

ANDREW YULE & COMPANY LTD.
(A Government of India Enterprise)
ELECTRICAL DIVN./CHENNAI OPERATION
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TENDER NO: T- 02 /12-13

Scaled Tenders invited from reputed service providers for following:

**TENDER FOR UNLOADING, ERECTION & COMMISSIONING OF TRANSFORMER
AND ACCESSORIES AT TANTRANSKO (TNEB) SUBSTATIONS**

Last date for submission of tender is 24/09/2012 up to 10.45 AM

Tenders will be opened on the 24/09/2012 at 11

EMD Rs.16000/- for T-02/12-13

**Documents can be had from DGM (Materials) with cash/DD of Rs.200/-each till one
day before the tender opening. Documents can be downloaded from here also.**

**ANDREW YULE AND COMPANY LIMITED
(A GOVERNMENT OF INDIA ENTERPRISE)
ELECTRICAL DIVN./CHENNAI OPERATION
5/346, OLD MAHABALIPURAM ROAD, PERUNGUDI,
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TENDER NO: T- 02 /12-13

TENDER FOR UNLOADING, ERECTION & COMMISSIONING OF
TRANSFORMER AND ACCESSORIES AT TANTRANSO (TNEB)
SUBSTATIONS

Last Date of submission of Tender:**24.09.2012 up to 10.45 A.M.**

Tender will be opened on 24.09.2012 at 11.00 AM

EMD Rs. 16,000/- (Rs. Sixteen Thousand Only)

Cost of Tender Document: Rs:200/-(Rs Two Hundred Only)

Bidders are requested to be present at the time of tender opening.

TENDER DOCUMENT FOR UNLOADING, ERECTION & COMMISSIONING OF POWER
TRANSFORMERS AT TANTRANSCO (TNEB) SUBSTATIONS

Sealed Tenders are reputed contractors for Unloading, Erection & Commissioning of Power Transformers at TANTRANSCO (TNEB) Substations at various destinations in Tamil Nadu.

Approximate quantity of transformers to be Unloaded & Commissioned is 15 nos (16 MVA – 13 Nos. & 25 MVA – 2 Nos.).

The quantity given is tentative only.

I .Transformer Rating: 16 MVA/110 kV.

- 1) Length of Transformer : 5.35 m (Approx)
- 2) Width of Transformer : 3.0 m (Approx)
- 3) Height of Transformer : 3.25 m (Approx)
- 4) Main job weight : 33.0 MT (Approx)
- 5) Accessories weight : 6.0 MT (Approx)
- 6) Total Oil Quantity : 12650 lit (Approx)

Quantity: 13 Nos.

Location: Anywhere in Tamil Nadu.

II .Transformer Rating: 25 MVA/110 kV.

- 1) Length of Transformer : 5.30 m (Approx)
- 2) Width of Transformer : 2.80 m (Approx)
- 3) Height of Transformer : 3.55 m (Approx)
- 4) Main job weight : 45.0 MT (Approx)
- 5) Accessories weight : 7.40 MT (Approx)
- 6) Total Oil Quantity : 15180 lit (Approx)

Quantity: 2 Nos.

Location: Anywhere in Tamil Nadu

During the execution of the contract and also at the time of placement of contract, the buyer reserves the right either to decrease or increase the quantity by 25 %.

VALIDITY: Your offer should be valid for acceptance for a minimum period of 120 days from the date of tender opening and the contract will be valid for one year from the date of tender opening.

The buyer reserves the right to accept or reject any or all the tenders or to waive any informality, minor deviation or omission without assigning any reasons whatsoever.

Bidders who have down loaded this tender document from our web site should enclose a DD for Rs: 200 /= in favour of ANDREW YULE & CO.LTD, Payable at Chennai towards cost of tender document

GENERAL TERMS AND CONDITIONS OF THE TENDER

The offer should be submitted as per two parts bids as follows:

1. Commercial bid along with DD for EMD and necessary copies of certificates/details in a separate sealed cover Super scribing "QUOTATION FOR Unloading, Erection & Commissioning of Power Transformers at TANTRANSCO (TNEB) Substations T-02 /12-13 DUE ON 24.09.2012 (COMMERCIAL BID)"
2. Price bid in a separate sealed cover Super scribing "QUOTATION FOR Unloading, Erection & Commissioning of Power Transformers at TANTRANSCO (TNEB) Substations T-02 /12-13 DUE ON 24.09.2012 (PRICE BID)".
3. Both the Sealed cover containing Commercial Bid and Price Bid should be put in one cover Super scribing "QUOTATION FOR Unloading, Erection & Commissioning of Power Transformers at TANTRANSCO (TNEB) Substations T-02 /12-13 DUE ON 24.09.2012 (COMMERCIAL BID AND PRICE BID)".
4. **EMD:** The bidders should enclose a Demand Draft for Rs: 16,000/= towards EMD. Price bid of bidders who have not submitted EMD will not be opened.

For bidders already enlisted with AYCL- Chennai Operation, having outstanding amount more than the EMD amount or who have already submitted the EMD against our earlier tenders or who have security deposit available with us, may apply for adjustment of the same. The total EMD should be as mentioned in the tender.

This EMD amount will be converted into Security Deposit. This Security amount will not carry any interest.

5. **Qualifying Requirement:** Bidder should enclose

1 Minimum five similar/ equivalent transformer job work carried out on each rating. Necessary certificate of performance and purchase order shall be enclosed. For contractors who have already carried out for Andrew yule , no certificate is required.

6. The Sealed Price Bid should have breakup for the following:

A) UNLOADING:

i) Charges for unloading of main transformer and accessories and placing it in the plinth and fixing the wheels/ near the plinth/ inside the store, etc.as per our/ Client Instruction. Separate per meter charges for leading the main transformer for more than 15 m (minimum 15 m leading is to be included in the main scope), to be mentioned.

ii) Separate bill processing and getting "LOI" and forwarding to the TNEB Chennai Head Quarters for Bill processing and follow up in TNEB, Head Quarters.

B) ERECTION:

Erection, CT Testing, Co-ordination with TNEB, oil filtering, wiring, testing coordination and Commissioning of the transformer.

Note: The Oil filtration should be done with a High Vacuum filter plant of capacity 4500litres/ hour or more.

7. BRIEF NATURE OF SCOPE OF WORK:

Wherever requested, you shall undertake the unloading, erection of the transformer supplied and to make the transformer ready for testing and commissioning and it includes the following:

a) Unloading the Transformer from the trailer on the plinth or if the plinth is not ready the Transformer shall be unloaded adjacent to plinth/ any other site as decided by their Site Engineer. The accessories shall also be unloaded .Placing of the transformer on the plinth and fixing of wheels and carrying out stop block welding including moving the transformer to the plinth, where the transformer is supplied and unloaded near the plinth.

b) Whenever necessary, proper arrangement for attaching slings for lifting shall be provided.

c) The Contractor has to supply, lay, erect and weld M.S.Channel, Flat of the 50x8 mm. sizes, including green painting and providing with adequate bolts and nuts as applicable. 50x8mm. Flat with suitable M.S.Channel for earthing with neutral bushing at two different earth points of existing earth pit, Transformer tank, Cooler fan and pumps. D.M.box RTCC panel & other accessories body earthing with required standards.

d) Erection of the following, wherever applicable:

- (i) HV bushing with turrets
- (ii) LV and neutral bushing with turrets.
- (iii) Cable boxes
- (iv) Bushing current transformers
- (v) Conservators
- (vi) Valves
- (vii) Radiators
- (viii) Fans/pumps
- (ix) Buchholz relay
- (x) Surge relay
- (xi) Gaskets
- (xii) Temperature indicators
- (xiii) Others wherever stated

e) Erection of the Drive Mechanism Box, Marshalling at site with equipment and RTCC Panel in the control room after removing the existing panel, if any.

f) Filling of transformer oil in the transformer and OLTC under hot oil circulation, vacuum drying wherever applicable/necessary to the required level and circulation of oil till satisfactory results are obtained before commissioning.

g) i) The Contractor scope of work shall include all the control cables required for the successful commissioning of Power Transformers including supply, laying, providing suitable glands ferrules, lugs, termination etc., but not limited to the above mentioned for successful commissioning of the transformer as per standard requirement.

- 1) Protection schemes of Power Transformer including differential protection cable.
- 2) Indication/Annunciation scheme for cooler fan and pumps.
- 3) OLTC Remote operation
- 4) OLTC fan, pump D.M. power supply cable
- 5) DC cable from control room to Transformer
- 6) Scada scheme for Remote/Automation operation
- 7) CTs cable from CT secondary to Marshalling Box and Marshalling box to LV panel/RTCC panels

- 8) Any other control cable with required site for successful commissioning of the transformer
- 9) Interconnection of cables for AC/DC panels to RTCC/LV panels

All Cables required will be supplied by AYCL. The length of cables will be decided at the time of allocation of Destination by TANTRANSCO.

h) One Coat of Aluminum Painting as required will be carried out so as to maintain the finish of the surface of the transformer and accessories prior to the erection of the same at site. Top metal portions of the HV& LV Bushings are to be painted with Red, Yellow & Blue. All the LV & HV (if any) Neutral and neutral flats & Tank, OLTC, Marshalling Box, etc. earthing flats are to be painted with green.

i) Any assistance required for testing and commissioning of Transformer.

Any other works not covered in the items detailed above but required for satisfactory commissioning of the power transformer shall also to be carried out by the contractor.

Note:

1i) If the commissioning of the transformer is unduly delayed due to incomplete erection, we (Andrew Yule & CO. Ltd.) reserve the right to carryout the work from other sources at the risk & cost of the original contractor.

8. PAYMENT:

i) For Unloading:

100 % bill value after 90 days from the date of remark free unloading of the transformer.

If the accessories truck unloading is not carried out by the bidder, 40% of the bill (order) value will be deducted from the unloading Bill & any damages to the other parties unloading of accessories will be of the Original Contractor's cost and Risk.

ii) For Erection/ Commissioning:

a) 90% payment of the erection amount (excluding unloading charges) in 90 days from the date of commissioning or 60% of the payment in 120 days of completion of work/ erection of the transformer whichever is earlier. Balance 30% of the erection will be released after one month of

successful commission of the transformer. Please note that the erection bill should accompany a commissioning report along with your bill. In the case of completion of erection, a certificate from the TANTRANSCO (TNEB) or from Our Engineers should be produced along with the bill.

b) Balance 10% of the total amount after 12 months from the date of successful commissioning of the transformer subject to the condition that no remarks on erection/ leakage/ earthing etc., of the particular transformer. If any such remarks have been received, the same has to be rectified FREE OF COST. Alternately, this 10% payment may also be released against an equivalent BG.

iii) Payment Follow-up: 90 days from the date of receipt of payment from TANTRANSCO (TNEB)

c) No interest will be applicable on delayed payment.

d) The offer should be **firm and no change in price is accepted.**

e) Tax Deduction at Source will be applicable on the payment.

9. LOSS OR DAMAGE:

The contractor is responsible for the safe erection of the equipment/ materials.

10. SCHEDULE OF UNLOADING:

The transformer should be unloaded on the plinth/ nearby plinth wherever applicable within three days of receiving message from us/ two days of trailer/truck reaching the site. If any delay beyond the above in unloading the transformer/ accessories the halting charges of trailer/ truck will be deducted from your bill.

11. SCHEDULE OF ERECTION:

The erection work shall be completed for the transformer entrusted within very short period (Maximum and minimum time of erection, etc work to be specified in the offer) from the date of handing over the site/ plinth by TANTRANSCO (TNEB).

The date of readiness of transformer for testing to be intimated at least before three days so as to inform our Client and arrange for the testing/ commissioning as per their schedule.

12. FAILURE TO EXECUTE THE CONTRACT:

Contractor failing to execute the contract placed on them to the satisfaction of the Andrew Yule & Co. under the terms and conditions set forth therein, will be liable to make good the loss sustained by the Andrew Yule & Co. Ltd., consequent to the placing of fresh orders elsewhere at higher rate, i.e. the difference between the price accepted in the contract already entered into and the price at which fresh orders have been placed.

13. DEFECTIVE ERECTION

If during the period of erection, it is found that goods already erected are defective in workmanship or do not confirm to specification or unsuitable for the purpose for which they are erected, then it will be open to AYCL either to repudiate the entire contract and claim such loss that AYCL may suffer on that account or require the contractor to rectify the work.

Similarly, if during the guarantee period of the transformer, any of the goods found to be defective in workmanship or do not confirm to specification or are unsuitable for the purpose for which they are erected, it will be open to AYCL either to repudiate the entire contract and claim damages or accept such parts of the goods that are satisfactory and require the contractor to replace the balance or to claim compensation for the entire loss sustained by the AY&CO. on that account.

14. Legal condition:

Any contract entered against this tender will be as per the following legal condition

It is recorded that this purchase order / contract / agreement is executed and concluded by and between the parties hereto at premises No.5/346, Old Mahabalipuram Road, Perungudi, Chennai 600 096 and in the event any dispute arises out of this agreement between the parties only the appropriate Civil Court in the City of Kolkata shall have the exclusive jurisdiction to entertain, try and determine the said proceedings in exclusion of all other courts.

15. REGULATION OF LOCAL AUTHORITIES AND STATUTES:

The Contractor shall comply with all the rules and regulations of local authorities during the performance of its field activities. The Contractor 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 there under in respect of any employee or workman employed or engaged by it or its Sub-Contractor.

16. OWNERS (Our Client like TNEB) LIEN ON EQUIPMENT:

The Owner shall have lien on all equipment including those of the Contractor, brought to the Site for the purpose of erection, testing and commissioning of the plant. The Owner shall continue to hold the lien on all such equipment throughout the period of Contract. No material brought to the site shall be removed from the site by the Contractor and/or its Sub-contractors without prior written approval of the Site Engineer.

17. INSPECTION, TESTING AND INSPECTION CERTIFICATES:

The Site Engineer shall have the right to re-inspect any equipment, even though the same may have been 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 Site Engineer rejects any equipment, the Contractor shall make good such rejected equipment etc., either by replacement or modification/repairs as may be necessary to the satisfaction of the Site Engineer. Such re-placements 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 the replacements or re-work done to the Contractor's work.

18. ACCESS TO SITES AND WORKS ON SITE:

The works so far as it is carried out on the Client premises, shall be carried out at such times as the TNEB may approve and TNEB shall give the Contractor reasonable facilities for carrying out the works.

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

19. CO-OPERATION WITH OTHER CONTRACTORS

The Contractor shall co-operate with all other Contractors or tradesmen/ representative(s) of the Owner, who may be performing other works on behalf of the Owner and the workmen who may be employed by the Owner and doing work in the vicinity of the works under the Contract. The Contractor shall also so arrange to perform its work as to minimise, to the maximum

extent possible, interference with the work of other Contractors and their work-men. Any injury or damage that may be sustained by the employee(s) of the other contractors and the Owner, due to the Contractor's work shall promptly be made good by the Contractor at its own expense. The site 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 work of the Contractor is delayed because of any acts of omission of another Contractor, the Contractor shall have no claim against the Owner on that account other than an extension of time for completing its works.

The Site 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 Site Engineer shall determine the corrective measures, if any, required to rectify this situation after inspection of the works and such decisions by the Site Engineer shall be binding on the Contractor.

20 DISCIPLINE OF WORKMEN

The Contractor shall adhere to the disciplinary procedure set by the Site Engineer in respect of its/its Sub-Contractor's employees and workmen at site. The Site Engineer shall be at liberty to object to the presence of any representative or employee of the Contractor/its Sub-Contractor at the site, if in the opinion of the Site Engineer such representative/ employee has misconduct himself or is incompetent or negligent or other-wise undesirable. The Contractor shall remove such person(s) objected to, and provide competent replacement in his place.

21. PROTECTION OF WORK

The Contractor shall have total responsibility for protecting its works till it is finally taken over by the Site Engineer. No claim will be entertained by the Owner or by the Site 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 original conditions, to comply with the specification(s) and drawings. Should any such damage to the Contractor's works occur because of any other party not being under its supervision or control, the Contractor shall make its claim directly to the party concerned without involving the Owner. .

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.

22. EMPLOYMENT OF LABOUR

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

2 All traveling 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.

3 The hours 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.

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

5 In case the Owner becomes liable to pay any wages or dues to the labour or 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.

6. 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, at its own cost shall make its own further distribution arrangement. All temporary wiring shall comply with local regulations and will be subject to Site Engineer's inspection and approval before connection to supply.

23. FACILITIES TO BE PROVIDED BY THE CONTRACTOR

i Tools, scaffolding and tackle

ii. The Contractor shall bring to site all the construction /erection equipment tools, tackle, scaffolding etc required for pre-assembly, erection of the equipment covered under the contract. He shall submit a list of all such materials to the Site Engineer before the commencement of pre- assembly at Site.

iii. The following items are generally required

- (1) Lifting equipment:
 - (a) Derrick or mobile crane of adequate capacity.
 - (b) wire ropes
 - (c) pulley blocks
 - (d) chain blocks
 - (e) Manila ropes,
 - (f) shackles
 - (g) sleepers.
- (2) Oil purifier with heating and vacuum facilities and hot oil resistant hose pipes.
- (3) Vacuum pump
- (4) Oil storage tank.

iv. The Owner shall have a lien on such goods for any sum or sums which may at any time be due or owing to it by the Contractor.

v. After the completion of the Works, the Contractor shall not remove from the Site, the materials such as construction equipment, erection tools and tackle, scaffolding etc. without permission of the Site Engineer.

24. First - Aid

The Contractor shall provide necessary first-aid facilities for all its employees, representatives and workmen working at the site. Adequate number of Contractor's personnel shall be trained in administering first-aid.

25. Cleanliness

1. The Contractor shall be responsible for keeping the entire allotted area clean and free from rubbish, debris etc. during the period of Contract.

2. Waste oil shall be disposed off in a manner acceptable to the Owner. Under no circumstances shall waste oil be dumped into uncontrolled drains.

26. FIRE PROTECTION

1. All the Contractor's supervisory personnel and sufficient number of workers shall be trained for fire-fighting and shall be assigned specific fire protection duties. Enough of such trained personnel shall be available at the Site during the entire period of the Contract.

2. The Contractor shall provide enough fire protection equipment of the types and number for the ware-house, office, temporary structures, labour colony area etc. Access to such fire protection equipment, shall be easy and kept open at all times.

27. SECURITY

The Contractor shall have total responsibility for all equipment and materials in its custody, stored, loose, semi-assembled and/or erected by it 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 work site only with the written permission of the Site Engineer in the prescribed manner.

28. MATERIALS HANDLING AND STORAGE

1. All the equipment furnished under the Contract and arriving at Site shall be promptly received, unloaded and transported and stored in the storage by the Contractor.

2. The Contractor shall be responsible for examining all the consignment and shall notify the Site Engineer immediately of any damage, shortage, discrepancy etc. for the purpose of Site Engineer's information only. 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 as well as for preferring all claims with the underwriter(s). Any demurrage, wharfage and other such charges claimed by the transporters, railways etc., shall be to the account of the Contractor.

3. The Contractor shall maintain an accurate and exhaustive record detailing out the list of all equipment received by it for the purpose of erection and keep all such record open for the inspection of the Site Engineer.

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 Site Engineer. The equipment stored shall be properly protected to prevent damage either to the equipment or to the floor where they are stored.

5. The Contractor shall ensure that all the packing materials and protection devices used for the various equipment during transit and storage are removed before the equipment are installed.

6. All the materials stored in the open or dusty location(s) shall be covered with suitable weather-proof and flameproof covering material, wherever applicable.

7. The Contractor shall be responsible for making suitable indoor storage facilities, to store all equipment which requires indoor storage. Normally, all the electrical equipment such as motors, control gears and consumables shall be stored in the closed storage space.

29. CONSTRUCTION MANAGEMENT

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

2. Time is the essence of the Contract and the Contractor shall be responsible for performance of its works in accordance with the specified construction schedule.

30. PROTECTION OF PROPERTY AND CONTRACTOR'S LIABILITY

The Contractor shall be responsible for any damage resulting from its operations. It 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 equipment and utilities either above or below the ground.

31. INSURANCE

1. In addition to the conditions covered under the Clause, titled Insurance the following provisions will also apply to the portion of works to be done beyond the Contractor's own or its Sub-Contractor's manufacturing Works.

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 its or its 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
Employee's liability :	As per statutory Provisions

3. Comprehensive Automobile Insurance

This insurance shall be in such 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. The minimum liability covered shall be as herein indicated:

Fatal Injury	:	Rs. 100,000 each person
	:	Rs. 200,000 each occurrence
Property Damage	:	Rs. 100,000 each occurrence

4. Comprehensive General Liability Insurance

4.1. The 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, its agents, its employees, its 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 titled Defence of Suits under General Conditions of Contract of this Volume-1A.

4.2. The hazards to be covered will pertain to all the works and areas where the Contractor, its Sub-Contractors, its agents and employees have to perform work pursuant to the Contract.

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 its liabilities either direct or indirect, in pursuance of the Contract.

32. WORK & SAFETY REGULATIONS

1. The Contractor shall ensure proper safety of all the workmen, materials plant and equipment belonging to it or to the others, working at the site. The Contractor shall also be responsible for provision of all safety notices and safety equipment required by the relevant legislations and deemed necessary by the Site Engineer.

2. 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 equipment shall be strictly operated and maintained by the Contractor in accordance with manufacturer's operation manual and safety instructions and as per Guidelines/Rules in this regard.

3. Periodical examinations and all tests for all lifting/hoisting equipment & tackle shall be carried-out in accordance with the relevant provisions of Factories Act 1948, Indian Electricity Act 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 Site Engineer or by the persons authorised by him.

4. No electric cable in use by the Contractor/Owner will be disturbed without prior permission.

5. No repair work shall be carried out on any live equipment. The equipment must be declared safe by the Site Engineer and a permit to work shall be issued by the Site Engineer before any repair work is carried out by the Contractor. While working on electric lines/equipment whether live or dead, suitable type and sufficient quantity of tools will have to be provided by Contractor to electricians/workmen/officers.

6. The Contractor shall employ necessary number of qualified, full time electricians/electrical supervisors to maintain its temporary electrical installations.

7. 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 its employees due to any reason whatsoever, it shall be the responsibility of the Contractor to promptly inform the same to the Site Engineer in prescribed form and also to all the authorities envisaged under the applicable laws.

8. The Site Engineer shall have the right at its sole discretion to stop the work, if in its opinion the work is being carried out in such a way as may cause accidents and endanger the safety of the persons and/or property, and/or equipment. 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 Site Engineer within 3 days of such stoppage of work and the decision of the Site Engineer in this respect shall be conclusive and binding on the Contractor.

9. The Contractor shall not be entitled for any damages/compensation for stoppage of work due to safety reasons as provided 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.

10. The Contractor shall follow and comply with all 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 unconformity between statutory requirement and Safety Rules referred above, the latter shall be binding on the Contractor unless the statutory provisions are more stringent.

11. If the Contractor does not take all safety precautions and/or fails to comply with the Safety Rules as prescribed by the Owner or as prescribed under the applicable law for the safety of the equipment, plant and personnel and the Contractor does not prevent hazardous conditions which may cause injury to its own employees or employees of other Contractors, or Owner or any other person at Site or adjacent thereto, the Contractor shall be responsible for payment of compensation to the Owner as per the following schedule :-

- | | | | |
|-------------------------------|---|----------------|--------------------------|
| a) Fatal injury or accident | } | Rs. 1,00,000/- |) These are |
| causing death | } | (per person) | applicable |
| | | | for death injury |
| | | | to any person whosoever. |
| b) Major injuries or accident | } | Rs. 20,000/- | |
| accident causing 25% or | } | (per person) | |
| or more permanent disability | } | | |
| to work men or employees | } | | |

Permanent disability 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 there under or any other applicable law as applicable from time to time. In case the Owner is made to pay such compensation, the Contractor will be liable to reimburse the Owner such amount(s) in addition to the compensation indicated above.

33. CODE REQUIREMENTS

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

the Government of India.

34. CHECK OUT OF CONTROL SYSTEMS

After completion of wiring and cabling the Contractor shall check out the operation of all control systems for the equipment furnished and installed under these specifications and documents.

35. CABLING

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 for fittings. When cables are run on cable trays, they shall be clamped at minimum intervals of 2000 mm or otherwise as directed by the Site Engineer.

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.

3. Sharp bending and kinking of cables shall be avoided. The minimum radii for PVC insulated cables 1100 V 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.

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.

5. Control cable terminations shall be made in accordance with wiring diagrams, using identifying codes subject to Site 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 to the point of the first conductor branch. 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. Control cable conductor insulation shall be securely and

evenly out.

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 in Elmex terminals and 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 operation before cables are corded together.