of the Owner, for the failure or neglect on the part of the Contractor to perform any acts, matters, covenants or things under the Contract, or for damage or injury caused by the alleged omission or negligence on the part of the Contractor, his agents, representatives or his sub-contractors, workmen, suppliers or employees, the Contractor shall in all such cases indemnify and keep the Owner, and the Engineer and / or his representative, harmless from all losses, damages, expenses or decrees arising of such action.

41.0 LIMITATION 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 39 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.

42.0 MARGINAL NOTES

The marginal notes to any clause of the Contract shall not affect or control the construction of such clause.

43.0 TAXES, PERMITS & LICENCES

The Contractor shall be liable and pay all non Indian taxes, duties, levies, lawfully assessed against the Owner or the Contractor in pursuance of the Contract. In addition the Contractor shall be responsible for payment of all Indian duties, levies

and taxes lawfully assessed against the Contractor for his personal income & property only. This clause shall be read in conjunction with clause 15.0 of Section INB of this volume I.

44.0 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 reports shall be in the form and size as may be required by the Engineer and shall be submitted in at least three (3) copies.

45.0 LONG TERM AVAILABILITY OF SPARES

45.1 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-contractor, 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.

45.2 Further, in case of discontinuance of supply of spares by the Contractor or his Sub-Contractors, the Contractor will provide the Owner with full information for replacement of such spares with other equivalent makes, if so required by the Owner.

45.3 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 subcontractors.

45.4 Notwithstanding anything stated elsewhere in the bid documents, the prices of the all spares which may be procured to cover long term requirements beyond the 3 years' maintenance and operational requirements, will be generally in accordance with the prices quoted by the sub-contractor and in any case will not exceed the ex-works/F.O.B prices quoted by the Contractor for initial spare requirements for 3 years' after taking into account the price adjustment in accordance with the relevant clauses of the bid documents but without any ceiling in the amount of variations in the prices.

The above option of procuring future requirement of spares by the Owner shall remain valid for a period of 10 years from the date of acceptance of the Letter of Award.

45.5 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 45.4. 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.

45.6 The procedure specified in clause 45.4 and 45.5 shall apply for future procurement of items included in standby spare list, mandatory spares lists, optional spares list and special tools, plants and equipment list, if any, specified in the bid documents.

46.0 **PAYMENTS**

46.1 The payment to the Contractor for the performance of the works 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.

46.2 **Currency of Payment**

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

46.3 **Due Date for Payment**

Owner will made progressive payment as and when the payment is due as per the terms of payment set forth in the accompanying technical specification. Payment other than under the Letter of Credit 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.

46.4 **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 in Clause 10 of this Section GCC of Volume-I. Any payment under the Contract shall be made only after the Contractor's price break-up is approved by the Engineer. The aggregate sum of the Contractor's price break-up shall be equal to the lump sum Contract Price.

46.5 **Application for Payments**

46.5.1 The Contractor shall submit application for the payment in the prescribed proforma of the Owner. Proforma for application for payment is enclosed as Annexure-A (GCC) to this Section GCC of Volume-I.

46.5.2 Each such application shall state the amount claimed and shall set forth in detail, in the order of the payment schedule, particulars of the works including the works executed at site and of the equipment shipped/brought on to the site pursuant to the contract upto the date mentioned in the application and for the period covered since the last preceding certificate, if any.

46.5.3 Every interim payment certificate shall certify the contract value of the works executed upto the date mentioned in the application for the payment certificate, provided that no sum shall be included in any interim payment certificate in respect of the works that, according to the decision of the Engineer, does not comply with the Contract, or has been performed, at the date of certificate prematurely.

46.6 **Mode of Payment**

46.6.1 The Owner will establish an irrevocable Letter of Credit in favour of the Contractor through the Owner's bank, valid for the completion period agreed to between the Contractor and the Owner.

46.6.2 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.

46.7 **Terms of Payments**

46.7.1 The terms of payment for the price components of the equipment and its erection are detailed herein for each equipment package. A certain percentage of the equipment and erection costs, for each package shall be paid as initial advance on fulfilment of the following, by the Contractor :

- i) For the price component of the equipment
 - a) Acceptance of Letter of Award
 - b) Submission of an unconditional Bank Guarantee for an equivalent amount, which shall be initially kept valid till 90 days after the scheduled date for successful completion of trial operations. The proforma of Bank Guarantee for advance is enclosed as Annexure-B (GCC) to this Section GCC of Volume-I. The value of bank guarantee (other security) for advance shall be allowed to be reduced every six months after first Running Account Bill/Stage Payment under the contract, if the value of such B.G. (Security) is more than Rs. five (5) lacs and validity is more than one year. The cumulative amount of reduction at any point of time shall not exceed 75% of the advance corresponding to cumulative value of supplies/work completed as per a certificate to be issued by the Engineer-in-Charge. It should be clearly understood that the reduction in value of advance bank guarantee or other security as above shall not in any way dilute the Contractor's responsibilities and liabilities under the contract including in respect of supplies/work for which the reduction in the value of Bank Guarantee (for other security) is allowed.
 - c) Submission of an unconditional bank guarantee towards Contract Performance Guarantee valid upto ninety (90) days after the end of the guarantee period, in accordance with clause 23.0 of Section INB of this Volume-I.
 - d) Submission of a detailed PERT Network based on the Work Schedule stipulated in the Letter of Award and its approval by Owner.
- ii) For the Erection Price Component
 - a) On establishment of his office at Site preparatory to mobilisation of his erection establishment.

- b) Submission of an unconditional Bank Guarantee covering the advance amount which shall be initially valid till ninety (90) days after the schedule date for successful completion of trial operations. The proforma of Bank Guarantee for advance is enclosed as Annexure-B (GCC) to this Section GCC of Volume-I.
- c) Signing of contract agreement.

46.7.2 All further payments under the contract shall be made as stipulated in the Technical specifications after signing the Contract Agreement. The payments linked with despatch of materials shall only be made after production of all despatch documents as specified in L/C conditions and/or in the relevant contract conditions which will inter-alia include the Material Despatch Clearance Certificate (MDCC) issued by the Owner.

In case of erection, progress payments shall only be made after the issue certificates by the Engineer's Field Quality surveillance representative for the successful completion of quality check points involved in the quantum of work billed.

46.7.3 **Inland Transportation & Insurance**

Inland transportation (including port handling) and inland insurance charges shall be paid to the contractor on pro-rata to the value of the equipment received at site and on production of the invoices by the contractor. However, wherever equipment wise inland transportation charges have been called for in the "Bid Proposal Sheets" and have been furnished by the Contractor, the payment of inland transportation charges shall be made after receipt of equipment at site based on the charges thus identified by the Contractor in his proposal and incorporated in the Contract. The aggregate of all such pro-rata payments shall however, not exceed the total amount quoted by the bidder in his bid and incorporated in the contract.

**PROFORMA BANK GUARANTEE FOR ADVANCE
(To be stamped in accordance with stamp Act)
The non-judicial stamp paper should be in the name of issuing Bank**

Ref :

Bank Gurantee No

Date :

To
Aravali Power Company Priivate Limited
Indira Gandhi Super Thermal Power Project.
P.O.Jharli, Dist. Jhajjar
Haryana-124 125
INDIA

Dear Sirs,

In consideration of the Aravali Power Company Private Limited (hereinafter referred to as the 'Owner' which expression shall unless repugnant to the context or meaning thereof, include all successors, administrators and assigns) having awarded to M/s with its Registered/Head Office at (hereinafter referred to as 'Contractor' which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators, executors, and assigns) a Contract by issue of Owner Letter of Award No..... dated..... and the same having been unequivocally accepted by the Contractor, resulting into a Contract bearing no dated valued at for Contract (hereinafter called the 'Contract')

(scope of work)

and the Owner having agreed to make an advance payment to the Contractor for performance of the above Contract amounting to (in figures and words) as an Advance against Bank Guarantee to be furnished by the Contractor.

We having its
(name of the Bank)

Head office at
(address)

(hereinafter referred to as the 'Bank' which expression shall unless repugnant to the context or meaing thereof, include its successors, administrators, executors and assigns) do hereby guarantee and undertake to pay the Owner immediately on demand any or, all monies payable by the Contractor to the extent of (in words and figures) at any time upto without any demur, reservation, recourse, contest or protest and/or without any reference to the Contractor. Any such demand made by the Owner on the Bank shall be conclusive and binding notwithstanding any difference between the Owner and the Contractor or any dispute pending before any Court,

Tribunal, Arbitrator or any other authority. We agree that the Guarantee herein contained shall be irrevocable and shall continue to be enforceable till the Owner discharges this Guarantee.

The Owner shall have the fullest liberty without affecting in any way the liability of the Bank under this Guarantee from time to time to vary the advance or to extend the time for performance of the Contract by the Contractor. The owner shall have the fullest liberty without affecting this Guarantee, to postpone from time to time the exercise of any powers vested in them or of any right which they might have against the Contractor, and to exercise the same at any time in any manner, and either to enforce or to forebear to enforce any covenants contained or implied in the Contract between the Owner and the Contractor or any other course or remedy or security available to the Owner. The Bank shall not be released of its obligations under these presents by any exercise by the Owner of its liberty with reference to matters aforesaid or any of them or by reason of any other act or forbearance or other acts of omission or commission on the part of the Owner or any other indulgence shown by the Owner or by any other matter or thing whatsoever which under law would but for this provision, have the effect of relieving the Bank.

The Bank also agrees that on the certification of the Owner the amount of the Bank guarantee shall stand reduced to the extent so notified by the Owner semi annually. It is further agreed that the reduction so notified by the Owner shall be conclusive and binding on the bank without any reservation.

The Bank also agrees that the Owner at its option shall be entitled to enforce this Guarantee against the Bank as a Principal debtor, in first instance without proceeding against the Contractor and notwithstanding any security or other guarantee the Owner may have in relation to the Contractor's liabilities.

Notwithstanding anything contained hereinabove, our liability under this guarantee is limited toand it shall remain in force upto end..... including @ and shall be extended from time to time for such periods (not exceeding one year) as may be desired by M/s on whose behalf this Guarantee has been given.

Dated this day of 20 at

WITNESS :

(Signature)

(Signature)

(Name)

(Name)

(Official Address)

(Designation with Bank Stamp)

Attorney as per Power of Attorney

No.

Dated

@ The date shall be 90 days after the schedule date of successful completion of the trial operations.

ANNEXURE-B (GCC)

PROFORMA FOR APPLICATION FOR PAYMENTS

Project	:		
Equipment Package	:	Date	:
Name of Contractor	:	Contract No.	:
Contract Value	:	Contract Name	:
Unit reference	:	Application	
		serial Number	:

To

_____*

Aravali Power Company Private Limited

Dear Sir,

APPLICATION FOR PAYMENT #

Pursuant to the above referred Contract dated _____ the undersigned hereby applies for payment of the sum of _____
(Specify amount and currency in which claim is made)

The above amount is on account of : (check whichever applicable) Initial

advance (Schedule **)

Interim payment as advance (Schedule **)

Progressive payment against despatch of equipment (Schedule **)

Progressive payment against receipt of equipment at Site (Schedule **)

Progressive payment against Supervision of Erection (Schedule **)

Ocean freight and marine insurance (Schedule **)

Inland transportation (Schedule **)

Inland insurance

Price Adjustment

Extra work not specified in Contract (Ref. Contract change order no)

Others (specify)

Final payment (Schedule **)

as detailed in the attached Schedule(s) which form an integral part of this application.

3. The payment claimed is as per item(s) No.(s) _____ of the payment schedule annexed to the above mentioned Contract.

4. This application consists of this page, a summary of claim statement (Schedule **) and the following signed schedules :

1. _____
2. _____
3. _____

The following documents are also enclosed :

- 1.
- 2.
- 3.

Signature of Contractor/authorised signatory

* Applications for payment will be made to 'Engineer' as to be designed for this purpose at the time of award of the Contract.

Prepare separate applications for claims in different currencies.

** Proforma for the Schedules will be mutually discussed and agreed to during the finalisation of the Contract Agreement.

ANNEXURE-C (GCC)

**PROFORMA OF INDEMNITY BOND TO BE EXECUTED
BY THE CONTRACTOR FOR THE EQUIPMENTS HANDED
OVER BY APCPL FOR PERFORMANCE OF ITS CONTRACT
(Entire Equipment Consignment in one Lot)**

(On non-judical stamp paper of appropriate value)

INDEMNITY BOND

THIS INDEMNITY BOND IS made this day of 20 by a Company registered under the Companies Act, 1956/Partnership Firm/Proprietary concern having its Registered Office at (hereinafter called as "Contractor" or "Obligor" which expression shall include its successors and permitted assigns) in favour of Aravali Power Company Private Limited , a Company incorporated under the Companies Act, 1956 having its Registered Office at NTPC Bhawan, Scope Complex, Core-7, Lodi Road, New Delhi-110003 and its Project at (hereinafter called "APCPL" which expression shall include its successors and assigns) :

WHEREAS APCPL has awarded to the Contractor a Contract for vide its Letter of Intent/Award Letter/Contract No dated and its Amendment No and Amendment No (applicable when amendments have been issued) (hereinafter called the "Contract") in terms of which APCPL is required to hand over various Equipments to the Contractor for execution of the Contract.

AND WHEREAS by virtue of Clause No of the said Contract, the Contractor is required to execute an Indemnity Bond in favour of APCPL for the Equipments handed over to it by APCPL for the purpose of performance of the Contract/Erection portion of the Contract (hereinafter called the "Equipments").

NOW, THEREFORE, this Indemnity Bond witnesseth as follows :

1. That in consultation of various equipments as mentioned in the Contract valued at Rs..... (Rupees.....) handed over to the Contractor for the purpose of performance of the Contract, the Contractor hereby undertakes to indemnify and shall keep APCPL indemnified, for the full value of the equipments. The Contractor hereby acknowledges receipt of the equipment as per despatch title documents handed over to the Contractor duly endorsed in their favour as detailed in the Schedule appended hereto. It is expressly understood by the

Contractor that handing over of the despatch title documents in respect of the said equipments duly endorsed by APCPL in favour of the Contractor shall be construed as handing over of the Equipments purported to be covered by such title documents and the contractor shall hold such equipments in trust as a Trustee for and on behalf of APCPL.

2. That the Contractor is obliged and shall remain absolutely responsible for the safe transit/protection and custody of the Equipments at APCPL project site against all risks whatsoever till the Equipments are duly used/erected in accordance with the terms of the Contract and the plant/package duly erected and commissioned in accordance with the terms of the Contract is taken over by APCPL. The Contractor undertakes to keep APCPL harmless against any loss or damage that may be caused to the Equipments.
3. The Contractor undertakes that the Equipments shall be used exclusively for the performance/execution of the Contract strictly in accordance with its terms and conditions and no part of the Equipments shall be utilised for any other work or purpose whatsoever. It is clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purposes including legal/penal consequences.
4. That APCPL is and shall remain the exclusive owner of the Equipments free from all encumbrances, charges or liens of any kind, whatsoever. The Equipments shall at all times be open to inspection and checking by Engineer-in-Charge/ Engineer or other employees/agents authorised by him in this regard. Further, APCPL shall always be free at all times to take possession of the Equipments in whatever form the Equipments may be, if in its opinion, the Equipments are likely to be endangered, misutilised or converted to uses other than those specified in the Contract, by any acts of omission or commission on the part of the Contractor or any other person or on account of any reason whatsoever and the Contractor binds itself and undertakes to comply with the directions of demand of APCPL to return the Equipments without any demur or reservation.
5. That this Indemnity Bond is irrevocable. If at any time any loss or damage occurs to the Equipments or the same or any part thereof is mis-utilised in any manner whatsoever, then the Contractor hereby agrees that the decision of the Engineer-in-Charge/Engineer of APCPL as to assessment of loss or damage to the Equipment shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and/or damaged Equipments at its own cost and / or shall pay the amount of loss to APCPL without any demur, reservation or protest. This is without prejudice to any other right or remedy that may be available to APCPL against the Contractor under the Contract and under this Indemnity Bond.
6. NOW THE CONDITION of this Bond is that if the Contractor shall duly and punctually comply with the terms of and conditions of this Bond to the satisfaction of APCPL, THEN, the above Bond shall be void, but otherwise, it shall remain in full force and virtue.

IN WITNESS WHEREOF, the Contractor has hereunto set its hand through its authorised representative under the common seal of the Company, the day, month and year first above mentioned

SCHEDULE No 1

Particulars of Equipments handed over	Quantity	Particulars of Despatch Title Documents		Value of Equipments	Signature of Attorney in Token of Receipt
		RR/GR No. Date/ Bill of Lading No	Carrier		
(Please number	sequent	Schedules)			

For and on behalf of
M/S.....

WITNESS

- I. 1. Signature -----
- 2. Name -----
- 3. Address -----

Name

Signature.....

Authorised Representative*

- II. 1. Signature -----
- 2. Name -----
- 3. Address -----

Common Seal

(In case of Company)

Indemnity Bonds are to be executed by the authorised persons and (i) In case of contracting Company under common seal of the Company of (ii) having the power of attorney issued under common seal of the company with authority to execute Indemnity Bonds, (iii) In case (ii) the original Power of Attorney if it is specifically for our contract or a photostat copy of the Power of Attorney if it is a General Power of Attorney and such documents should be attached to Indemnity Bond.

ANNEXURE-D (GCC)

**PRORORMA OF INDEMNITY BOND TO BE EXECUTED BY THE CONTACTOR
FOR THE EQUIPMENTS HANDED OVER AND TO BE HANDED OVER IN
INSTALMENTS BY APCPL FOR PERFORMANCE OF ITS CONTRACT.**

(On non-judicial stamp paper of appropriate value)

INDEMNITY BOND

THIS INDEMNITY BOND IS made this day of 20 by a Company registered under the Company Act, 1956/Partnership Firm/Proprietary concern having its Registered Office at (hereinafter called as "Contractor" or "Obligor" which expression shall include its successors and permitted assigns) in favour of Aravali Power Company Private Ltd., a Company incorporated under the Companies Act, 1956 having its Registered Office at NTPC Bhawan, Scope Complex, Core-7, Lodi Road, New Delhi-110 003 and its Project at..... (hereinafter called "APCPL" which expression shall include its successors and assigns) :

WHEREAS APCPL has awarded to the Contractor a Contract for vide its Letter of Intent/Award Letter/Contract No dated and its Amendment No. 1 and Amendment No.2 (applicable when amendments have been issued) (hereinafter called the "Contract"); in terms of which APCPL is required to hand over various Equipments to the Contractor for execution of the Contract.

AND WHEREAS by virtue of Clause No of the said Contract, the Contractor is required to execute an Indemnity Bond in favour of APCPL for the Equipments be handed over to it by APCPL for the purpose of performance of the Contract/Erection portion of the Contract (hereinafter called the "Equipments").

NOW, THEREFORE, this Indemnity Bond witnesseth as follows :

1. That in consideration of various equipments as mentioned in the Contract valued at Rs (Rupees) to be handed over to the Contractor in instalments from time to time for the purpose of performance of the Contract; the Contractor hereby undertakes to indemnify and shall keep APCPL indemnified, for the full value of the Equipments. The Contractor hereby acknowledges receipt of the initial instalment of the Equipments as per details in the Schedule appended hereto. Further, the Contractor agrees to acknowledge receipt of the subsequent installments of the Equipments as required by APCPL in the form of schedules consecutively numbered which shall be attached to this Indemnity Bond so as to form integral parts of the this Bond. It is expressly understood by the Contractor that handing over of the despatch title documents in respect of the said Equipments duly endorsed by APCPL in favour of the Contractor shall be construed as handing over of the Equipments purported to be covered by such title documents and the Contractor shall hold such Equipments in trust as a Trustee for and on behalf of APCPL.

2. That the Contractor is obliged and shall remain absolutely responsible for the safe transit/protection and custody of the Equipments at APCPL project site against all risks whatsoever till the Equipments are duly used/erected in accordance with all terms of the Contract and the plant/package duly erected and commissioned in accordance with the terms of the Contract is taken over by APCPL. The Contractor undertakes to keep APCPL harmless against any loss or damage that may be caused to the Equipments.
3. The Contractor undertakes that the Equipments shall be used exclusively for the performance/execution of the Contract strictly in accordance with its terms and conditions and no part of the Equipments shall be utilised for any other work or purpose whatsoever. It is clearly understood by the Contractor that non-observance of the obligations under this Indemnity Bond by the Contractor shall inter-alia constitute a criminal breach of trust on the part of the Contractor for all intents and purposes including legal/penal consequences.
4. That APCPL is and shall remain the exclusive Owner of the Equipments free from all encumbrances, charges or liens of any kind, whatsoever. The Equipments shall at all times be open to inspection and checking by Engineer-in-Charge/Engineer or other employees/agents authorised by him in this regard. Further APCPL shall always be free at all time to take possession of the Equipments in whatever form the Equipments may be, if in its opinion, the Equipments are likely to be endangered, misutilised or converted to uses other than those specified in the Contract, by any acts of omission or commission on the part of the Contractor or any other person or on account of any reason whatsoever and the Contractor binds itself and undertakes to comply with the directions or demand of APCPL to return the Equipments without any demur or reservation.
5. That this Indemnity Bond is irrevocable. If at any time any loss or damage occurs to the Equipments or the same or any part thereof is misutilised in any manner whatsoever, then the Contractor hereby agrees that the decision of the Engineer-in-Charge/Engineer of APCPL as to assessment of loss or damage to the Equipment shall be final and binding on the Contractor. The Contractor binds itself and undertakes to replace the lost and/or damaged Equipments at its own cost and/or shall pay the amount of loss to APCPL without any demur, reservation or remedy that may be available to APCPL against the Contractor under the Contract and under this Indemnity Bond.

NOW THE CONDITION, of this Bond is that if the Contractor shall duly and punctually comply with the terms and conditions of this bond to the satisfaction of APCPL, THEN, the above bond shall be void, but otherwise, it shall remain in full force and virtue.

IN WITNESS WHEREOF, the Contractor has hereunto set its hand through its authorised representative under the common seal of the Company, the day, month and year first above mentioned

SCHEDULE No 1

Particulars of Equipments handed over	Quantity	Particulars of Despatch Title Documents		Value of Equipments	Signature of Attorney in Token of Receipt
		RR/GR No. Date/ Bill of Lading No	Carrier		
(Please number sequent Schedules)					

For and on behalf of
M/S.....

WITNESS

- I. 1. Signature -----
- 2. Name -----
- 3. Address -----

Name

Signature.....

Authorised Representative*

- II. 1. Signature -----
- 2. Name -----
- 3. Address -----

Common Seal

(In case of Company)

Indemnity Bonds are to be executed by the authorised persons and (i) In case of contracting Company under common seal of the Company of (ii) having the power of attorney issued under common seal of the company with authority to execute Indemnity Bonds, (iii) In case (ii) the original Power of Attorney if it is specifically for our contract or a photostat copy of the Power of Attorney if it is a General Power of Attorney and such documents should be attached to Indemnity Bond.

SECTION - GTC
GENERAL TECHNICAL CONDITIONS

SECTION - GTC

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SECTION GTC

GENERAL TECHNICAL CONDITIONS

1.0 GENERAL

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. 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. 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.

2.0 LIMIT OF CONTRACT

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. All similar standard components/parts of similar standard equipment provided, shall be interchangeable with one another.

3.0 EQUIPMENT PERFORMANCE GUARANTEE

3.1 The performance guarantee of the equipment under the scope of the Contract are detailed separately in the Technical Specifications. These guarantees shall supplement the general performance guarantee provisions covered under General Terms and Conditions of Contract in Clause entitled 'Guarantee'.

3.2 Liquidated damages for not meeting performance guarantee during the performance and guarantee tests shall be assessed and recovered from the Contractor, as detailed in Technical Specifications. Such liquidated damages shall be without any limitation whatsoever and shall be in addition to damages, if any payable under any other clause of Conditions of Contract.

4.0 ENGINEERING DATA

4.1 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. 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 lay out. This review by the Engineer may not indicate a thorough review of all dimensions, quantities and details of the equipment, materials, any devices or 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.

4.2 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.

5.0 **DRAWINGS**

5.1 All drawings submitted by the Contractor including those submitted at the time of bid shall be in sufficient detail 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 equipments and materials, clearances and spaces required between various portions of equipments and any other information specifically requested in the specifications.

5.2 Each drawing submitted by the Contractor shall be clearly marked with the name of the Owner, the unit designation, the specifications title, the specification number and the name of the Project. If standard catalogue pages are submitted the applicable items shall be indicated therein. All titles, notings, markings and writings on the drawing shall be in English. All the dimensions should be in metric units.

5.3 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 drawing reviewed will be returned to the Contractor as stipulated herein.

5.3.1 Copies of drawings returned to the contractor will be in form of a print with the Owner's marking, or a print made from a microfilm of the macked up drawing or in the form of aperture cards if the contractor has facilities to process such cards.

5.3.2 Necessary instructions regarding preparation of drawings for microfilming purposes is enclosed at Annexure-A (GTC) to this section of Volume-I.

5.4 The drawings submitted by the Contractor shall be reviewed by the Engineer as far as practicable within four (4) 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 delays arising out of failure by the Contractor to rectify the drawings in good time shall not alter the contract completion date.

5.5 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 reproduceable original of the drawings after incorporating all corrections.

5.6 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.

5.7 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.

5.8 Drawings shall include all installation and detailed piping drawings wherever applicable. All piping 100 millimeter 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.

6.0 **INSTRUCTION MANUALS**

6.1 The Contractor shall submit to the Engineer, preliminary instruction manual for all the equipments, 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, testing procedures, operation and maintenance procedures of the equipments. These instruction manuals shall be submitted in the form of one (1) original reproducible and twelve (12) copies.

6.2 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 twelve (12) copies shall be submitted by the Contractor to the Owner.

6.3 The Contractor shall furnish to the Owner, twelve (12) sets of spare parts catalogue.

7.0 **FIRST FILL OF CONSUMABLES, OIL AND LUBRICANTS**

All the first fill of consumables 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 these specifications and documents.

8.0 **MANUFACTURING SCHEDULE**

The Contractor shall submit to the Engineer his manufacture and delivery schedules for all equipments within thirty (30) days from the date of the Letter of Award. Such schedules shall be in line with the detailed network 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. Schedules shall also include the materials and equipment purchased from outside suppliers.

9.0 **REFERENCE STANDARDS**

9.1 The codes and/or standards referred to in these specifications shall govern, in all cases wherever such references are made. In case of a conflict between such codes and/or standards and the specifications, the latter shall govern. Such codes and/or standards, referred to shall mean the latest revisions, amendments/ changes adopted and published by the relevant agencies. In case of any further conflict in this matter, the same shall be referred to the Engineer whose decision shall be final and binding.

9.2 Other internationally acceptable standards which ensure equal or higher performance than those specified shall also be accepted.

10.0 **DESIGN IMPROVEMENTS**

10.1 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.

10.2 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.

11.0 **QUALITY ASSURANCE**

11.1 **Quality Assurance Programme**

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. Such programme shall be outlined by the Contractor and shall be finally accepted by the Engineer after discussions before the award of Contract. A quality assurance programme of the contractor shall generally cover the following:

(a) his organisation structure for the management and implementation of the proposed quality assurance programme;

- (b) documentation control system;
- (c) qualification data for bidder's key personnel;
- (d) the procedure for purchases of materials, parts components and selection of sub-Contractor's services including vendor analysis, source inspection, incoming raw material inspection, verification of material purchased etc.;
- (e) system for shop manufacturing and site erection controls including process controls and fabrication and assembly controls;
- (f) control of non-conforming items and system for corrective actions;
- (g) inspection and test procedure both for manufacture and field activities;
- (h) control of calibration and testing of measuring and testing equipments;
- (i) system for indication and appraisal of inspection status;
- (j) system for quality audits;
- (k) system for authorising release of manufactured product to the Owner;
- (l) system for maintenance of records;
- (m) system for handling storage and delivery; and
- (n) a quality plan detailing out the specific quality control procedure adopted for controlling the quality characteristics relevant to each item of equipment furnished.

11.2 **Quality Assurance Documents**

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

- (i) all Non-Destructive Examination procedures stress relief and weld repair procedure actually used during fabrication.
- (ii) welder and welding operator qualification certificates.
- (iii) welder identification list, listing welder's and welding operator's qualification procedure and welding identification symbols.
- (iv) material mill test reports on components as specified by the specification.
- (v) 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.
- (vi) sketches and drawings used for indicating the method of traceability of the radiographs to the location on the equipment.
- (vii) all Non-Destructive Examination result reports including radiography interpretation reports.

- (viii) stress relief time temperature charts.
- (ix) factory test results for testing required as per applicable codes and standard referred in the specifications.
- (x) 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.

12.0 **ENGINEER'S SUPERVISION**

12.1 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.

12.2 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 :

- (a) interpretation of all the terms and conditions of these documents and specifications;
- (b) review and interpretation of all the Contractor's drawings, engineering data etc;
- (c) witness or authorise his representative to witness tests and trial either at the manufacturer's works or at site, or at any place where work is performed under the Contract;
- (d) inspect, accept or reject any equipment, material and work under the Contract;
- (e) issue certificate of acceptance and/or progressive payment and final payment certificates;
- (f) review and suggest modifications and improvements in completion schedules from time to time;
- (g) supervise the quality assurance programme implementation at all stages of the works; and
- (h) to receive and endorse the despatch documents enabling the Contractor to clear the consignments;

13.0 **INSPECTION, TESTING & INSPECTION CERTIFICATE**

13.1 The Engineer, his duly authorised representative and/or an outside inspection agency acting on behalf of the Owner shall have at all reasonable times access to the Contractor's premises or Works and shall have the power at all reasonable times to inspect and examine the materials and workmanship of the Works during its manufacture or erection and if part of the Works is being manufactured or assembled at

other premises or works, the Contractor shall obtain for the Engineer and for his duly authorised representative permission to inspect as if the Works were manufactured or assembled on the Contractor's own premises or works.

- 13.2 The Contractor shall give the Engineer/Inspector fifteen (15) days written notice of any material being ready for testing. Such tests shall be to the Contractor's account except for the expenses of the Inspector. The Engineer/Inspector, unless witnessing of the tests is virtually waived, will attend such tests within fifteen (15) days of the date on which the equipment is notified as being ready for test/inspection, failing which the Contractor may proceed with the test which shall be deemed to have been made in the Inspector's presence and he shall forthwith forward to the Inspector duly certified copies of tests in triplicate.
- 13.3 The Engineer or Inspector shall within fifteen (15) days from the date of inspection as defined herein give notice in writing to the Contractor, of any objection to any drawings and all or any equipment and workmanship which in his opinion is not in accordance with the Contract. The Contractor shall give due consideration to such objections and shall either make the modifications that may be necessary to meet the said objections or shall confirm in writing to the Engineer/Inspector giving reasons therein, that no modifications are necessary to comply with the Contract.
- 13.4 When the factory tests have been completed at the Contractor's or Sub-Contractor's works, the Engineer/Inspector shall issue a certificate to this effect within fifteen (15) days after completion of tests but if the tests are not witnessed by the Engineer/Inspector, the certificate shall be issued within fifteen (15) days of receipt of the Contractor's Test certificate by the Engineer/Inspector. Failure of the Engineer/Inspector to issue such a certificate shall not prevent the Contractor from proceeding with the Works. The completion of these tests or the issue of the certificate shall not bind the Owner to accept the equipment should, it, on further tests after erection, be found not to comply with the Contract.
- 13.5 In all cases where the Contract provides for tests whether at the premises or works of the Contractor or of any Sub-Contractor, the Contractor, except where otherwise specified, shall provide free of charge such items as labour, materials, electricity, fuel, water, stores, apparatus and instruments as may be reasonably demanded by the Engineer/Inspector or his authorised representative to carry out effectively such tests of the equipment in accordance with the Contract and shall give facilities to the Engineer/Inspector or to his authorised representative to accomplish testing.
- 13.6 The inspection by Engineer and issue of Inspection Certificate thereon shall in no way limit the liabilities and responsibilities of the Contractor in respect of the agreed quality assurance programme forming a part of the Contract.

14.0 TESTS

14.1 Start-up

- 14.1.1 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 for 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.

14.1.2 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 equipments as a complete system referred hereinafter as 'Plant'.

14.2 **Trial Operation**

14.2.1 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.

14.2.2 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. 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.

14.2.3 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.

14.2.4 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. 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. The report shall have sheets, recording all the details of interruptions occurred, adjustments made and any minor repairs done during the Trial Operation. Based on the observations, necessary modifications/repairs to the plant shall be carried out by the Contractor to the full satisfaction of the Engineer to enable the latter to accord permission to carry out Performance and guarantee Tests on the Plant. However, minor defects which do not endanger the safe operation of the equipment, shall not be considered as reasons for withholding the aforesaid permission.

14.3 **Performance and Guarantee Test**

14.3.1 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.

14.3.2 These tests shall be binding on both the parties of the Contract to determine compliance of the equipment with the performance guarantees.

- 14.3.3 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, unmeasurable parameters shall be taken into account in a reasonable manner by the Engineer, for the requirement 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.
- 14.3.4 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.
- 14.3.5 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 equipments 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 the equipment is ready for retest 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.
- 14.3.6 The specific tests to be conducted on equipment have been brought out in the Technical Specifications.
- 14.3.7 Performance and Guarantee Test shall make allowance for instrumentation errors, as may be decided by the Engineer-in-Charge.

14.4 **Test Codes**

The provisions outlines 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.

15.0 **PACKING**

- 15.1 All the equipments shall be suitably protected, coated, covered or boxed and crated to prevent damage or deterioration during transit, handling and storage at Site till the time of erection. 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 details of various wagons normally available with Indian Railways for transportation of heavy equipments are enclosed as Annexure-B(GTC) to this Section of Volume-1. The Contractor shall be responsible for any loss or damage during transportation, handling and storage due to improper packing. The details furnished are for the guidance of bidders. Owner takes no responsibility of the availability of the wagons and variation in dimensions.
- 15.2 Annexure 'F' indicates the dimensions which can be normally transported on the wagons without infringement of the 'moving gauge'. This is not indicative of the consignments which can be carried out with infringement of 'moving gauge' duly authorised and approved by the Indian Railways.
- 15.3 There may be difference between the 'moving gauge' and the 'fixed structure gauge' and consignments infringing the 'moving gauge' can be moved after investigation regarding possible infringement with the fixed structures.

15.4 As the critical fixed structures in each route are different, consignments infringing moving dimensions have to be individually investigated to select a route and also determine the restrictions under which such movement is to be carried out. Such routes selected or other mode of transport envisaged is to be clearly brought out in the proposal wherever transport of over dimensioned equipment is involved.

16.0 **PROTECTION**

All coated surfaces shall be protected against abrasion, impact, discolouration and any other damages. All exposed threaded portions shall be suitably protected with either a metallic or a non-metallic protecting device. All ends of all valves and pipings and conduit equipment connections shall be properly sealed with suitable devices to protect them from damage. The parts which are likely to get rusted, due to exposure to weather should also be properly treated and protected in a suitable manner.

17.0 **PRESERVATIVE SHOP COATING**

17.1 All exposed metallic surfaces subject to corrosion shall be protected by shop application of suitable coatings. All surfaces which will not be easily accessible after the shop assembly, shall before-hand be treated and protected for the life of the equipment. 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. Transformers and other electrical equipments, if included shall be shop finished with one or more 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 Engineer at a later date.

17.2 Shop primer for all steel surfaces which will be exposed to operating temperature below 95°C shall be selected by the Contractor, after obtaining specific approval of the Engineer regarding the quality of primer proposed to be applied. Special high temperature primer shall be used on surfaces exposed to temperatures higher than 95°C and such primers shall also be subject to the approval of the engineer.

17.3 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.

18.0 **PROTECTIVE GUARDS**

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.

19.0 **DESIGN CO-ORDINATION**

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

20.0 DESIGN CO-ORDINATION MEETING

The Contractor will be called upon to attend design co-ordination meetings with the Engineer, other Contractor's and the Consultants of the Owner during the period of Contract. The Contractor shall attend such meetings at his own cost at New Delhi or at mutually agreed venue as and when required and fully cooperate with such persons and agencies involved during those discussions.

21.0 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.

22.0 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 equipments furnished and installed under these specifications expressed in decibels to a reference of 0.0002 microbar, shall not exceed 85 dbA.

23.0 TAKING OVER

Upon successful completion of all the tests to be performed at Site on equipments 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. 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 equipments. 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.

24.0 INDIAN STANDARDS

For the information of the bidder a list of equivalent international or Internationally recognized standards, in respect of Indian Standards normally referred in the specifications and documents, is provided in annexure-C (GTC) to this section of Volume-1.

25.0 WELDING

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

26.0 LUBRICATION

Equipment shall be lubricated by systems designed for continuous operation.

27.0 **EQUIPMENT BASES**

A cast iron or welded steel baseplate shall be provided for all rotating equipment which is to be installed on a concrete base unless otherwise agreed to by the Engineer. Each baseplate 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.

28.0 **RATING PLATES, NAME PLATES AND LABELS**

20.0 Each main and auxiliary item 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 manufacturer's name, equipment, type or serial number together with details of the loading conditions under which the item of plant in question has been designed to operate, and such diagram plates as may be required by the Engineer.

28.0 Each item of plant is to be provided with nameplate or label designating the service of the particular equipment. The inscriptions are to be approved by the Engineer or as detailed in the appropriate sections of the Technical Specifications.

28.1 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.

28.2 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.

28.5 All such nameplates, instruction plates lubrication charts, etc, shall be in bilingual with Hindi inscription first followed by English. Alternatively two separate plates one with Hindi and the other with English inscriptions may be provided.

29.0 **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.

30.0 **SERVICES BY THE OWNER**

30.1 The following services shall be provided by the Owner :

(i) Instrument and service air :

Oil free and dry at 6.0 kg/cm² absolute, at locations specified elsewhere in this specification.

(ii) Auxiliary cooling water :

Clarified water at 5.0 to 6.0 kg/cm² absolute at average temperature of 30°C (maximum temperature of 36°C) at locations specified elsewhere in this specification.

(iii) Auxiliary power

Nominal Voltage Volts	Variation in Voltage	Frequency Hz	Phase	Neutral Connection
6600	(+/-) 10%	50	3	Isolated
415	(+/-) 10%	50	3	Solidly earthed
240	(+/-) 10%	50	1	Solidly earthed
220	190V to 240V	DC	(Isolated 2 wire system)	---

Variation of frequency shall be $\pm 10\%$

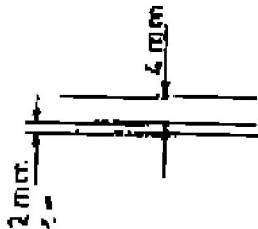
Combined variation of frequency and voltage shall be $\pm 5\%$

Fault levels for the 6600V and 415 V A.C. power distribution system of the Owner shall be 500 MVA and 32 MVA respectively.

30.2 In the event of the Contractor requiring these services at parameters other than specified above, for any systems, equipments, instrument etc. he shall make the necessary arrangement himself.

1. LETTERING

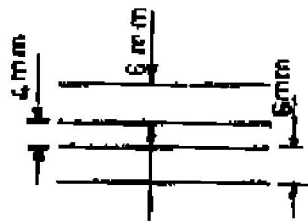
Only capital letters shall be used. in the body of the drawing a minimum height of 4 mm shall be used for all letters and numbers. Larger characters are preferred wherever possible.



THIS HEIGHT LETTERING FOR MATERIAL, NOTES, ETC. CAPITAL LETTERING SHALL BE USED

2. TITLE BLOCK

In the title block a minimum height of 6 mm shall be used for all letters.



THIS HEIGHT LETTERING FOR TITLE BLOCK. CAPITAL LETTERING SHALL BE USED

3. SPACING BETWEEN LINES

The minimum gap between lines shall be at least one half the letter height.



4. SPACING BETWEEN LETTERS AND NUMBERS

Lettering shall be applied in a manner that prevents the characters making contact with lines, symbols, figures or other characters. Spacing between round full characters such as O, Q, 6, requires less space than between straight figures such as 1, H, P.

Care should be taken to keep characters open so that legibility will not be affected on reduced size copy by any method of reproduction.

4 mm LETTERING

ABCDEFGHIJKLMNOPQRSTUVWXYZ
1234567890

Example- LOCK

2mm  MIN. SPACING-ROUND LETTERS

Example- HILL

3mm  MAX. SPACING-STRAIGHT BACK LETTERS

5. FRACTIONS

When common fractions are used on drawings the fraction bar must not be omitted and it should not be slanted except when applied with a type-writing machine. The fraction bar shall be parallel to the direction in which the dimension line reads. Each numeral shall be a minimum of 4mm in height and should not touch the fraction bar.

When dimension line is broken to admit the fraction, the bar should be indicated by making it heavier than the dimension line.

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When dimension line is broken to admit the fraction, the bar should be indicated by making it heavier than the dimension line.

Instruction regarding preparation of drawings

6. LINE AND WIDTH CONSISTENCY

If using pencil, pressure must be ensured to ensure lines of constant density

Minimum line width, weight and type shall be as shown below

LINE GROUP 0.8

_____ 0.8 VISIBLE OUTLINE

_____ 0.3 DIMENSION LINES, LEADER LINE, EXTENSION LINES
CONSTRUCTION LINES, OUTLINES OF ADJACENT PARTS, HATCHING AND REVOLVED SECTION

0.3 m IRREGULAR BOUNDARY LINE SHORT BREAK LINES.

----- 0.4 HIDDEN LINES AND EDGES

----- 03 CENTER LINES, LOCUS LINES, EXTREME POSITIONS OF THE MOVEABLE PARTS, PARTS SITUATED IN FRONT OF THE CUTTING PLANES AND PITCH CIRCLES,

--- 0.8 CUTTING PLANE LINE

----- 0.8 TO INDICATE SURFACES WHICH ARE TO RECEIVE ADDITIONAL TREATMENT

---\ \-----\ \----- 03 LONG BREAK LINES

7 REVISIONS When making revisions to drawings extreme care should be taken to

conform to the original style. Every effort should be made to match the original line

density.

LIST OF SPECIFICATIONS

Legend

Abbreviations have been used for denoting International and National Standardization Organizations.

Reference Abbreviation Name and Address

ASA : American Standards Association,
American National Standards Institute,
1430 Broadway, New York, N.Y. 10018, U.S.A.

ASTM : American Society of Testing and Materials,
1916, Race Street, Philadelphia,
Pennsylvania –19103, U.S.A.

BS : British Standards,
British Standards Institution,
101, Pentonvile Road, Londone N 19 ND, U.K

CEE : Commission on rules for the approval of Electric,
Equipment (Netherland),
Netherlands Normalisatie – Institut
Polkwege, Rijswijk (ZH) - 2016, Netherland

DIN : Deutscher Normenausschuss ,Beuth Verlag GMBH Auslieferung, Burggra
Fenstrasse, 4-71000 Berlin 30, Germany

IEC : International Electrotechnical Commission, Bureau Central De la
Commission Electrotechnique, Internationale, 1 rue de Varembe Geneve,
Switzerland.

IS Indian Standards, Indian Standards Institute,
Bahadurshah Zafar Marg New Delhi - 110 002.

Manak Bhavan, 9,

Reference Abbreviation	Name and Address
ISO :	International Organization for Standardization, Danish Board for Standardization, Dansk Standardisering Sraat, Aurehoegvel - 12, DK-2900 Helleprup, Denmark.
JIS :	Japanese Standards Institution, Japanese Standards Association, 1-24, Akasaka 4 Chome, Tokyo 107, Japan.
SAA :	Standards Association of Australia, Marks Committee, SAA, P.O. Box 458, North-Sydney, Australia.
: VDE :	Germany Standards VDE, Verlag GMBH, 1000 Berlin 12, Bissmarc-Ketrabe 33, West Germany.
Indian Standards	Title International and Internationally recognize Standards
IS:325-1970	IEC Document 2 (Central Office) 432 Three-phase induction motor VDE 0530 Part 1/1.66
IS:335-1972	BS 148:1959 IEC 296:1969 ASTMD 1257:1967
IS-800-1962	BS 449:1959 Code of practice for use of structural steel CP:113-1948 (Issued by BS)
IS:807-196	Draft Revision of A.S. No. CS:2, SAA Crane and Hoist code Code of practice for design,

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Indian Standards	Title	International and Internationally recognize Standards
IS:875-1964	Code of practice for structural safety buildings Loading standards	National Building Code of Canada (1953) - Part IV Design Section 4:1 (Issued by Canadian Standards) DIN-1055-1955 BS CP 3 A 58:1-1955 (Issued by ASA)
IS:966-1964	Single-phase small ac and universal electric motors	BS 170:1962 BS 1608:1949 BS 2613 : 1959 Pub : HG-1-1963 (NEMA-USA)
IS:1026-1966	Flexible trailing cables for use in quarters and metaliferrous mines	BS 1116-1956
IS:1239	Mild steel tubes, tubulars and other wrought steel fittings	(ISO/R-50-1957) (ISO/R-64-1958) (ISO/R-65-1958) (BS 1387:1957)
IS:1239 (Part I - 1969)	Mild steel tubes	ISO/R 65-1971 (Issued by International Organization for Standardization)
IS:1239 (Part II)-1969	Mild steel tubulars and other wrought steel pipe fittings	BS 1387 : 1967 BS 1740 : 1965
IS:1554-1964	PVC insulated (heavy duty)	CEE publication 13 July, 1955

electric cables

(Issued by International
commission on Rules for the
approval of Electric Equipment
CX (ELE) 5313 (Issued by BS)
VDE 0271/5:58 VDE
0472/11:54 VDE 0100 a/11:58
BS 2004 : 1961 BS 2746 : 1956
BS 3346 : 1961

IS:1860-1968 Code of Practice for installation,
operation and maintenance of
electric passenger and goods lift

AS No. CA-3-1966 SAA
lift code (Issued by Standards
Association of Australia)
BSS 2655 : 1958
BS CP 407:101:1951
A 17:1-1965 (The American Society
of Mechanical Engineers)

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Indian Title
Standards

International and
Internationally recognize
Standards

IS:1978-1971 Line pipe

API Standard 5L.April 1969

IS:2026-1962 Power transformers

IEC 76
BS 171:1959
BEBS-T1 (1958) British
BEBS-T2 (1958) Standards

IS:2099-1973 High Voltage porcelain bushing

IEC Document 36A
(Central Office)
Revision of BS 223:1956-Documents
No. 69/17493

IS:2147-1962 Degrees of protection provided
by enclosures for low-voltage
switchgear and control gear

IEC Document 17B
(Central Office)-12

IS:2266-1970 Steel wire ropes for general
engineering purposes

BS:302:1968

IS:2365-1963 Steel wire suspension ropes
for lifts and hoists

BS:329:1957

IS:2705-1967	Current Transformers	IEC Doc. 38 (Central Office) 15 AS No. C 45-1950 JISC 1710-1961 (Issued-Japanese Standards Institution) Doc : AB (ELE) 9362 (Issued BS) C 57 13-1954 (Issued ASA)
IS:3043-1966	Code of practice for earthing	SAA wiring rules Part I VDE 0100/11.58 VDE 0141/2.64 CW (ELCP) 9328 (British Standards)
IS:3177-1965	Code of practice for design of overhead travelling cranes and gantry cranes other than steel work cranes	AS No. CB.2 SAA (Standards Association of Australia) BS 466:1960

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Indian Standards	Title	International and Internationally recognize Standards
IS: 3346-1966		
IS: 3815-1969		
IS:4137-1967	Points hooks with shank for General engineering purposes	
IS:4289-1967	Code of practice for heavy duty electric overhead travelling cranes	
	Lift cables	
IS:4666-1968	Electric passenger and goods lifts	BS 329:1957 BS 2655: Part-1:1958 A 17.1 (American Society of

IS:691-1968

IEC 34-5(1968) Part 5

IS:4722-1968

IS:4728-1975

IEC PUB : 34-8 (1972)

Terminal marking for rotating electrical machinery

IS:4889-1968

Rotating electrical machines, of efficiency of Methods of determination

IEC document 2D (United Kingdom) 5

IEC document 2D (Secretariat) 7

IS:5578-1970

Guide for marking of insulated conductors

IEC Doc : 16 (Central Office) 20

Indian Standards

Title

International and Internationally recognize Standards

IS:5749-1970

Forged rams horn hooks

Entwurf DIN 15402 Blatt 1
Entwurf DIN 15402 Blatt 2
BS 3017 : 1958

IS:5959-1970

Polyethylene insulated and PVC-sheathed (heavy duty) electric cables

IEC Doc : 20A (Central Office) 30

IS:6392-1971

Steel pipe flanges

BS 4504 : 1969

IS:6524-Part-1
1972

Code of practice for design of tower cranes

	Part 1 Static and rail mounted	BS 2799:1956
IS:6600-1972	Guide for loading of oil-immersed transformers	IEC document 14 (Central Office) - 16 IEC publication 76 (1967)

ISI Steam Tables

(i) Revised steam tables and diagrams of the Japan society of mechanical Engineers, 1955 (Ed. 2, Corrected and Supplemented)

(ii) VUKALOVICH (M.P.), Thermodynamic properties of water and steam, 1958. State Publishing House of Scientific Technical Literature concerning Mechanical Engineering Moscow.

(iii) VOKALOVICH (M.P.) Thermodynamic properties of water and water vapour, 1958. State Power Publishing House Moscow.

SECTION - ECC
ERECTION CONDITIONS OF CONTRACT

SECTION - ECC

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ERECTION CONDITIONS OF CONTRACT

1.0 GENERAL

1.1 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 or this Contract to be performed at Site.

1.2 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.

2.0 REGULATION OF LOCAL AUTHORITIES AND STATUTES

2.1 The Contractor shall comply with all the rules and regulations of local authorities during the performance of his field activities. He shall also comply with the Minimum Wages Act, 1948 and the Payment of Wages Act (both of the Government of India) and the rules made thereunder in respect of any employee or workmen employed or engaged by him or his Sub-contractor.

2.2 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. However, any registration, statutory inspection fees lawfully payable under the provisions of Indian Boiler Regulations and any other statutory laws and its amendments from time to time during erection in respect of the plant equipment ultimately to be owned by the Owner, shall be to the account of the Owner. Should any such inspection or registration need to be re-arranged due to the fault of the Contractor or his Sub-contractor, the additional fees for such inspection and/or registration shall be borne by the Contractor.

3.0 OWNER'S LIEN ON EQUIPMENTS

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.

4.0 INSPECTION, TESTING AND INSPECTION CERTIFICATES

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. 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 erected at Site. If by the above inspection, the Engineer rejects any equipment, the Contractor shall make good for such rejections either by replacement or modifications/repairs as may be necessary, to the satisfaction of the Engineer. Such replacements will also include the replacements or re-execution of such of those works of other Contractors

and/or agencies, which might have got damaged or affected by replacements or re-work done to the Contractor's work.

5.0 ACCESS TO SITE AND WORKS ON SITE

5.1 Suitable access to and possession of the Site shall be afforded to the Contractor by the Owner in reasonable time.

5.2 The Owner shall have the necessary foundations to be provided by him ready, as per the agreed schedule for the execution of the individual phase of Works.

5.3 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.

5.4 In the execution of the works, no persons other than the Contractor or his duly appointed representative, Sub-contractor and workmen, shall allowed to do work on the Site, except by the special permission, in writing of the Engineer or his representative.

6.0 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 representative Contractor and the same shall be deemed to have been communicated to the Contractor at his legal address.

7.0 CO-OPERATION WITH OTHER CONTRACTORS

7.1 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 Work under the Contract. 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. Any injury or damage that may be sustained by the employees of the other Contractors and the Owner, due to the Contractor's work shall promptly be made good at his own expense. The Engineer shall determine the resolution of any difference or conflict that may arise between the Contractor and other contractors or between the Contractor and the workmen of the Owner in regard to their work. If the Works of the Contractor is delayed because of the any acts of omissions of another contractor, the Contractor shall have no claim against the Owner on that account other than an extension of time for completing his Works.

7.2 The Engineer shall be notified promptly by the Contractor of any defects in the other Contractor's works that could affect the Contractor's Works. The Engineer shall determine the corrective measures if any, required to rectify this situation after inspection of the Works and such decisions by the Engineer shall be binding on the Contractor.

8.0 **DISCIPLINE OF WORKMEN**

8.1 The Contractor shall adhere to the disciplinary procedure set by the Engineer in respect of his employees and workmen at site. The Engineer shall be at liberty to object to the presence of any representative or employee 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.

9.0 **CONTRACTOR'S FIELD OPERATION**

9.1 The Contractor shall keep the Engineer informed in advance regarding his field activity plans and schedules for carrying out each part of the Works. Any review of such plan or schedule or method of work by the Engineer shall not relieve the Contractor of any of his responsibilities towards the field activities. Such reviews shall also not be considered as an assumption of any risk or liability by the Engineer or the Owner or any of his representatives and no claim of the Contractor will be entertained because of the failure or inefficiency of any such plan or schedule or method of work reviewed. The Contractor shall be solely responsible for the safety, adequacy and efficiency of plant and equipment and his erection methods.

9.2 The Contractor shall have the complete responsibility for the conditions of the Work-Site including the safety of all person employed by him or his Sub-contractor and all the properties under his custody during the performance of the work. This requirement shall apply continuously till 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.

10.0 **PHOTOGRAPHS AND PROGRESS REPORT**

10.1 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.

10.2 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.

11.0 **MAN-POWER REPORT**

11.1 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.

The Contractor shall also submit to the Engineer on the first day of every month, a man power report of the previous month detailing the number of persons scheduled to have been employed and actually employed, skill-wise and the areas of employment of such labour.

12.0 PROTECTION OF WORK

The Contractor shall have total responsibility for protecting his works till it is finally taken over by the Engineer. 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 complete restoration of the damaged Works to its original conditions to comply with the specification and drawings. Should any such damage to the Contractor's Works occur because of other party not under his supervision or control, the Contractor shall make his claim directly with the party concerned. If disagreement or conflict or dispute develops between the Contractor and the other party or parties concerned regarding the responsibility for damage to the Contractor's Works the same shall be resolved as per the provisions of the Clause 7.0 above entitled "Co-operation With Other Contractor". The Contractor shall not cause any delay in the repair of such damaged Works because of any delay in the resolution of such disputes. The Contractor shall proceed to repair the work immediately and no cause thereof will be assigned pending resolution of such disputes.

13.0 EMPLOYMENT OF LABOUR

13.1 The Contractor will be expected to employ on the work only his regular skilled employees with experience of his particular work. No female labour shall be employed after darkness. No person below the age of eighteen years shall be employed.

13.2 All travelling expenses including provisions of all necessary transport to and from Site, lodging allowances and other payments to the Contractor's employees shall be the sole responsibility of the Contractor.

13.3 The hour of work on the Site shall be decided by the Owner and the Contractor shall adhere to it. Working hours will normally be eight (8) hours per day – Monday through Saturday.

13.4 Contractor's employees shall wear identification badges while on work at Site.

13.5 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 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.

14.0 FACILITIES TO BE PROVIDED BY THE OWNER

14.1 Space :

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. 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.

14.2 Electricity :

The Contractor shall submit to the Engineer within thirty (30) days from the date of acceptance of the Award Letter, his electrical power requirements, if any, to allow the planning of the temporary electrical distribution by the Engineer. The Contractor shall be provided with free supply of electricity for the purposes of the Contract, only at one point in the Project Site. The Contractor shall make his own further distribution arrangement. All temporary wiring must comply with local regulations and will be subject to Engineer's inspection and approval before connection to supply. The free supply of power will not be provided for the use in the labour colonies. Power supply for labour colonies shall be provided at one point and the Contractor shall be charged at Re 0.20 per kW hr.

14.3 Water:

Free supply of water will be made available for the construction purposes at an agreed single point in the site. Any further distribution will be the responsibility of the Contractor. Free drinking water will also be provided at one agreed point in the Site. Further distribution either to his labour and colony or his work site or to office shall be the responsibility of the Contractor.

15.0 FACILITIES TO BE PROVIDED BY THE CONTRACTOR

15.1 Tools, tackles and scaffoldings.

The Contractor shall provide all the construction equipments, tools, tackles and scaffoldings required for pre-assembly, erection, testing and commissioning of the equipments covered under the Contract. 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.

15.2 Communication

The Owner will extend the telephone & telex facilities, if available at Site for purposes of Contract. The Contractor shall be charged at actuals for such facilities.

15.3 First-aid

15.3.1 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.
The Owner will provide the Contractor, in case of any emergency, the services of an ambulance for transportation to the nearest hospital

15.4 **Cleanliness**

15.4.1 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. All such rubbish and scrap material shall be stacked or disposed in a place to be identified by the Engineer. 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

15.4.2 Similarly the labour colony, the offices and the residential areas of the Contractor's employees and workmen shall be kept clean and neat to the entire satisfaction of the Engineer. Proper sanitary arrangements shall be provided by the Contractor, in the work-areas, office and residential areas of the Contractor.

16.0 **LINES AND GRADES**

All the Works shall be performed to the lines, grades and elevations indicated on the drawings. The Contractor shall be responsible to locate and lay-out the Works. Basic horizontal and vertical control points will be established and marked by the Engineer at Site at suitable points. These points shall be used as datum for the Works under the Contract. The Contractor shall inform the Engineer well in advance of the times and places at which he wishes to do work in the area allotted to him, so that suitable datum points may be established and checked by the Engineer to enable the Contractor to proceed with his Works. Any work done without being properly located may be removed and/or dismantled by the Engineer at Contractor's expense.

17.0 **FIRE PROTECTION**

17.1 The work procedures that are to be used during the erection shall be those which minimise fire hazards to the extent practicable. 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. Untreated canvas, paper, plastic or other flammable flexible materials shall not at all be used at site for any other purpose unless otherwise specified. If any such materials are received with the equipment at the Site, the same shall be removed and replaced with acceptable material before moving into the Construction area or storage.

17.2 Similarly corrugated paper fabricated cartons etc. will not be permitted in the construction area either for storage or for handling of materials. All such materials used shall be of water proof and flame resistant type. All the other materials such as working drawings, plans etc. which combustible but are essential for the Works to be executed shall be protected against combustion resulting from welding sparks, cutting flame and other similar fire sources.

17.3 All the Contractors 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.

- 17.4 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 time.

18.0 **SECURITY**

The Contractor shall have total responsibility for all equipment and materials in his custody stores, loose, semi-assembled and/or erected by him at site. 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.

19.0 **CONTRACTOR'S AREA LIMITS**

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. 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.

20.0 **CONTRACTOR'S CO-OPERATION WITH THE OWNER**

In case where the performance of the erection work by the Contractor affects the operation of the system facilities of the Owner, such erection work of the Contractor shall be scheduled to be performed only in the manner stipulated by the Engineer and the same shall be acceptable at all times to the Contractor. The Engineer may impose such restrictions on the facilities provided to the Contractor such as electricity, water, etc. as he may think fit in the interest of the Owner and the Contractor shall strictly adhere to such restrictions and co-operate with the Engineer. It will be the responsibility of the Contractor to provide all necessary temporary instrumentation and other measuring devices required during start-up and operation of the equipment systems which are erected by him. The Contractor shall also be responsible for flushing and initial filling of all the oil and lubricants required for the equipment furnished and erected by him, so as to make such equipment ready for operation. The Contractor shall be responsible for supplying such flushing oil and other lubricants unless otherwise specified elsewhere in these documents and specifications.

21.0 **PRE-COMMISSIONING, TRIALS AND INITIAL OPERATIONS**

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. The Contractor shall provide, in addition, test instruments, calibrating devices, etc. and labour required for successful performance of these trials. If 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.

22.0 **MATERIALS HANDLING AND STORAGE**

- 22.1 All the equipments furnished under the Contract and arriving at Site shall be promptly received, unloaded and transported and stored in the storage spaces by the Contractor.
- 22.2 Contractor shall be responsible for examining all the shipment and notify the Engineer immediately of any damage, shortage, discrepancy, etc. for the purpose of Engineer's information only. The Contractor shall submit to the Engineer every week a report detailing all the receipts during the week. 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 Site. Any demurrage, wharfage and other such charges claimed by the transporters, railways etc. shall be to the account of the Contractor.
- 22.3 The Contractor shall maintain an accurate and exhaustive record detailing out the list of all equipment received by him for the purpose of erection and keep such record open for the inspection of the Engineer at any time.
- 22.4 All equipment shall be handled very carefully to prevent any damage or loss. No bare wire ropes, slings, etc. shall be used for unloading and/or handling of the equipment without the specific written permission of the Engineer. The equipment stored shall be properly protected to prevent damage either to the equipment or to the floor where they are stored. The equipment from the store shall be moved to the actual location at the appropriate time so as to avoid damage of such equipment at Site.
- 22.5 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.
- 22.6 All the electrical equipment such as motors, generators, etc. shall be tested for insulation resistance at least once in three months from the date of receipt till the date of commissioning and a record of such measured insulation values maintained by the Contractor. Such records shall be open for inspection by the Engineer.
- 22.7 The Contractor shall ensure that all the packing materials and protection devices used for the various equipments during transit and storage are removed before the equipments are installed.
- 22.8 The consumables 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.
- 22.9 All the materials stored in the open or dusty location must be covered with suitable weather-proof and flameproof covering material wherever applicable.
- 22.10 If the materials belonging to the Contractor are stored in areas other than those earmarked for him, the Engineer will have the right to get it moved to the area earmarked for the Contractor at the Contractor's cost.

22.11 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 consumables like electrodes, lubricants etc. shall be stored in the closed storage space. The Engineer, in addition, may direct the Contractor to move certain other materials which in his opinion will require indoor storage, to indoor storage areas which the Contractor shall strictly comply with.

23.0 **CONSTRUCTION MANAGEMENT**

23.1 The field activities of the Contractors working at Site, will be co-ordinated by the Engineer and the Engineer's decision shall be final in resolving any disputes or conflicts between the Contractor and other contractors and tradesmen of the Owner regarding scheduling and co-ordination of work. Such decision by the Engineer shall not be a cause for extra compensation or extension of time for the Contractor.

23.2 The Engineer shall hold weekly meetings of all the Contractors working at Site, at a time and a place to be designated by the Engineer. The Contractor shall attend such meetings and take notes of discussions during the meeting and the decisions of the Engineer and shall strictly adhere to those decisions in performing his Works. In addition to the above weekly meeting, the Engineer may call for other meetings either with individual contractors or with selected number of contractors and in such a case the Contractor if called, will also attend such meetings.

23.3 Time is the essence of the Contract and the Contractor shall be responsible for performance of his Works in accordance with the specified construction schedule. If at any time, the Contractor is falling behind the schedule, he shall take necessary action to make good for such delays by increasing his work force or by working overtime or otherwise accelerate the progress of the work to comply with the schedule and shall communicate such actions in writing to the Engineer, satisfying that his action will compensate for the delay. The Contractor shall not be allowed any extra compensation for such action.

23.4 The Engineer shall, however, not be responsible for provision of additional labour and/or materials or supply or any other services to the Contractor except for the co-ordination work between various Contractors as set out earlier.

24.0 **FIELD OFFICE RECORDS**

The Contractor shall maintain at his Site Office up-to-date copies of all drawings, specifications and other Contract Documents and any other supplementary data complete with all the latest revisions thereto. The Contractor shall also maintain in addition the continuous record of all changes to the above Contract Documents, drawings, specifications, supplementary data, etc. effected at the field and on completion of his total assignment under the Contract shall incorporate all such changes on the drawings and other engineering data to indicate as installed condition of the equipment furnished and erected under the Contract. Such drawings and engineering data shall be submitted to the Engineer in required number of copies.

25.0 **CONTRACTOR'S MATERIALS BROUGHT ON TO SITE**

25.1 The Contractor shall bring to Site all equipment, components, parts, materials, including construction equipment, tools and tackles for the purpose of the Works under intimation to the Engineer. All such goods shall, from the time of their being brought vest in the Owner, but may be used for the purpose of the Works only and shall not on any account be removed or taken away by the Contractor without the written permission of the Engineer. The Contractor shall nevertheless be solely liable and responsible for any loss or destruction thereof and damage thereto.

25.2 The Owner shall have a lien on such goods for any sum or sums which may at any time be due or owing to him by the Contractor, under, in respect of or by reasons of the Contract. After giving a fifteen (15) days notice in writing of his intention to do so, the Owner shall be at liberty to sell and dispose of any such goods, in such manner as he shall think fit including public auction or private treaty and to apply the proceeds in or towards the satisfaction of such sum or sums due as aforesaid.

25.3 After the completion of the works, the Contractor shall remove from the Site under the direction of the Engineer the materials such as construction equipment, erection tools and tackles, scaffolding etc. with the written permission of the Engineer. If the Contractor fails to remove such materials, within fifteen (15) days of issue of a notice by the Engineer to do so then the Engineer shall have the liberty to dispose of such materials as detailed under Sub-Clause 25.2 above and credit the proceeds thereto to the account of the Contractor.

26.0 **PROTECTION OF PROPERTY AND CONTRACTOR'S LIABILITY**

26.1 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, building, other plants and equipments and utilities either above or below the ground.

26.2 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. 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.

27.0 **PAINTING**

All exposed metal parts of the equipment including structures railings 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, scraping or sand blasting and the same being inspected and approved by the Engineering for painting. Afterwards, the above parts shall be finished painted with two coats of allowed 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.

28.0 INSURANCE

28.1 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 Sub-Contractor's manufacturing works.

28.2 Workmen's Compensation Insurance

This insurance shall protect the Contractor against all claims applicable under the Workmen's Compensation Act. 1948 (Government of India). This policy shall also cover the Contractor against claims for injury, disability disease or death of his or his Sub-Contractor's employees, which for any reason are not covered under the Workmen's Compensation Act 1948. The liabilities shall not be less than

Workmen's Compensation	As per statutory provisions
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Employee's liability	As per statutory provisions
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28.3 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.

28.4 Comprehensive General Liability Insurance

28.4.1 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. This insurance shall also cover all the liabilities of the Contractor arising out of the Clause entitled Defence of Suits under General Terms and Conditions of Contract of this Volume-1.

28.4.2 The hazards to be covered will pertain to all the Works which and areas where the Contractor, his Sub-contractors, his agents and his employees have to perform work pursuant to the Contract.

28.5 The above are only illustrative list of insurance covers normally required and it will be the responsibility of the Contractor to maintain all necessary insurance coverage to the extent both in time and amount to take care of all his liabilities either direct or indirect, in pursuance of the Contract.

29.0 UNFAVOURABLE WORKING CONDITIONS

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

30.0 PROTECTION OF MONUMENTS AND REFERENCE POINTS

The Contractor shall ensure that any finds such as relic, antiquity, coins, fossils, etc. which he may come across during the course of performance of his works either during excavation or elsewhere, are properly protected and handed over to the Engineer. Similarly, the Contractor shall ensure that the bench marks, reference points, etc., which are marked either with the help of the Engineer or by the Engineer shall not be disturbed in any way during the performance of his works. If, any work is to be performed which disturb such references, the same shall be done only after these are transferred to other suitable locations under the direction of the Engineer. The Contractor shall provide all necessary materials and assistance for such relocation of reference points etc.

31.0 WORK AND SAFETY REGULATIONS

31.1 The Contractor shall ensure proper safety of all the workmen, materials, plant and equipment belonging to him or to APCPL 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 legislations and the Engineer-in-Charge as he may deem necessary.

31.2 The Contractor will notify well in advance to the Engineer-in-Charge of his intention to bring to the Site any container filled with liquid or gaseous fuel or explosive or petroleum substance or such chemicals which may involve hazards. The Engineer-in-Charge shall have the right to prescribe the conditions, under which such container is to be stored, handled and used during the performance of the works and the Contractor shall strictly adhere to and comply with such instructions. The Engineer-in-Charge shall have the right at his sole discretion to inspect any such container or such construction plant/equipment for which material in the container is required to be used and if in his opinion, its use is not safe, he may forbid its use. No claim due to such prohibition shall be entertained by the Owner and the Owner shall not entertain any claim of the Contractor towards additional safety provisions/conditions to be provided for/constructed as per the Engineer-in-Charge's instructions.

Further, any such decision of the Engineer-in-Charge shall not, in any way, absolve the Contractor of his responsibilities, and in case, use of such a container or entry thereof into the site area is for-bidden by Engineer-in-Charge, the Contractor shall use alternative methods with the approval of Engineer-in-Charge without any cost implication to APCPL or extension of work schedule

- 31.3 Where it is necessary to provide and/or store petroleum products or petroleum mixtures and explosives, the Contractor shall be responsible for carrying-out such provision and/or storage in accordance with the rules and regulations laid down in Petroleum Act 1934, Explosives Act 1948, and Petroleum and Carbide of Calcium Manual published by the Chief Inspector of Explosives of India. All such storage shall have prior approval of the Engineer-in-Charge. In case, any approvals are necessary from the Chief Inspector (Explosives) or any statutory authorities, the Contractor shall be responsible for obtaining the same.
- 31.4 All equipment used in construction and erection by Contractor shall meet Indian/ International Standards and where such standards do not exist, the Contractor shall ensure these to be absolutely safe. All equipments shall be strictly operated and maintained by the Contractor in accordance with manufacturer's operation manual and safety instructions and as per Guidelines/Rules of the APCPL in this regard.
- 31.5 Periodical Examinations and all tests for all lifting/ hoisting equipment & tackles shall be carried-out in accordance with the relevant provisions of Factories Act 1948, Indian Electricity Act 1910 and associated Laws/Rules in force from time to time. A register of such examinations and tests shall be properly maintained by the Contractor and will be promptly produced as and when desired by the Engineer-in-Charge or by the person authorised by him.
- 31.6 The Contractor shall be fully responsible for the safe storage of his and his-sub-contractors radio-active sources in accordance with BARC/DAE Rules and other applicable provisions. All precautionary measures stipulated by BARC/DAE in connection with use, storage and handling of such material will be taken by Contractor.
- 31.7 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 equipments to determine their suitability, reliability, acceptability and adoptability.
- 31.8 Where explosives are to be used, the same shall be used under the direct control and supervision of an expert, experienced, qualified and competent person strictly in accordance with the Code of Practices/Rules framed under Indian Explosives Act pertaining to handling, storage and use of explosives.
- 31.9 The Contractor shall provide safe working conditions to all workmen and employees at the Site including safe means of access, railings, stairs, ladders, scaffoldings etc. The scaffoldings 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.
- 31.10 The Contractor shall not interfere or disturb electric fuses, wiring and other electrical equipment belonging to the Owner or other contractors under any circumstances, whatsoever, unless expressly permitted in writing by APCPL to handle such fuses, wiring or electrical equipment.
- 31.11 Before the Contractor connects any electrical appliances to any plug or socket belonging to the other Contractor or Owner, he shall:
- a) Satisfy the Engineer that the appliance is in good working condition;

- b) inform the Engineer of the maximum current rating, voltage and phases of the appliances;
 - c) obtain permission of the Engineer detailing the sockets to which the appliances may be connected.
- 31.12 The Engineer will not grant permission to connect until he is satisfied that:
- a) The appliance is in good condition and is fitted with suitable plug;
 - b) The appliance is fitted with a suitable cable having two earth conductors, one of which shall be an earthed metal sheath surrounding the cores.
- 31.13 No electric cable in use by the Contractor/Owner will be disturbed without prior permission. No weight of any description will be imposed on any cable and no ladder or similar equipment will rest against or attached to it.
- 31.14 No repair work shall be carried out on any live equipment. The equipment shall must be declared safe by the Engineer-in-Charge and a permit to work shall be issued by the Engineer-in-Charge before any repair work is carried-out by the Contractor. While working on electric lines/equipments whether a live or dead, suitable type and sufficient quantity of tools will have to be provided by the Contractor to electricians/workmen/officers.
- 31.15 The Contractor shall employ necessary number of qualified, full time Electricians/ Electrical Supervisors to maintain his temporary electrical installations.
- 31.16 The Contractor employing more than 250 workmen whether temporary, casual, probationer, regular or permanent or on contract, shall employ at least one full time officer exclusively as Safety Officer to supervise safety aspects of the equipments and workmen, who will co-ordinate with the Project Safety Officer. In case of work being carried out through sub-contractors, the Sub-contractor's workmen/employees will also be considered as the Contractor's employees/workmen for the above purpose. The name and address of such Safety Officer of the Contractor will be promptly informed in writing to the Engineer-in-Charge with a copy to the Safety Officer-in-Charge before he starts work or immediately after any change of the incumbent is made during currency of the Contract.
- 31.17 In case any accident occurs during the construction/ erection or other associated activities undertaken by the Contractor thereby causing any minor or major or fatal injury to his employees due to any reason, whatsoever, it shall be the responsibility of the Contractor to promptly inform the same to APCPL's Engineer-in-Charge in the prescribed form and also to all the authorities envisaged under the applicable laws.
- 31.18 The Engineer-in-Charge shall have the right at his sole discretion to stop the work, if in his opinion the work is being carried out in such a way that it may cause accidents and endanger the safety of the persons and/or property, and/or equipments. In such cases, the Contractor shall be informed in writing about the nature of hazards and possible

injury/accident and he shall comply to remove short comings promptly. The Contractor after stopping the specific work, can, if felt necessary, appeal against the order of stoppage of work to the General Manager of the Project within 3 days of such stoppage of work and decision of Project GM in this respect shall be conclusive and binding on the Contractor.

31.19 The Contractor shall not be entitled for any damages/ compensation for stoppage of work due to safety reasons as provided in para 31.18 above and the period of such stoppage of work will not be taken as an extension of time for completion of work and will not be the ground for waiver of levy of liquidated damages.

31.20 The Contractor shall follow and comply with all APCPL Safety Rules relevant provisions of applicable laws pertaining to the safety of workmen, employees, plant and equipment as may be prescribed from time to time without any demur, protest or contest or reservation. In case of any inconformity between statutory requirement and APCPL Safety Rules referred above, the later shall be binding on the Contractor unless the statutory provisions are more stringent.

31.21 If the Contractor fails in providing safe working environment as per APCPL Safety Rules or continues the work even after being instructed to stop the work by the Engineer-in-Charge as provided in para 31.18 above, the Contractor shall promptly pay to APCPL, on demand i.e. by the Owner, compensation at the rate of Rs. 5,000/- per day or part thereof till the instructions are complied with and so certified by the Engineer-in-Charge. However, in case of accident taking place causing injury, to any individual, the provisions contained in para 31.22 shall also apply in addition to the compensation mentioned in this para.

31.22 If the Contractor does not take all safety precautions and/or fails to comply with the Safety Rules as prescribed by APCPL or under the applicable law for the safety of the equipment and plant and for the safety of Personnel and the Contractor does not prevent hazardous conditions which cause injury to his own employees or employees of other contractors, or APCPL employees or any other person who are at the Site or adjacent thereto, the Contractor shall be responsible for payment of compensation to APCPL as per the following schedule :-

a)	Fatal injury or accident causing death	Rs 1,00,000/- per person	These are applicable for death/ injury to any person whosoever
b)	Major injuries or accident causing 25% or more permanent disablement to workmen or employees	Rs 20,000/- per person	

Permanent disablement shall have the same meaning as indicated in Workmen's Compensation Act. The compensation mentioned above shall be in addition to the compensation payable to the workmen/employees under the relevant provisions of the

Workmen's Compensation Act and Rules framed thereunder or any other applicable laws as applicable from time to time. In case the Owner is made to pay such Compensation then the Contractor is liable to reimburse the Owner such amount in addition to the compensation indicated above.

- 31.23 If the Contractor observes all the Safety Rules and Codes, Statutory Laws and Rules during the currency of the Contract awarded by the Owner and no accident occurs then the APCPL may consider the performance of the Contractor and award suitable "ACCIDENT FREE SAFETY MERITORIOUS AWARD" as per scheme as may be announced separately from time to time.

32.0 **CODE REQUIREMENTS**

The erection requirements and procedures to be followed during the installation of the equipment shall be in accordance with the relevant Indian Boiler Regulations. ASME codes and accepted good engineering practice, the Engineer's Drawings and other applicable Indian recognised codes and laws and regulations of the Government of India.

33.0 **FOUNDATION DRESSING & GROUTING**

- 33.1 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.

- 33.2 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.

- 33.3 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.

33.4 **Grouting Mix**

The grouting mixture shall be composed of portland cement, sand and water. The portland cement to be used shall conform to ISI No. 269 or equivalent, sand shall conform to ISI No. 383/2386 or equivalent. The grout proportions for flat based where the grouting space does not exceed 35 mm shall be 50 kg bag of cement to 75 kg of sand. Only the required quantity of water shall be added so as to make the mix quaky and flowable and the mix shall not show excess water on top when it is being puddled in place. For thicker grout beds upto 65 mm, the amount of sand shall be increased to 105 kg per bag of cement. Bases which are hollow and are to be filled full of grouting shall be filled to a level of 25 mm above the outside rim with a mortar mix in the volumetric proportions of one bag of cement and 1.5 bags sand and 1.5 part 6 mm granite gravel. An acceptable plasticiser may be added to the grout mixes in a proport plasticisers manufacturer. All such grouts shall be thoroughly mixed for not less than five minutes in an approved mechanical mixer and shall be used immediately after mixing.

33.5 **Placing of Grout**

33.5.1 After the base has been prepared, its alignment and level has been checked and approved and before actually placing the grout a low dam shall be set around the base at a distance that will permit pouring and manipulation of the grout. The height of such dam shall be at least 25 mm above the bottom of the base. Suitable size and number of chains shall be introduced under the base before placing the grout, so that such chains can be moved back and forth to push the grout into every part of the space under the base.

33.5.2 The grout shall be poured either through grout holes if provided or shall be poured at one side or at two adjacent sides giving it a pressure head to make the grout move in a solid mass under the base and out in the opposite side. Pouring shall be continued until the entire space below the base is thoroughly filled and the grout stands at least 25 mm higher all around than the bottom of the base. Enough care should be taken to avoid any air or water pockets beneath the bases.

33.6 **Finishing of the Edges of the Grout**

The poured grout should be allowed to stand undisturbed until it is well set. Immediately thereafter, the dam shall be removed and grout which extends beyond the edges of the structural or equipment base plates shall be out off flush and removed. The edges of the grout shall then be pointed and finished with 1:2 cement mortar pressed firmly to bond with the body of the grout and smoothed with a tool to present a smooth vertical surface. The work shall be done in a clean and scientific manner and the adjacent floor spaces, exposed edges of the foundations, and structural steel and equipment base plates shall be thoroughly cleaned of any spillage of the grout.

33.7 **Checking of Equipment after Grouting**

After the grout is set and cured, the Contractor shall check and verify the alignment of equipments, alignment of shafts of rotating machinery, the slopes of all bearing pedestals, centering of rotors with respect to their sealing bores, couplings, etc. as applicable and the like items to ensure that no displacement had taken place during grouting. The values recorded prior to grouting shall be used during such post grouting check-up and verifications. Such pre and post grout records of alignment details shall be maintained by the Contractor in a manner acceptable to the Engineer.

34.0 **SHAFT ALIGNMENTS**

All the shafts of rotating equipment shall be properly aligned to those of the matching equipments to as perfect an accuracy as practicable. The equipment shall be free from excessive vibration so as to avoid over-heating of bearings or other conditions which may tend to shorten the life of the equipment. All bearings, shafts and other rotating parts shall be thoroughly cleaned and suitably lubricated before starting.

35.0 **DOWELLING**

All the motors and other equipment shall be suitably dowelled after alignment of shafts with tapered machined dowels as per the direction of the Engineer.

36.0 CHECK OUT OF CONTROL SYSTEMS

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 systems for the equipment furnished and installed under these specifications and documents.

37.0 COMMISSIONING SPARES

The Contractor shall make arrangements 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 this commissioning activities necessitating the requirements of spares will not come in the way of timely completion of the Works under the Contract.

38.0 CABLING

38.1 All cables shall be supported by conduits or cable tray run in air or in cable channels. These shall be installed in exposed runs parallel or perpendicular to dominant surfaces with right angle turn made of symmetrical bends or fittings. When cables are run on cable trays, they shall be clamped at a minimum intervals of 2000 mm or otherwise as directed by the Engineer.

38.2 Each cable, whether power or control, shall be provided with a metallic or plastic tag 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 of the cable adjacent to the terminations. Cable routing is to be done in such a way that cables are accessible for any maintenance and for easy identification.

38.3 Sharp bending and kinking of cables shall be avoided. The minimum radii for PVC insulated cables 1100V grade shall be 15 D where D is the overall diameter of the cable. Installation of other cables like high voltage, coaxial, screened, compensating, mineral insulated shall be in accordance with the cable manufacturer's recommendations. Wherever cables cross roads and water, oil, sewage or gaslines, special care should be taken for the protection of the cables in designing the cable channels.

38.4 In each cable run some extra length shall be kept at a suitable point to enable one or two straight through joints to be made, should the cable develop fault at a later date. Control cable terminations shall be made in accordance with wiring diagrams, using identifying codes subject to the Engineer's approval. Multicore control cable jackets shall be removed as required to train and terminate the conductors. The cable jacket shall be left on the cable, as far as possible. The insulated conductors from which the jacket is removed shall be neatly twined in bundles and terminated. The bundles shall be firmly but not tightly tied utilising plastic or nylon ties or specifically treated fungus protected cord made for this purpose. The control cable conductor insulation shall be securely and evenly cut.

38.6 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 & washers. The insulating sleeve shall be fire resistant and shall be long enough to over-pass the conductor insulation. All control cables shall be fanned out and connection made to terminal blocks and test equipment for proper opera cables are corded together.