

# **COUNCIL FOR LEATHER EXPORTS**

(Sponsored by Ministry of Commerce & Industry, Government of India)

*Registered office & Head office:*

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Chennai – 600 008, India

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## **ELECTRICAL INSTALLATION WORKS FOR COMMON FACILITY CENTRE AT MELVISHARAM**

**UNDER CENTRAL ASIDE COMPONENT OF GOVERNMENT OF INDIA**

### **NOTICE INVITING TENDER**

**Tender Notice No. : CLE-HO/ASIDE/CFC-M/2016/02 dated 25-11-2016**

## **TENDER DOCUMENT**

### **Volume – 1: General - Instruction to Tenderers, General Conditions of Contract and Safety Code**

*for*

**Electrical installations for Common Facility Centre at Melvisharam  
at S. F. No. 340/1C, C. Abdul Hakeem Road  
Melvisharam – 632 509  
Vellore District**

*Promoter Organization:*

**VISHARAM TANNERS COMMON FACILITY CENTRE PVT LTD  
(VISHTAN)**

**S. F. No. 340/1C, C. Abdul Hakeem Road  
Melvisharam – 632 509**

## **Brief summary**

Common Facility Centre Pvt. Ltd in Melvisharam Leather Cluster for providing machinery services using technologically advanced tannery machines. The project is being implemented by the Council for Leather Exports. Indian Leather Industry Foundation (ILIFO) is the project management consultant. The construction of buildings, office room and other ancillary civil works are ongoing at the project site in Melvisharam.

## **Scope of Work**

This tender is for providing electrical installations for the common facility centre including, transformer yard, diesel generator, main MV panel, LT panels, distribution boards, cables, earthing, wiring and cabling using cable trays, conduits wherever necessary, lighting, emergency lighting through UPS, telephone and data cabling, lightning arrester, and associated civil works. Indicative BOQ has been provided. The price fixed will be final until completion of the project. No escalation or additional quantities are acceptable. If any additional quantities are required the bidders shall provide the additional quantities in the additional sheets in the technical bid and the same has to be reproduced along with prices in the price bid.

The successful tenderer shall prepare a detailed design and working drawings based on this tender document and submit before the commencement of the work for the approval of PMC and CLE. The successful tenderer shall obtain the approval of Chief Electrical Inspector to Government of Tamil Nadu and electrical department authorities on working drawings, safety certificate approval for energization for the entire electrical works including Diesel Generator.

The bill of quantities is provided in Schedule A and Schedule B (Volume-III). Tenderer are required to quote for both Schedules. However, CLE reserves the right to choose items in these schedules while placing the order without assigning any reasons for. Failure to quote for any one Schedule will lead to disqualification of tender.

## **Site Location**

The site location is in Melvisharam which is about 120 km from Chennai. An area of about 3 acres is available for this purpose.

The main points of the tender are provided below:

Earnest money deposit	Rs. 2,20,400/- (Rupees: Two Lakhs Twenty Thousand Four Hundred only).The EMD should be submitted at the time of submission of tender comprising of Technical bid (Part I) and Financial Bid (Part II). The EMD should be submitted in the form of Demand Draft from public sector or scheduled bank issued in favour of Council for Leather Exports payable at
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	Chennai. Cheque for EMD will not be accepted. Tenders which are not accompanied with Earnest Money Deposit shall be summarily rejected.
Period of completion	Five (5) months, from the date of award of contract
Bidding procedure	Two bid system
Stipulated dates of tendering	<p>Issuance of tender document: from 28.11.2016 to 12.12.2016, from 10.00 AM to 5.00 PM on all working days</p> <p>Pre-bid meeting: 11.30 AM on 6<sup>th</sup> December 2016 (Tuesday) at 11.30 a.m. at CLE, Chennai</p> <p>Last date for submission of bids: 15<sup>th</sup> December 2016 (Thursday) before 3.00 p.m. at CLE, Chennai</p> <p>Opening of technical bids: 15<sup>th</sup> December 2016 (Thursday) at 3.30 p.m. at CLE, Chennai</p>
Cost of tender document	Rs.7,000/- to be remitted by demand draft favoring “ <b>Council for Leather Exports</b> ” payable at Chennai or by cash ( <b>Non-Refundable</b> )
Contents of tender document	<p><u>Tender document-Volume-1: General</u></p> <p>Section 1.A: Instruction to Tenderers</p> <p>Section 2.B: General conditions of contract</p> <p>Section 3.C: Safety code</p> <p><u>Tender document-Volume-2: Technical Specifications</u></p> <p><u>Tender document-Volume-3: Bill of quantities and price bid</u></p> <p><u>Tender document-Volume-4: Technical data sheets</u></p> <p><u>Tender document-Volume-5: Indicative drawings</u></p>
Tender number	CLE-HO/ASIDE/CFC-M/2016/02 dated 25-11-2016
Title of tender	Electrical Installation works for Common Facility Centre at Melvisharam, Vellore District, Tamil Nadu

# **SECTION 1-A**

## **INSTRUCTIONS TO BIDDERS**

## INSTRUCTIONS TO BIDDERS

### 1. Introduction

1.1. Melvisharam is an important export centre for leather and leather products in Vellore District, Tamil Nadu, India. A common facility centre with tannery machines is proposed in Melvisharam tanning cluster to meet the requirements of the local MSME units represented by Visharam Tanners Common Facility Centre Pvt Ltd (Vishtan). These machineries are identified such that these machines are at present not available in the MSE tanneries and are also not affordable by individual MSME units. The CFC will support the companies to improve productivity, quality, expand the product mix of the cluster and thus improve competitiveness of the industry.

1.2. The Ministry of Commerce and Industry, Government of India, has approved the establishment of common facility centre promoted by Visharam Tanners Common Facility Centre Pvt Ltd (Vishtan) under central ASIDE Scheme. The Council for Leather Exports (CLE) is the project implementation agency. The contact details of the CLE is given below:

The Executive Director  
Council for Leather Exports (CLE)  
3rd Floor, CMDA Tower II  
Gandhi-Irwin Bridge Road  
Egmore, Chennai - 600 008  
Tel: +91-44-2859 4367 (5 Lines)  
Fax: 044-2859 4363-64 (2 Lines)  
Email: cle@cleindia.com

1.3. Vishtan has already purchased the land and the civil works for the buildings is ongoing.

1.4. Indian Leather Industry Foundation (ILIFO), Chennai is the Project Management Consultant (PMC) engaged for establishment of common facility centre in Melvisharam, and as such, the ILIFO will be responsible for overall management of the project till its completion. The ILIFO contact details are given under:

Indian Leather Industry Foundation (ILIFO)  
F2 'Shreyas' 87, Greenways Lane  
Greenways Road, R A Puram,  
Chennai 600 028  
Tel: 044 2461 5497 / 5494 E mail: ilifo@vsnl.com  
Contact person: Dr. K. V. Emmanuel, Executive Director  
E mail: [kvemmanuel@yahoo.com](mailto:kvemmanuel@yahoo.com)  
Mobile: 9003026351.

1.5. Brief description of proposed work involves the following:

Site location: The proposed site location is at S. F. No. 340/1C, C. Abdul Hakeem Road, Melvisharam – 632 509, Vellore District, Tamil Nadu. The coordinates of the site is 12.899324, 79.276166. The site is located at about 4 km off the National Highway NH-46 on C. Abdul Hakeem Road in Melvisharam.

The main categories of works are provided below:

- (i) Supply, erection, testing, commissioning of 1000 KVA Transformer 11 KV/ 433V, oil cooled indoor type with HV cable boxes including consumer double pole structure and outdoor metering yard
- (ii) Supply, erection, testing and commissioning of medium voltage panels for EB incomer and DG incomers, outgoing MCCBs, APFC panel, LT switch boards, SPPs and MCB distribution boards
- (iii) Supply, erection, testing and commissioning of cabling and earthing, using cable trays.
- (iv) Supply, erection, testing and commissioning of lighting, electrical fixtures and emergency lighting using UPS
- (v) Supply and erection of safety equipments for electrical installations
- (vi) Supply, erection, testing and commissioning of lightning arrestors
- (vii) Supply, erection testing and commissioning of three numbers of DG sets, each of 380 KVA, 250 KVA and 125 KVA
- (viii) Obtaining the approval from electrical authorities including CEIG and relevant authorities for all electrical installations

1.6. Council for Leather Exports invites sealed bids for electrical works for the CFC in a two part bid system.

Part –I: Technical bid for qualification

Part – II: Financial bid, from competent firms/companies with sound technical and financial capabilities fulfilling the qualification criteria.

1.7. The bid documents are available for sale from Council for Leather Exports, Chennai from 28.11.2016 to 12.12.2016 on all working days up to 5.00 pm by a written application addressed to The Executive Director, Council for Leather Exports, along with the payment of Rs.7,000/- by way of Demand Draft or Cash, drawn in favor of the “Council for Leather Exports”. The DD should be drawn on any schedule bank. The bidding documents requested by mail will be dispatched by Registered /Speed

Post at an extra amount of Rs.200/-. The CLE will not be responsible for the postal delay if any in the delivery of the documents or non-receipt of the same.

- 1.8. A pre-bid Meeting will be held at 11:30 am on 6<sup>th</sup> December 2016 (Tuesday) at the office of Council for Leather Exports, Chennai.
- 1.9. The last date for the receipt of Tender Documents is before 3.00 p.m. on 15<sup>th</sup> December 2016 (Thursday). The Bid Opening Meeting will be held at 3.30 p.m. on 15<sup>th</sup> December 2016 (Thursday) at CLE Office, Chennai, in the presence of the tenderers who wish to attend the meeting.
- 1.10. Any clarifications, technical or otherwise, should be addressed in writing to Council for Leather Exports (Email: [sp@cleindia.com](mailto:sp@cleindia.com) [cle@cleindia.com](mailto:cle@cleindia.com) and by marking a copy to Indian Leather Industry Foundation (Email: [ilifo@vsnl.com](mailto:ilifo@vsnl.com) and Visharam Tanners Common Facility Centre Pvt Ltd (E mail: [vishtancfc@gmail.com](mailto:vishtancfc@gmail.com) )
- 1.11. Bidders are advised to undertake a site visit to the project site, inspect the ongoing construction works, and thereafter submit the bids. The costs of visiting the site shall be at the Tenderers own expense. All bids received are deemed to be prepared after the inspection visit by applicants. For inspection visit, the applicants may contact the VISHTAN for scheduling visit appointments as per the below contact details:

Visharam Tanners Common Facility Centre Pvt Ltd  
S. F. No. 340/1C, C. Abdul Hakeem Road  
Melvisharam – 632 509, Vellore District, Tamil Nadu  
Contact person: Mr. Ashraf Ali, Mobile number: +91 99 44 932788  
Email: [vishtancfc@gmail.com](mailto:vishtancfc@gmail.com)

- 1.12. Tender shall be submitted in two parts viz.- PART-I & PART-II. Each part shall be placed in an independent sealed envelope and both the envelopes should be put in 3rd envelope and sealed. Each part shall be super scribed as follows.

PART-I : Captioned as “TECHNICAL BID” clearly mentioning the bidders name, address, tender number and title of tender

PART-II : Captioned as “FINANCIAL BID” clearly mentioning the bidders name, address, tender number and title of tender

3rd Envelope : Captioned as “Electrical Installation Works for Common Facility Centre at Melvisharam” clearly mentioning the from address (bidders name, address) and to address (CLE address)

- 1.13. The Earnest Money Deposit is Rs.2,20,400/- and must be drawn on a public sector or scheduled bank in favour of “Council for Leather Exports”, payable at Chennai. This is to be submitted along with the technical bid. The EMD will be returned to the unsuccessful tenderer after the finalization of the tender.

- 1.14. The entire work should be completed within the 5 months from the date of issue of the Work Order / Letter of Intent.
- 1.15. Penalty for the delay in completion shall be levied @ 1.5% of the contract price per calendar month including Sundays and holidays, subject to a ceiling of 10% of the contract value, as mentioned in Clause 60 of the General Conditions of Contract.
- 1.16. Successful Tenderer shall have to pay the Security Deposit to the tune of 5% of the Contract value by way of Demand Draft Only drawn from public sector or scheduled bank in favor of the Council for Leather Exports.
- 1.17. Council for Leather Exports has engaged Central Leather Research Institute (CLRI) as Technical Agency to vet the documents and verify at site the progress and guide CLE on technical part of implementation.

### **A. Scope of work**

#### **2. Scope of Work**

- 2.1. Scope of work involves building works and services in accordance with the specifications, drawings and bill of quantities given in the Tender Document on item rate contract basis.
  - i. The tenderers are requested to inspect the site before tendering. Tenderer will give an undertaking to the effect that he has visited the site and acquainted himself of site conditions.
  - ii. The description of components in this electrical works is provided in Clause no. 1.
  - iii. The work involves supply, erection, testing and commissioning of transformer, diesel generators, main MV panel, LT panels, distribution boards, cabling, earthing, lighting and all other associated works. The scope includes obtaining the approval from CEIG and relevant authorities.
  - iv. The building construction at site is ongoing.
  - v. Civil works for DG foundation and concealed cabling in the office building are included in the scope of the electrical contractor.
  - vi. Electrical works in office building only including supply, installation of LT panel boards for lights and fans, lighting indoor, provision of light fittings and lights in LED, fans and cabling for lighting, data cabling for all workstations, telephone cabling for all work stations and earthing including earth pits
  - vii. Obtaining all approvals from competent authority for electrical installations. The cost towards obtaining the approvals.
  - viii. Submission of regular progress report to PMC and CLE on monthly basis is one of the important scopes of the contractor.

**Note 1: Any other items required for the successful completion of the electrical**



works for the common facility centre but not included in the BOQ shall be included as Additional item and the same should be indicated in the technical bid as well as financial bids with detailed specifications and quantities. The additional items cannot include after fixing the prices and any additional items mandatorily required for functional completion and satisfactory operations should be provided by the tenderer and it is deemed to be in the scope of contractor. The rate fixed in the work order will remain until completion of the project.

Note 2: Bidders should quote for all of the items broadly covering under Clause 2.1. However CLE reserves the right to modify the overall dimensions or delete part of the components. In case of such modification of the dimensions, the tender price will be obtained on pro rate basis.

- 2.2. The bill of quantities is provided in Schedule A and Schedule B (Volume III).. Tenderer are required to quote for both Schedules. However, CLE reserves the right to choose items in these schedules while placing the order without assigning any reasons for. Failure to quote for any one Schedule will lead to disqualification of tender.

### **3. Period of Completion**

- 3.1. The entire works given in the Scope of work shall be completed within a period of five (5) months from the date of issuance of Letter of intent.
- 3.2. Tenderers shall submit together with their Tenders a detailed programme in the form of a bar chart showing the various activities to be carried out in order to complete the Works on schedule.

Climatic Conditions

- 3.3. All the equipment and materials to be supplied under this Contract shall be entirely suitable for operation in Melvisharam town.
- 3.4. The climate of Melvisharam is hot and dry. The temperatures range from 20 deg C to 45 deg C.

### **4. Eligibility Criteria for Tendering**

- 4.1. To eligible for award of the contract, each bidder in its name should have in the last three years ending 31/03/2016
- (i) Should have Average Annual Financial Turnover during the last 3 years, ending 31<sup>st</sup> March 2016, should be at least Rs.66.11 lakhs.
  - (ii) Should have bank solvency certificate of a public sector bank / scheduled bank for a minimum of Rs.66.11 lakhs.
  - (iii) Should have Experience of having successfully completed similar works during last 7 years ending last day of month previous to the one in which applications are incited should be either of the following:
    - a) Three similar completed works costing not less than Rs.88.15 lakhs.
    - or**
    - b) Two similar completed works costing not less than Rs.110.19 lakhs **or**

- (iv) One similar completed work costing not less than Rs. 176.30 lakhs.
- (v) The tenderer should be a registered firm in India. Only Indian tenderers are allowed to participate. Bidder on whose name bid is submitted will be technically and financially responsible for all the obligations and activities of work related to establishment of Common Facility Centre. CLE's decision will be final.
- (vi) Definition of similar work as defined under 4.2.

4.2. Similar nature of work means electrical works involving panel boards, wiring, cabling, lighting, etc with installation of transformer. Similar works should include erection and commissioning of at least one transformer.

4.3. A tenderer shall not be considered eligible for the award of contracts if:

- a. He is bankrupt.
- b. Payments to him have been suspended in accordance with the judgement of a court or a judgement declaring bankruptcy and resulting, in accordance with his national laws, in total or partial loss of the right to administer and dispose of his property.
- c. Legal proceedings have been instituted against him involving an order suspending payments and which may result, in accordance with his national laws, in declaration of bankruptcy or in any other situation entailing the total or partial loss of the right to administer and dispose of his property.
- d. He is guilty of serious misrepresentation with regard to information required for participation in an invitation to tender.
- e. He is in breach of contract on another contract with the Employer and/or the State of Tamil Nadu / Union of India.

4.4. Documentation (all in English language only)

The Tenderer shall submit the following documentary information in support of the qualification on technical experience and financial standing. This is a mandatory requirement and shall be submitted as per the details given herein without fail in Technical Bid cover. The technical bid shall be submitted in two copies, marked as 'Original' and other '1<sup>st</sup> Copy'.

- a. Letter of tender
- d. Covering letter (as per Appendix 3)
- e. Proof of purchasing tender in their name
- f. EMD Amount for Rs.2,20,400/- in the form of DD favouring "Council for Leather Exports" payable at Chennai
- g. A copy of documents showing the organization chart, legal status, place of registration of the headquarters and written powers of attorney to the signatory to obligate.
- h. Certified Power of Attorney authorized or representatives of the firm to sign the

- tender and all subsequent communication
- i. Photo copies of the PAN no. and current sales tax registration certificate/ VAT.
  - j. Income Tax returns filed for last three years 2013-14, 2014-15 and 2015-16.
  - k. Solvency certificate from the bank.
  - l. Tenderer shall certify through the Declaration of Eligibility and upon request, provide evidence satisfactory to the employer that none of these situations applies to him as per section 4.3.
  - m. Details of manpower proposed for Project Management and for site Management including qualification and experience of the personnel.
  - n. Details of technical experience, list of completed and on-going works on hand as mentioned in Part-I, section 4 .1 (iii) in the format given in Appendix 1.
  - o. Performance certificate/s of the completed projects from the respective clients in support of the successful completion of the project. In the event, certificate is not in English language a certified translation (original copy) in English language apart from the photocopy of the certificate as received from the client as per Part-I, section 4.1(iii) in the format given in Appendix 1.
  - p. Mandatory Site Inspection Declaration: It is mandatory that, the tenderer to visit and inspect the sites of the works and its surroundings and obtain, at his own responsibility, expense and risk, all information which may be necessary to prepare his tender and sign the Contract for the Works.
  - q. Financial capacity as per Appendix 2.
- 4.5. The Tenderer shall submit the following technical information in the technical bid.
- a. Detailed Bar chart for the execution of the work including work methodology and plan.
  - b. Declaration stating the offer is in full compliance to technical specifications of tender document
  - c. Completed and duly filled-in data sheets
  - d. The Tender document with all pages and indicative drawings duly signed by the authorized signatory of the Tenderer and stamped with the Company seal. This document along addenda issued by CLE shall be returned as it is (with signature and seal) in token of having read, understood and accepted the various terms, conditions, specifications and drawings of the Tender document.
  - e. A photocopy of the Schedule of Prices and Annexure to the Schedule of Prices as submitted by the tenderer in the Part II cover but with the prices details blanked out to enable CLE and PMC to verify that the format of the Schedule of Prices and the Annexure to be Schedule of Prices have been strictly followed in the same manner by the Tenderer and deviation or alteration of the format shall be submitted in the technical bid.
  - f. PMC will securitize the technical bid and will open only those bids that are
  - g. Technically fulfilling all the requirement as per the tender specification other bids will be rejected.

- 4.6. List of documents to be submitted in financial bid sealed cover (Volume-3) are
- a. Only prices are to be indicated as requested in the tender document inclusive all taxes. No other conditions should be indicated in the price bid. The price bid will be rejected if this condition is not adhered to.
  - b. If the taxes are not included in the individual items, this should be indicated separately in the summary page of the price bid.
  - c. Signed copy with bidder's seal of the original price bid
  - d. Financial capacity as per Appendix -2

## 5. One Tender per Tenderer

- 5.1. A Tenderer can submit only one Tender. In case a Tenderer submits more than one Tender, both the Tenders shall be disqualified.

## 6. Cost of Tendering

- 6.1. The Tenderer shall bear all costs associated with the preparation and submission of this Tender and CLE will in no case be responsible or liable for these costs.

## 7. Site Visit

- 7.1. The Tenderer shall be held to have visited the site, examined the nature thereof, perused the Drawings and to have made himself thoroughly acquainted by his own independent observations and enquiries with the nature, topography, ongoing building construction, power supply source, extent and practicality of the Works, means of access, storage areas for materials and all other matters which can in any way influence his Tender price, as no monetary or other claims made by the Tenderer on the grounds of want of knowledge of any or all of the aforesaid matters will be entertained. The costs of visiting the Site shall be at the Tenderers own expense.

## **B. Tender document**

### 8. Contents of Tender Documents

- 8.1. The Tender documents for this Contract contain the following and any addenda issued in accordance with clause 14 of the Instructions to Tenderers.

Tender document-Volume -1: General	Section 1.A: Instruction to Tenderers & Section 1.B: General conditions of contract Section 1.C: Safety code
Tender document-Volume-2: Technical Specifications	Technical specifications for electrical works
Tender document-Volume-3:	Bill of quantities and price bid
Tender document-Volume-4:	Data sheets
Tender document-Volume-5	Indicative drawings

## 9. Sale of Tender Documents

- 9.1. The Tender documents can be obtained on payment of a non-refundable fee of Rs.7,000/- (Rupees Seven thousand only). Payment for the purchase of Tender documents shall be made either by cash or by a crossed demand draft drawn in favour of “Council for Leather Exports” payable in Chennai. The cash or demand draft shall be enclosed with a letter of application for the Tender documents.
- 9.2. The Tender documents can be taken delivery by hand or speed post or by the authorized representative of the Tenderer. For this purpose, the Tenderer shall send along with the application a letter authorizing his representative to collect the Tender Documents personally upon payment of the cost of the Tender documents as specified above.
- 9.3. The tender documents are available in CLE’s Head office and also all CLE’s Regional Offices as mentioned in the following addresses. The application for obtaining Tender documents shall be made to the respective offices:

<b>Chennai</b>	The Deputy Director Council for Leather Exports CMDA Tower –II, 3 <sup>rd</sup> Floor Gandhi Irwin Bridge Road Egmore, Chennai 600 008 Ph: 044-28594367-71 ( 5 lines ) Fax:044-28594363 & 28594364 Email: cle@cleindia.com
<b>Mumbai</b>	The Regional Director (West) Council for Leather Exports STAR HUB, Building 1, Unit No.102, 1 <sup>st</sup> Floor Near Hotel Hyatt Regency & ITC Maratha Sahar International Airport Road, Andheri (East), Mumbai – 400 099. Tel: +91 - 22 - 28392221 Fax: +91 - 22 - 67256236 E-mail: cleb@cleindia.com
<b>Kolkata</b>	The Regional Director (East), Council for Leather Exports, 1B, First Floor, "Duckback House", 41, Shakespeare Sarani, Kolkata - 700 017. Tel: +91-33-22835479/80. Fax: +91-33-22877270. E-mail: <a href="mailto:cleer@cleindia.com">cleer@cleindia.com</a> ,

<b>Kanpur</b>	The Regional Director (Central), Council for Leather Exports, H.B.T.I. Campus (Adjacent to Central Bank of India), NawabGanj, Kanpur-208 002. Tel: 0512-2534198. Fax: 0512-2534197. E-Mail: cleknp@cleindia.com,
<b>New Delhi</b>	The Regional Director (North) Council for Leather Exports, Unit No. 317, DLF Prime Towers Plot No. 79& 80, Block F Okhla Industrial Area Phase I New Delhi- 110 020. Tel: 011-268145031/502 Fax: 011-26814503 E-mail: cledelhi@cleindia.com ,
<b>Agra</b>	The Assistant Director Council for Leather Exports, S-6, 2nd Floor, Friends Tower, Block No.41-B, Sanjay Place, Agra - 282 002. Tel: +91-562-2852619 / Fax: +91-562-2854053 E-Mail: cleagra@cleindia.com
<b>Jalandhar</b>	The Office In-charge Council for Leather Exports CLRI Extension Centre (Testing Lab), Leather Complex, Kapurthala Road, Jalandhar - 144 021, Punjab, India. Tel: +91-181-2650967 / Fax: +91-181-2650967 E-Mail: clejalandhar@ymail.com

9.4. CLE does not accept responsibility either for delays in receipt of the completed Tender documents or any delay experienced by the applicant in receiving the documents including loss of documents in transit. Extension of the bid submission date and time for receipt of the completed documents will not be made on account of any such delays.

9.5. The Tender documents are not transferable under any circumstances.

## **10. Tenderer to Check Tender Documents**

10.1. The Tenderer is particularly requested to check all dimensions, figures and the technical data shown on the drawings and in the technical schedules and obtain his own information on all matters which may in any way affect his Tender price as no

claim for extra compensation for any alleged ignorance in respect thereof shall be entertained.

- 10.2. Any discrepancy in the figures, drawings or specifications detected by the Tenderer shall be immediately intimated to CLE and ILIFO. Any adjustment or assumption by the Tenderer without such verification shall be at his own risk and expense.
- 10.3. Notwithstanding the specifications and drawings of the Tender documents, the Contractor is responsible for successful completion and satisfactory performance. Any omission in the specifications and drawings shall not entitle the Contractor for additional payments. The tendered price should be inclusive of all such additional items required for successful completion and satisfactory performance of the Works.

## **11. Clarifications on the Tender Document**

- 11.1. In general, no answer will be given to Tenderers in reply to an oral question if the question involves an interpretation of the intent or meaning of the drawings, specifications, terms & conditions or Tender documents, or the equality or use of products or methods other than those designated or described in the drawings, technical specifications, terms & conditions or in the Tender documents. Any information given to Tenderers other than by means of the drawings, technical specifications, terms & conditions and Tender documents, including Addenda, as described below, shall not be used by the Tenderers as the basis of any claim or demand against CLE. To receive consideration, such questions shall be submitted in writing to CLE and ILIFO at least 3 days before the date of the pre-bid meeting as detailed in clause 12 of the Instructions to Tenderers.

## **12. Pre-bid Meeting**

- 12.1. The pre bid meeting will be held at 11:30 am on 06<sup>th</sup> Dec 2016 at the Council for Leather Exports, Egmore, Chennai- 600 008.
- 12.2. The purpose of the pre-bid meeting will be to clarify issues and to answer questions on any matter that may be raised at that stage pertaining to the Tender. Apart from the pre-bid meeting, the CLE will not entertain any further question whether written or verbal.
- 12.3. The Tenderer is requested to submit the questions in writing or by fax or by e mail clearly mentioning in the subject “Queries Regarding CFC-M:” to reach CLE (sp@cleindia.com) and ILIFO (ilifo@vsnl.com) before the Pre-bid meeting.
- 12.4. The text of the questions raised and the responses given as a result of the pre-bid meeting shall be made by CLE exclusively through the issue of an addendum pursuant to clause 13 of the Instructions to Tenderers and not through the minutes of the pre-bid meeting.

- 12.5. Non-attendance at the pre-bid meeting will not be a cause for disqualification of a Tenderer.

### **13. Amendment of Tender Documents**

- 13.1. Before the deadline for submission of Tenders, CLE may modify the Tender documents by issuing addendum.
- 13.2. Any addendum thus issued shall be part of the Tender documents and shall be communicated in writing or by fax or by e mail to all the Tenderers. Tenderers shall acknowledge receipt of each addendum by letter or by fax or by email to CLE. A signed and stamped copy of the addendum shall be submitted together with the Tender documents
- 13.3. Adequate time for submission of Tenders will be ensured when such addendum is issued.

## **C. PREPARATION OF TENDERS**

### **14. Language of the Tender Document**

- 14.1. All Tenders and information to be submitted shall be in English language only.
- 14.2. Tenders which are conditional or obscure or which contain additions not called for, erasures, alterations, unsigned or irregularities of any kind shall not be considered.

### **15. Contract Requirements**

- 15.1. Tenderer shall fill up and sign with official seal, the Letter of Tender and all schedules, tables etc. which are included in the Tender documents.

### **16. Alternative Proposals by Tenderers**

- 16.1. Tenderers shall submit their Tenders in accordance with the specifications of the Tender document only. Alternative technologies or processes or design criteria will not be accepted.

### **17. Tender Price**

- 17.1. The tender is for item rate contract work. The rates quoted by the tenderer in the financial bid is deemed to be all inclusive of all types of duties, taxes, license fees, packing forwarding charges, all kinds of transportation, insurance, erection / installation charges, commissioning and all other expenses and shall be the maximum amount payable for the execution of the Works. No extras, on whatever count, shall be paid by the CLE. The tenderers shall ascertain the bill of quantities against the indicative quantities provides. In case of any extras are required, the tenderers may use the BOQ for extra items or quantities.



- 17.2. Tenderers are required to price each and every item in the Schedule of Prices and fill in all blanks in the Technical Schedules legibly and properly. Items unpriced will not be paid for and shall be deemed to be covered by the pricing of other items. Corrections, if any, shall be made out by crossing out, rewriting, signing and dating.
- 17.3. The sum of the amounts of all items in the Schedule of Prices priced by the Tenderer shall truly represent the amount shown in his Tender.

## **18. Currency of Tender**

- 18.1. Tenderers shall quote their prices in Indian Rupees only.

## **19. Tender Validity**

- 19.1. Tenders shall remain valid for a period of ninety days (90) days from the date of bid opening. The tenderers shall submit a declaration in this regard.
- 19.2. In exceptional circumstances, prior to expiry of the original time limit, CLE may request Tenderers to extend the period of validity for a specified additional period. The request and the Tenderer's responses shall be made in writing or by fax. A Tenderer may refuse the request without forfeiting his Earnest Money Deposit. A Tenderer agreeing to the request will not be permitted to modify his Tender.

## **20. Earnest Money Deposit**

- 20.1. The Tender shall be accompanied by an Earnest Money Deposit (EMD) for Rs.2,20,400/- (Rupees Two Lakhs Twenty Thousand Four Hundred only) in the form of a demand draft from a public sector or scheduled Bank in favour of Council for Leather Exports payable at Chennai.
- 20.2. Any Tender submitted without the EMD shall not be considered and shall be summarily rejected.
- 20.3. The EMD of unsuccessful Tenderers will be returned within ten (10) days of the finalization of the Contract with the successful Tenderer.
- 20.4. The EMD of the successful Tenderer shall be returned when the Tenderer has furnished the required Security Deposit and signed the Agreement as per the format in the Tender document or it may be adjusted against the Security Deposit.
- 20.5. The EMD may be forfeited if:
1. The Tenderer withdraws his Tender after Tender opening and during the Tender validity period as per clause 19.
  2. The Tenderer does not accept the correction of the Tender price, pursuant to clause 29.
  3. In the case of a successful Tender, the Tenderer fails within the specified time limit to furnish the required Security Deposit or sign the Agreement.

4. If the Tenderer does not accept the stipulation of pursuant to clause 31 of the Tender Document.

## **21. Signing of the Tender**

- 21.1. The Tender shall be signed by a person or persons duly authorized to sign on behalf of the Tenderer, along with official seal. All pages of the Tender where entries or amendments with official seal have been made shall be signed by the person or persons signing the Tender. The Tenderer shall enclose a certified copy of the Power of Attorney authorizing the signatory or signatories to sign the Tender document. This certification shall be from the Legal Manager or a Director of the Firm.
- 21.2. The Tender shall contain no alterations or additions, except those to comply with instructions issued by CLE or as necessary to correct errors made by the Tenderer, in which case such corrections shall be signed by the person or persons signing the Tender affixing the official seal.
- 21.3. All the pages in the Schedule of Prices and Technical Schedules should be signed with the official seal by the Tenderer, after filling in the prices in figures and words.

## **D. PROCEDURES FOR SUBMISSION OF TENDERS**

### **22. Due date for Tender Submission**

- 22.1. Tenders in sealed envelope/package as detailed in clause 23 below will be received by CLE at the address mentioned in clause 23.5 up to 15th Dec 2016 before 3.00 pm . If the said date happens to be a holiday, Tenders will be received up to 2.30 pm on the next working day.
- 22.2. CLE may extend the date for submission of Tenders by issuing an addendum in which cases all the rights and obligations of CLE and the Tenderers previously subject to the original due date for submission will then be subject to the new date for submission as to be extended if any.

### **23. Procedures for Submission of Tenders**

- 23.1. Tenderers are advised to go through the Tender documents in full detail and understand all the provisions and stipulations contained therein before submitting the Tenders.
- 23.2. The Tender shall be submitted exactly as per the procedures and requirements stipulated herein.
- 23.3. The Tender must be submitted so as to be received within the stipulated date & time as per clause 22.

23.4. Tenders submitted by fax or e-mail will not be accepted and will be summarily rejected.

23.5. The package shall be addressed to

The Executive Director  
Council for Leather Exports,  
CMDA Tower II, 3<sup>rd</sup> Floor,  
Gandhi Irwin Bridge Road,  
Egmore, Chennai - 600 008  
Phone No :044 2859 4367–71 (5 Lines).

Each envelope shall carry the name and address of the Tenderer prominently.

23.6. The technical bid shall contain the documents in the sequence indicated in Clause 4.4. The technical and financial bids shall be submitted in duplicate i.e. one original plus one copy. One of the volumes of the Tender shall be marked as “Original” while the other shall be marked as 1st copy.

23.7. The “Technical bid” shall NOT contain the following:

- i. Schedule of Prices of the Tender document constituting the Lump Sum Tender Price.
- ii. Any indication either direct or indirect or implicit or explicit or implied regarding the Tender Price or its break up details or any other related price indication etc. shall be cause for outright disqualification of the entire Tender.

## **24. Late Tenders**

24.1. Any Tenders received by CLE after the due date & time as per clause 22 of the Instructions to Tenderers will not be considered and will be returned unopened to the Tenderers.

## **25. Modification and Withdrawal of Tenders**

25.1. Tenderers may modify or withdraw their Tenders by giving notice in writing before the due date of submission of Tender as per clause 22 of the Instructions to Tenderers.

25.2. Each Tenderer’s modification or withdrawal notice shall be prepared, sealed, marked and delivered in accordance with clause 23.7 of the Instructions to Tenderers with the outer and inner envelopes additionally marked MODIFICATION or WITHDRAWAL as appropriate.

25.3. No Tender may be modified after the due date of submission of the Tenders.

- 25.4. Withdrawal or modification of a Tender between the deadline for submission of Tenders and the expiration of the original period of Tender validity specified in clause 19.1 of the Instructions to Tenderers or as extended pursuant to clause 19.2 of the Instructions to Tenderers may result in the forfeiture of the Tender Security pursuant to clause 20.5 of the Instructions to Tenderers.

## **E. TENDER OPENING AND EVALUATION**

### **26. Tender Opening**

- 26.1. Executive Director CLE or his authorized person will open the Tenders in the presence of the Tenderers or their authorized representatives at 3.30 pm on 15<sup>th</sup> December 2016 ( Thursday) at CLE Chennai Office. In the event of the specified date of Tender opening being declared a holiday for CLE, the Tenders will be opened at the same time on the next working day.
- 26.2. On opening the Tenders, the details such as name of the Tenderer and whether the EMD has been submitted or not will be read out.

### **27. Process to be Confidential**

- 27.1. Information relating to the examination, clarification, evaluation and comparison of Tenders and recommendations, for the award of Contract shall not be disclosed to Tenderers or any other persons not officially concerned with such process until the award to the successful Tenderer has been announced. Any effort by a Tenderer to influence CLE or ILIFO in the processing of Tenders or award decisions may result in the rejection of his Tender.

### **28. Procedure for Tender Evaluation**

- 28.1. After opening the Tenders, PMC will determine whether the Tenderer has fulfilled all the conditions as stipulated under clause 23 of the Instructions to Tenderers viz. the EMD, the various appendices required to be submitted with the Tender, the eligibility criteria and other documents as called for. Tenderers who have not submitted the documents as per clause 23 will be liable for disqualification.
- 28.2. PMC will proceed with the evaluation of those Tenders which have not been rejected as per clause 28.1 above.
- 28.3. Before proceeding with the detailed evaluation, CLE will determine whether the Tender is substantially responsive or not. A responsive Tender is one, which conforms to all the terms, conditions and specifications of the Tender documents, without material deviation or reservation. A material deviation or reservation is one:
- a). which affects in any substantial way the scope, quality or performance of the Works,

- b) which in a substantial way is inconsistent with the Tender documents, CLE's rights or the Tenderer's obligations under the Contract or
  - c) whose rectification would affect unfairly the competitive position of other Tenderers presenting substantially responsive Tenders.
- 28.4. To assist the examination, evaluation and comparison of Tenders, CLE or PMC may, at its discretion, ask any Tenderer for clarification on his Tender. The request for clarification and the response shall be in writing or by fax, but no change in the substance of the Tender shall be sought, offered or permitted.
- 28.5. Should a Tender fail to be responsive, it will be rejected by CLE and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation or reservation.
- 28.6. CLE will proceed with opening of Part II envelope i.e. "Financial bid Envelope" of those Tenderers whose Technical bids has been accepted. The opening of the "Financial Bid Envelope" will be done in the presence of those Tenderers or their representatives who choose to be present. The Financial Bid Envelope" of the unsuccessful Tenderers shall not be opened.
- 28.7. During Tender Price opening, CLE will read out the total prices of the Tenders as quoted by the Tenderers.

## **29. Correction of Errors**

- 29.1. The prices quoted by the Tenderers will be checked by CLE and PMC, for any arithmetic errors. Errors will be corrected as follows:
- a. Where there is a discrepancy between the figures and words in the Schedule of Prices, the prices as given in words will govern.
  - b. A discrepancy in the total shall be corrected by considering the prices quoted by the Tenderer for the individual items in words which shall govern.
- 29.2. The amount stated in the Tender Price will be corrected by PMC in accordance with the above procedure for the correction of errors and with the concurrence of the Tenderer, shall be considered as binding upon the Tenderer. If the Tenderer does not accept the corrected amount, the Tender will be rejected and the EMD will be forfeited.

## **30. Evaluation of Tender Prices**

- 30.1. In evaluating the Tender Prices, CLE and PMC will determine for each Tender the evaluated Tender price by adjusting the Tender price as follows:
- (i) Making any correction for errors pursuant to clause 29 above.

- (ii) Making appropriate adjustments to reflect discounts offered by Tenderers in their Tender Price.
- 30.2. If the Tender of the successful Tenderer is seriously unbalanced in relation to the CLE's estimate of the cost of work to be performed under the Contract, CLE may request the Tenderer to produce detailed price analysis for any or all items of the Schedule of Prices to demonstrate in internal consistency of these prices with the construction methods and schedules proposed. After evaluation of the price analysis, CLE may require that the amount of the Security Deposit set forth in clause 42 of the General Conditions of Contract be increased at the expense of the successful Tenderer to a level sufficient to protect CLE against financial loss in the event of default of the successful Tenderer under the Contract.
- 30.3. The evaluation of the Tender Price will be based on the Tender Price submitted by the Tenderer.

## **F. AWARD OF CONTRACT**

### **31. CLE's Right to accept any Tender and to reject any or all Tenders.**

- 31.1. Notwithstanding anything that is said herein, CLE reserves the right to accept or reject any Tender in part and to cancel the tendering process and reject all Tenders, at any time prior to the award of Contract, without thereby incurring any liability to the affected Tenderer or Tenderers of any obligation to inform the affected Tenderer or Tenderers of the grounds for CLE's action.
- 31.2. The decision of CLE will be final and binding upon the lowest evaluated Tenderer. Non-acceptance of the above mentioned conditions would also result in the forfeiture of the EMD in accordance with clause 20.5.

### **32. Notification of Award**

- 32.1. The Tenderer whose Tender has been accepted will be notified of the award by CLE prior to expiration of the Tender validity period by facsimile/e mail and confirmed in writing by a registered letter.
- 32.2. The notification of award will constitute the formation of the Contract, subject only to the furnishing of a Security Deposit in accordance with the provisions of clause 33 and the signing of the Agreement as per clause 34 of the Instructions to Tenderers.
- 32.3. Upon furnishing by the Contractor of the Security Deposit and upon signing the Agreement, CLE will promptly notify the other Tenderers that their Tenders have been unsuccessful and will arrange to return their EMD.

**33. Performance Security Deposit**

- 33.1. Within seven (7) working days from the date of notification of the award the successful Tenderer shall deliver to CLE the Performance Security Deposit to a tune of 5% of the contract value.
- 33.2. Failure of the successful Tenderer to comply with this requirement shall constitute sufficient grounds for cancellation of the award and forfeiture of the EMD.

**34. Signing the Agreement**

- 34.1. Within seven (7) working days of the date of notification of the award, the successful Tenderer will sign the Agreement as per the format given in the Tender document and deliver it to CLE. The Tenderer shall bear the cost of the stamp paper and other legal charges. The Agreement will incorporate all agreements between CLE and the successful Tenderer.

**Appendix 1****Reference List of Projects of similar nature installed by the Tenderer**

<b>S.No</b>	<b>Parameters</b>	<b>Details</b>
1	Name of the project	
2	Owner of the project	
3	Address of the project implemented	
4	Contact person Name Phone No, E-mail, Fax No	
5	Contract reference & date a) Name of the company which received the contract b) Date of completion as per contract c) Actual date of completion d) Date of commissioning	
6	Years in operation since commissioning	
7	Scope of work	

**Note:**

1. Please use similar statements for every project implemented by you to meet the prequalification requirement for technical experience.
2. Please attach certified photocopies of certificates from owners of installations for satisfactory performance in accordance with the Instructions to Tenderers
3. Please attach a certified photocopy of the Contract indicating name of the Contractor, Contract no, scope of work, and value of Contract in accordance with the Instructions to Tenderers and in support of the technical experience



**Appendix 2****Financial Capacity**

1. Name of the firm :
2. Address of the Registered Office :
3. Address of the office of communication :  
and contact particulars
4. Annual turnover (Rupees or home  
Currency of the applicant) for  
2013 - 2014 :  
2014 - 2015 :  
2015 - 2016 :
5. Furnish name, address, telephone no. fax:  
and contact person of your Bankers in a  
separate list attached to this appendix
6. Furnish name, address, telephone no. :  
fax no. & contact person of your  
Insurance Company in a separate list  
attached to this appendix

I hereby authorize CLE to seek information as required from our Bankers and Insurers.

Signature of person authorized \_\_\_\_\_ Date \_\_\_\_\_

Name & Designation \_\_\_\_\_

Attachments : Audited annual reports for the financial years as mentioned in Sl No.4  
above. IT Return for 2013-14, 2014-15 and 2015-16

**Note: The Tenderer may at their discretion submit the financial proof for annual turnover for the financial year 2015-16 also support with IT returns if they desires to do so, to fulfill the eligibility criteria.**

**APPENDIX 3****Form of Letter Confirming Agreement with Technical and Commercial Terms & Conditions of the Tender****(To be typed on the letterhead of the Tenderer)**

Date

The Executive Director  
Council for Leather Exports,  
CMDA Tower II, 3<sup>rd</sup> Floor,  
Gandhi Irwin Bridge Road,  
Egmore, Chennai - 600 008  
Phone No : +91 44 2859 4367- 71 ( 5 Lines)

**Sub.:** Electrical works for Common Facility Centre in Melvisharam**Ref. :** Notice inviting tender no. CLE-HO/ASIDE/CFC-M/02/2016 dated 25-11-2016 for electrical works for common facility centre in Melvisharam.

Sir,

We have examined the Tender documents including addenda particulars, receipt of which is hereby acknowledged. We have submitted our Tender ref. \_\_\_\_\_ dated \_\_\_\_\_ for the subject works as per the specifications and terms & conditions of the Tender document.

We confirm that our Tender is in conformity with the technical specifications and commercial terms & conditions as stipulated in the Tender document and without any deviations whatsoever. We are aware that our Tender is liable for disqualification in the event technical and commercial deviations are observed by CLE at a later date during the process of evaluation of our Tender.

Thanking you and assuring you of our best services always

Very truly yours,

*For (Name of the Tenderer)*

Signature

Authorized signatory or signatories

Name/s

(\* Power of attorney issued by competent authority should be enclosed)

# **SECTION 1-B**

## **GENERAL CONDITIONS OF CONTRACT**

## GENERAL CONDITIONS OF CONTRACT

### Definitions

In the Contract as hereinafter defined the following words and expressions shall have the meanings herein assigned to them except where the context otherwise requires:

**"Addenda"** means written or graphic instruments issued prior to opening of Tenders which clarify, correct or change the Contract documents.

**"Contract Price"** shall mean the total lump sum amount for the Works includes all taxes

**"By Others"** means Work to be furnished by CLE, by Contractors or sub-contractors other than Contractor to whom this Contract is awarded, or by this Contractor under another Contract Agreement.

**"Compensating Event"** means events not attributable to the Contractor, which causes delays in the erection schedule as described in clause 60.6 of the GCC.

**"Contract"** shall mean the documents forming the Tender document, the Tender submitted by the Contractor and acceptance there together with the documents referred to therein including the various Terms and Conditions, Specifications, Schedule of Prices, Drawings and all the documents taken together shall be deemed to form one Contract and shall be complementary to one another.

**"Contract Price"** shall mean the total lump sum amount including excise duty and sales tax on works contract accepted by CLE as a single component together to arrive at competitive bidding

**"Contractor"** shall mean the person or persons, partnership, firm or company whose Tender for the Works has been accepted and who has or have signed the Contract and shall include his or their heirs, executors, administrators, assigns, successors and duly appointed representative.

**"Contract documents"** shall mean the Notice Inviting Tenders, Instruction to Tenderers, General Conditions of the Contract, Special Conditions of Contract, Letter of Tender, Appendices, Security Deposit, Agreement, Performance Bank Guarantees, Technical Specifications, Commercial Terms & Conditions, Attachments, Drawings, Technical Schedules, Schedule of Prices, all issued Addenda and all documents submitted by the Contractor prior to the execution of the Contract.

**"Days"** means calendar days

**"Defect"** means any part of the Works not completed and also includes equipments / machineries / construction work not conformity to specified standards or find defective, in accordance with the Contract.

**"Defects Liability Period"** is the period named in the Contract in accordance with clause 95 of the Special Conditions of Contract.

**"Drawings"** means the drawings referred to in the specification and any modification of such drawings approved in writing by the CLE and such other drawings as may from time to time be furnished or approved in writing by the CLE.

**"Employer"** means CLE or the Owner acting through the ILIFO or any other officer nominated by him, who will employ the Contractor to carry out the Works.

**"Engineer"** means ILIFO, appointed by CLE to assist them in the implementation of the project and who are responsible for the designs, engineering of the Works, specifications for the materials, articles and equipment, advice during the construction period, and the supervision and administration of the Contract. Day to day functions of ILIFO as referred to in this document is the one carried out by an Engineer employed by the ILIFO.

**"Erection"** shall mean the putting up under the particular contract of structures and / or installation of equipment with all accessories supplied, and will include any service which the Contractor is required to perform for the due fulfillment of his contract at the building site with his own and / or other staff or labour made available to him and with the aid of his own and / or other staff, labour and equipment auxiliary materials placed at his disposal.

**"Erection Supervision"** mean the supervision services rendered or exercised by the Contractor during the erection of the installation as explained under clause 'Erection Supervision Services' of these General Conditions.

**"Months"** means calendar months

**"Promoter"** means Visharam Tanners Common Facility Centre Pvt Ltd.

**"Project Management Consultant" or "PMC"** means Indian Leather Industry Foundation (ILIFO).

**"Permanent Works"** means the Works to be constructed, completed and maintained in accordance with the Contract.

**"Site" or "Site of Works"** means the actual place / places designated by CLE where the goods, materials and plant are to be supplied/delivered and installed or Works executed.

**"Specifications"** means the specification/s referred to in the Tender and Contract and includes general specifications, technical specifications and drawings and any modification, thereof or addition thereto as may from time to time be furnished or approved in writing by the ILIFO.

**"Start Date"** means the date for starting the Work and shall be reckoned from the date of the intimation of the award of the Work to the Contractor.

**"Sub-Contractor"** shall mean the individual, firm, partnership, or corporation supplying equipment, materials, labour or specific services required by the Contract documents and who is under separate and direct Contract with the Contractor.

**"Tender"** means the offer of the Tenderer for the Works when executed and submitted on the prescribed form, in accordance with the Tender document.

**"Tenderer"** means any individual, firm, partnership, corporation, or joint venture submitting a Tender as per the stipulations in the Tender document for the Works contemplated, acting directly or through a duly authorized representative.

**"Tender Price"** shall mean the total lump sum amount for the Works which the Tenderer offers in the Schedule of Prices including excise duty and sales tax on works contract together as a single component.

**"Temporary Works"** means the Work designed, constructed, installed and removed by the Contractor, which is needed for construction or installation of the Works.

**"Tests on Completion"** shall mean such tests as are prescribed by The Chief Electrical Inspector to Government / Tamil Nadu Electricity Board / ISI and / or tests mutually agreed upon by the and the Contractor to be made by the Contractor after erection of the equipment to prove satisfactory operation as required by the Specification.

**"Variation"** means an instruction given by the ILIFO, which varies the tendered Works.

**"Vishtan" or "Promoter"** means Visharam Tanners Common Facility Centre Pvt Ltd.

**"Works"** means the Work to be carried out in accordance with the Contract including all Permanent Works and Temporary Works and any plant and machinery to be supplied, delivered and installed under the Contract and whether the same may be on the construction site or not.

The word **"Shall"** when used in these documents implies mandatory action. The word **"May"** when used in these documents implies optional action.

Words importing persons shall include firms and corporations. Words importing the singular only shall also include the plural and vice-versa where the context requires.

## **1. Language**

1.1 The language used in the Tender and Contract shall be English and all other correspondence pertaining to the Contract shall be in English.

## **2. Scope of Contract**

2.1. The Contractor shall carry out and complete the Works in accordance with this Contract in every respect and in accordance with the directions and to the entire satisfaction of the CLE and ILIFO, who may in his absolute discretion from time to

time issue further drawings, details and/or written instructions, written directions and written explanations (all of which are hereinafter collectively referred to as "ILIFO's instructions") in regard to:

- i. The variation or modification of the design, quality provided such work falls with the ambit of tendered items / specifications of works or omission or substitution of any Works;
  - ii. Any discrepancy in the Drawings and Specifications
  - iii. The removal from the site of any materials brought thereon by the Contractor and the substitution of any other materials therefore;
  - iv. The removal and / or re-execution of any Works, which are executed not in accordance with the Contract without any additional cost thereof.
  - v. The dismissal from the Works of any person mentioned in clause 14 hereof employed thereupon;
  - vi. The opening up for inspection of any Work covered without approval;
  - vii. The amending and making good of any defects under clause 62.
  - viii. Any other matter or item which is required and which will ensure the proper execution, completion and maintenance of Works in accordance with the Contract and compliance with the Specifications.
- 2.2. Any equipment, fittings, Materials or supplies which may not be specifically mentioned in the specification or drawings, but which are usual or necessary for carrying out under the Contract within the scope of the Project are to be provided for the rendered by the Contractor without extra charge, and the installation must be complete in all details.

### **3. Notices**

- 3.1. The Contractor shall notify to the CLE and ILIFO an address where notices and CLE or ILIFO's instructions under this Contract may be served upon him. In the event of the Contractor failing to notify the CLE and ILIFO of such an address, notices shall be deemed served upon the Contractor if sent by registered post to the address stated in this Contract or left at his office on the site and receipt obtained from the Contractor's representative.
- 3.2. The contractor shall not be permitted to tender for works in the CLE responsible for award and execution of contracts in which his near relative is posted as Divisional Accountant or as an officer in any capacity or the any grades. He shall also intimate the names of persons who are working with him in any capacity or are subsequently employed by him and who are near relatives to any Gazetted Officer in

the CLE or in the Ministry of Commerce. Any breach of this condition by the contractor would render him liable to be removed from the approved list of contractors of CLE. If however the contractor is registered in any other department, he shall be debarred from tendering in CLE for any breach of this condition.

- 3.3. NOTE: By the term “near relatives” is meant wife, husband, parents and grandparents, children and grandchildren, brothers and sisters, uncles, aunts and cousins and their corresponding in-laws.

#### **4. Drawings, Schedule of Prices and Specifications**

- 4.1 The Contractor shall furnish to the CLE, the detailed breakdown of his prices in the Schedule of Prices to the full satisfaction of the CLE. The original Contract documents, Specifications and the Schedule of Prices shall remain in the custody of CLE. CLE shall furnish to the Contractor one copy of the Contract Agreement and one copy of the Contract Drawings. One copy of all further Drawings shall be issued progressively during the execution of the Works. On completion of the Works the Contractor shall forthwith return to the CLE all the Drawings and Specifications issued in good condition.

#### **5. Contractor to Provide Everything Necessary**

- 5.1 The Contractor shall provide everything necessary for the proper execution of the Works and according to the true intent and meaning of the Drawings and Specifications taken together whether the same may or may not be particularly shown or described provided that the same is reasonably to be inferred therefrom; and if the Contractor finds any discrepancy therein he shall immediately and in writing refer the same to the CLE who shall decide which shall be followed. Figured dimensions shall be taken in preference to the same mentioned on or attached to any drawings.

#### **6. Local and other Authorities' Notices and Fees**

- 6.1 The Contractor shall give all notices as required by any law or custom or as directed by the CLE and whether notice be so required or so directed or not shall in all cases give due and sufficient notices to all authorities and other bodies and persons such as Railways, Water, Gas, Telephone, Hydraulic Power, Tamil Nadu Electricity Board, Postal Department, Public Works Department, Highways Department, Municipalities, Police Department, Fire Services Department, Labour department and all other local bodies or authorities connected with utilities, services and Works prior to commencement and at the completion of any Work under this Contract in order that the proper bodies or authorities in respect of the matter aforesaid may be enabled to attend and see that the Works within their jurisdiction and all matters and things incidental and appertaining thereto are secured, re-laid or reinstated in a proper and satisfactory manner and so that such bodies and authorities may be enabled to attend and secure, shore up after the position and remove, relay and reinstate the Works and



things belonging to them but the Contractor notwithstanding any notice given aforesaid shall be chargeable and responsible for the proper protection and restoration of all matters and things herein referred to.

- 6.2 The Contractor shall conform to and comply with the regulations and by-laws of the State Government, Central Government and all other local authorities as referred to but not limited to in clause 6.1 above, the provisions contained in the various Labour Acts enacted by the State Legislature and Central Parliament in force and rules made there under including those under the Minimum Wages Act, Factories Act, the Indian Electricity Act and rules framed under it, Workmen Compensation Act, Provident Fund Regulations Act, Employees Provident Fund Act 1961 and Schemes made under the said Act for health and sanitary arrangements of Workers etc., and the Contract Labour (Regulation and Abolition) Central Act 1970 and the Contract (Regulation and Abolition) Central Rules 1971 etc. for welfare and protection of Workers or for the safety of the public and all other insurance provisions.

The contractor shall comply with the provisions of the Apprentices Act, 1961 and the rules and orders issued there under from time to time. If he fails to do so, his failure will be a breach of the contract and the Superintending Engineer may, in his discretion, cancel the contract. The contractor shall also be liable for any pecuniary liability arising on account of any violation by him of the provisions of the said Act.

- 6.3 The Contractor shall pay and indemnify CLE against any fees or charges demandable by law by any of the above authorities in respect of the Works. CLE shall not be liable for the failure of the Contractor in conforming to the provisions of the Act, Rules and Regulations etc. referred to in the above para/s and in case of any contravention of the provisions of the Acts, Rules and Regulations etc., the Contractor shall keep CLE indemnified against any loss, cost, penalty, damage, litigation & cost thereof in the event of any action being taken for contravention.

## **7. Limits and Access to Site**

- 7.1 The Contractor shall be limited to the lands and other places on, under, in or through which the Works are to be executed or carried out and any other lands or places provided by CLE for the purposes of the Contract. Except as defined below, the limits of the Site shall be as shown in the drawings.
- 7.2 Where Works are in highways the limits of the Site shall be the limits of the highways. Where pipelines and appurtenant Works are not in highways, the limits of the Site, unless otherwise shown on the drawings, shall be as required for the Work. The Contractor shall inform himself of the number and nature of the existing roads and cart tracks available for access to the site of the Work and make due provision in his cost for any difficulty involved in carting materials and surplus excavation.

- 7.3 Reasonable access across the Site shall be maintained for the use of occupants of adjoining lands. Should the Contractor require land beyond the Site he shall notwithstanding clause 9 provide it entirely at his own expenses and before taking possession shall supply the CLE with a copy of the necessary permits.
- 7.4 Access to the Site is available where the Site adjoins public highways, but is not otherwise provided unless shown on the drawings.
- 7.5 When necessary for the safety and convenience of Workmen, public or livestock, or for the protection of the Works, the Contractor shall at his own expense provide adequate temporary fencing to the whole or part of Site.
- 7.6 The Contractor shall not disturb, damage or pull down any hedge, tree or building within the Site without the written permission of the CLE.

## **8. Inspection of Site**

- 8.1 The Contractor shall be deemed to have inspected and examined the Site and its surroundings and to have satisfied himself before submitting his Tender as to the nature of the ground and sub-soil, the form and nature of the Site, quantity and nature of the Work and materials necessary for the completion of the Works and the means of access to the Site, the accommodation he may require and in general to have obtained himself all necessary information as to risk, contingencies and other circumstances which might influence or affect his prices.

## **9. Contractor not to Occupy Land etc.**

- 9.1 In no case shall the Contractor continue to use or occupy or allow to be used any land or property either for the deposit of materials or plant for any purpose whatever, after written notice from the CLE shall have been addressed to the Contractor at his usual or last known place of abode or business and sent through the post office or other modes of delivery requiring the Contractor to remove or cause to be removed all such materials or plant from any such land or property as aforesaid or to give up vacant possession of such land or property to the CLE and should any such materials or plant remain upon any such land or property remain occupied or be used after such notice for any purpose whatever as aforesaid, then and in every such case and after the same shall happen, the Contractor shall forfeit and on demand pay CLE the sum of Rs.50,000/- (Rupees fifty thousand only) per day as liquidated and ascertained damages for each and every day during which the said land or property are so used and occupied as aforesaid from the time such notice has been given.

**10. Programme to be Furnished**

- 10.1 On the acceptance of his Tender the Contractor shall submit to the CLE and ILIFO for its approval a programme showing the order of procedure and method in which he proposes to carry out the Work and shall whenever required by the CLE and ILIFO furnish for his information particulars in writing of the Contractor's arrangements for carrying out of the Works and of the constructional plant and temporary Works which the Contractor intends to supply, use or construct as the case may be. The submission to and approval by the CLE of such programme or furnishing of such particulars shall not relieve the Contractor of any of his duties or responsibilities under the Contract.

**11. Setting Out**

- 11.1 The Contractor shall set out the Works and during the progress thereof he shall amend at his own cost any errors arising from inaccurate setting out unless the CLE shall otherwise decide. Any assistance, which the CLE may render to the Contractor in setting out, shall in no way relieve the Contractor of entire responsibility for the correctness of all setting out.

**12. Days and Hours of Work**

- 12.1 The contractor should inform the Visharam Tanners Common Facility Centre Pvt Ltd (Vishtan) about the working hours, and in case of any night shifts, working on holidays etc, contractor should inform the Vishtan well in advance. The contractor will be solely responsible for obtaining required permissions for such workings from competent authorities if any, and for any damages, consequences arising out of such workings.

**13. Contractors Superintendence**

- 13.1 The Contractor shall keep constantly on the Site of the Works a Site Manager approved by the ILIFO. The Contractor shall also deploy such assistants in each trade as may be necessary and who must be capable of receiving verbal instructions in English. The Site Manager shall be constantly on the Works and shall give his whole time to the superintendence of the same and shall be in full charge of the Works and shall be responsible for the safety of all operations. Any directions or explanations given to such Site Manager / representative and his assistants shall be held to have been given to the Contractor in pursuance of clause 2 thereof.

**14. Discharge of Workmen**

- 14.1 The Contractor shall employ only such technical staff, foreman, artificers and laborers on the Works as are thoroughly efficient, competent and skilled and of good character. If, in the sole opinion of the CLE, any person employed by the Contractor misconducts himself or has caused quarrels or delays or is incompetent, the

Contractor, when so directed by the ILIFO in writing, shall at once remove such person from the Works and he shall not again be employed on the Works without the written permission of the CLE and ILIFO.

## **15. Contractor's Obligations**

15.1 The Contractor shall and will, in good Workmanlike manner, do and perform all Work and furnish and pay for all supplies and materials, machinery, equipment, facilities and means, necessary or proper to perform and complete all the Work required by this Contract, within the time stated in the Tender in accordance with the drawings covered by this Contract and any and all supplemental drawings, in accordance with the directions of the CLE as given from time to time during the progress of the Work, whether or not he considers the directions in accordance with the terms of Contract. He shall furnish erect, maintain and remove such construction plant and such temporary Works as may be required. During execution of the Works the Contractor shall make at his cost all necessary provision for the temporary diversion of roads, cart tracks, foot paths, drains, water courses, channels etc. The Contractor shall observe, comply with and be subject to all terms, conditions, requirements and limitations of the Contract documents and shall do, carry on and complete the entire Work to the satisfaction of the CLE and ILIFO.

15.2 Unless otherwise agreed upon, the following work and services shall also be provided and the Erection Contract:

- Unloading the equipment from the rail or road transport and moving these to storage area. Demurrage charges, if incurred at rail head or at site for default of the Contractor shall be paid by him.
- Opening of packing cases, inspection and checking of materials. Repair and replacement of contract material damaged or lost in transit or at site.
- Final adjustment of foundation levels by chipping and dressing, checking location, elevation etc., of anchor bolts and grouting of anchor bolts and base plates.
- Complete erection of the equipment covered under the contract, final preparation for testing, commissioning, final run and acceptance tests and putting the installation into commercial operation after obtaining necessary approvals from CEIG, TNEB at their own cost.
- All consumable stores required for the above work, except those mentioned under sub-clause.
- Watch and ward to ensure security and safety of materials under his custody.
- Furnishing of residential accommodation to erection labour under his custody.

- Daily transport for his erection personnel, to and from between residence and site.
- All erection tools and lifting tackles. The Contractor shall make replacement on reasonable terms and in such a way as to avoid disturbances in the general progress of the erection of the works. This shall apply irrespective of the question whether or not the risk has passed to the purchase or, who shall be responsible for the unserviceableness as aforesaid.
- On arrival of the materials at site, the contractor Machinery Equipment and Materials, the Contractor shall assume custody thereof and remain responsible there for, until the materials taken over by Vishtan in terms of the contract after successful commissioning of all items.

## **16. Materials & Workmanship**

- 16.1 All materials and Workmanship shall be of the respective kinds described in the Specifications and the Contractor shall upon the request of the ILIFO submit the necessary test certificates to prove that the materials comply with the Specifications. The Contractor shall arrange for and/or carry out any test of any materials, which in the opinion of the CLE is essential to establish conformity with the Specifications. The Contractor shall forthwith carry out such tests as may be required upon the written directions of the CLE at his cost and submit the report within two (2) weeks. In case the materials are found not to confirm with the Specifications, the material, item, component or machinery shall be rejected and the Contractor shall make arrangements to replace the material, item, component or machinery forthwith.

## **17. Access for Indian Leather Industry Foundation (ILIFO)**

- 17.1 The ILIFO or their representatives, shall at all reasonable times have access to the Works and to the Workshops of the Contractor or his sub-contractors and to all other places wherein any materials are being made or obtained for the Work for the purpose of inspection, testing and control.

## **18. Watching and Lighting**

- 18.1. The Contractor shall in connection with the Works provide and maintain at his own cost all lights, security guards, fencing and watching when and where necessary or required by the Vishtan for the protection of the Works or for the safety and convenience of the Public or others.

## **19. Damage to Existing Roads**

- 19.1 The Contractor shall make careful arrangement for the cartage of his materials, plants, etc. so as to cause a minimum of damage to existing roads, footpaths, etc. He shall make good any and all damages to existing roads, footpaths, etc, caused by or attributable in any way to the Contractor's Workmen, due to the cartage of materials

or plants for the Works and he shall indemnify CLE against loss or damage or claims by the Authorities or others to the roads, paths and the like by reason of increased traffic or any other cause. Alternatively, the Contractor shall bear the cost of such maintenance, making good and restoration as a deduction from money due or to become due to the Contractor under this Contract.

## **20. Damage to and Resulting from Performance of Work**

- 20.1. All damage, direct or indirect, of whatever nature resulting from the performance of the Work or resulting to the Work during its progress from whatever cause, shall be borne and sustained by the Contractor, and all Work shall be solely at his risk until it has been finally inspected and accepted by the CLE/ ILIFO.
- 20.2. The Contractor shall indemnify and save harmless CLE from suits, actions, damages and costs of every name and description resulting from the Work under this Contract during its prosecution and until the acceptance thereof and CLE may retain such moneys from the amount due to the Contractor as may be necessary to satisfy and claims for damages recovered against CLE. The Contractor's obligations under this paragraph shall not be deemed waived by the failure of CLE to retain the whole or any part of such moneys due to the Contractor, nor shall such obligation be deemed limited or discharged by the enumeration or procurement of any insurance for liability for damages imposed by law upon the Contractor, Sub-Contractor or CLE.

## **21. Impact on Environment**

- 21.1. From his experience and expertise in similar Works, the Contractor shall assess the environment impact of the activities at the site and shall take appropriate sanitation and safety measures during the execution of the Contract. The Contractor shall abide by the rules, regulations and laws as enforced by the Authorities for the protection of the environment and Contractor's quoted price shall be deemed to have taken care of all such requirements.

## **22. Provision for Noise Protection and Safety Requirements for Building Operations and Works of Engineering Construction**

- 22.1. The Contractor shall comply with the provision of the Factories Act and Pollution Control Act and any other amendment that may be brought to these Acts from time to time for noise pollution and provide the necessary safety equipment such as but not restricted to ear protectors and shall ensure proper audiometric examination for Workers where pneumatic drilling and or piling Work is involved in the Work or where the noise level is above 80 dBA for Workers exposed to these conditions for more than eight (8) hours per day.
- 22.2. The Contractor shall be liable for all penalties and damages whatsoever in the event of Workers failing to use or wear such safety equipment.

- 22.3. Further, the CLE may issue letters of warning of any violation and if the Contractor fails to comply with the instructions, the CLE may instruct suspension of Works with all consequences and delays to the account of the Contractor.

### **23. Cooperation with other contractors**

- 23.1. The Contractor shall cooperate with other contractors / suppliers, if any, for any associated installation and freely exchange all technical information with them to obtain the most efficient and economical design and to avoid unnecessary duplication of Equipment. No remuneration shall be claimed from the for such technical cooperation. If any of the Contractor's work depends upon the works of any other contractor, for proper execution or results the Contractor shall inspect and inform the ,of any defects in such works that render it unsuitable for such proper execution or results immediately on receipt of such request from Vishtan.
- 23.2. The Contract work shall be of the best quality and workmanship according to the latest Architecting practice available at the time of award of Contract and Equipment, Installation and Machinery shall be manufactured from Materials of the best quality or highest class intended for their purpose. They shall be designed, manufactured, supplied and, if required, erected and maintained until their acceptance in India, in accordance with the requirements of the Contract.
- 23.3. The Contractor shall procure and / or fabricate and erect all Materials and Equipment, as provided in the Contract, in accordance with all requirements of Central and State Government enactments, rules and regulations governing such work and codes and standards listed in the Contract documents and normal considerations of quality and good workmanship. This shall not be construed as relieving the Contractor from complying with any requirements of the drawings and Contract Specifications which may be more rigid than and not contrary to, the above mentioned rules nor from providing such construction as may be required by the above mentioned rules and regulations, even though, it may not be shown on the drawings or in the specifications. In case if variance of the drawings and/ or Contract Specification from the laws, ordinances, rules and regulations, governing the work, the Contractor shall immediately notify Vishtan.

It is the sole responsibility of the Contractor, however, to determine that such variance exists. Wherever required by regulation, the Contractor shall also obtain relevant statutory authorities' approval (e.g. Electrical Inspector etc) for the installation, Machinery and Equipment supplied by the Contractor.

- 23.4. Codes and Standards referred to in the Contract documents shall be followed. In general, the Equipment shall be designed and manufactured conforming to the relevant Indian Standard Specifications (ISS) issued by Indian Standards Institutions, New Delhi. In the absence of suitable Indian Standards, Codes and Standards of other countries and International Organization for Standardization (ISO) can be followed,

with prior approval of the / Consultants, provided Materials and Equipment according to those standards are equal to or better than corresponding standards specified in the contract. The Standards followed shall be clearly indicated in the tender.

#### **24. Removal and Disposal of Debris and Waste**

- 24.1. The Contractor is prohibited from dumping building debris, rubbish and waste at the Site, vacant plot of land, roadside or drains as it may cause obstruction, pollution and mosquito breeding. All rubbish, building debris and waste arising from the Contractor's occupation of the site of Works must be collected, stored and removed from the site on a daily basis as often as necessary and disposed of in accordance with the directions of the CLE or ILIFO.

#### **25. Tests at site**

- 25.1. In all cases for tests at the site, the Contractor, except where otherwise specified shall provide free of charge, such labour, materials, stores, all apparatus and instruments as may be required from time to time as may reasonably be demanded to carry out such tests of the installation, Material or workmanship in accordance with the Contract. Special apparatus and instruments, if any required shall be provided by the Contractor.

#### **26. Tests on completion**

- 26.1. Where possible all tests shall be carried out before shipment, raiment or dispatch by any other means. Should however, it become necessary for the final tests as to performance and guarantees to be held over until the installation is erected at site, they shall be carried out in the presence of the Contractor's representative within 15 days or such time as may be considered reasonable by Vishtan, from the date of completion of erection or from the date on which the installation is put into commission. Should the result of these tests not come within the margin specified, the tests shall, if required, be respected within 15 days from the date the installation is ready for retest, and the Contractor shall repay to Vishtan, all expenses which he may be put to by such re-tests. All tests will be conducted by the Contractor in the presence of the, authorized representatives.

#### **27. Site Clearance on Completion of Work**

- 27.1. On completion of the Work all rubbish, debris, wastes, materials and temporary structures of any sort or kind used for the purpose of or connected with its fabrication and erection are to be removed by the Contractor and all pits and excavation filled up and the Site handed over in a tidy and Workmanlike condition and no final payment in settlement of the account for the said Work shall be held to be due or shall be made to the Contractor, till such site clearance shall have been effected by the Contractor.



The ILIFO shall be at his liberty to withhold any payment due to the Contractor till such time as when the Site has been cleared to the fullest satisfaction of the CLE and ILIFO.

## **28. Use of Explosives**

- 28.1. Explosive shall not be used on the Work by the Contractor without the permission in writing of the CLE and ILIFO and then only in the manner and to the extent to which he has prescribed. When explosives are used the same shall be stored in a special magazine to be provided by and at the cost of the Contractor, who shall be responsible for all damage, loss or injury to any person or property and shall be responsible for complying with all the statutory obligations in this respect.

## **29. Variations and Additional Work**

- 29.1. The ILIFO may at any time and during the progress of the Works, by order in writing under his hand, make or cause to be made any variations from the original Drawings, Schedule of Prices and Specifications by way of addition or omission or otherwise deviating therefrom and the said Works shall be executed according to the said variations or deviations under his direction and to his entire satisfaction as if the same had been included in the said original Drawings, Schedule of Prices and Specifications and any Work or materials which shall be ordered not to be done or used shall be omitted or shall not be used by the Contractor. No variation shall vitiate this Contract.
- 29.2. The CLE shall have the right to increase the tendered Work without the consent of the Contractor provided that such increase or decrease in the tendered Work shall be limited to plus or minus twenty five(25) percent of the Contract value on a cumulative basis. The additional payment in case of any increase in the tendered Work, or reduction in the Contract value in case of any decrease in the tendered work, shall be based on the Schedule of prices on a pro-rata basis.
- 29.3. All variations authorized as per clause 29.2 shall be measured by the ILIFO and the Contractor shall be given the opportunity of being present during such measurements and for taking notes as required. The Contractor shall be supplied with a copy of the measured items on or before the date of ILIFO's certificate in respect of such variations and the valuation thereof.
- 29.4. For any additional Work authorized by the CLE and not previously tendered, the valuation shall be made in accordance with the following rules:
- (i) The prices as entered in the Schedule of Prices after adjustment, if necessary, as provided in clause 29.2 shall determine the valuation of the additional Work of similar character executed under similar conditions of Work priced therein;
  - (ii) The said prices, where additional Works are not of similar character or executed under similar conditions as aforesaid, shall be the basis of valuation for the same

as far as may be reasonable. Failing which, a fair valuation thereof shall be made based upon prices for similar Work in the locality current at the time the additional Works are executed;

(iii) If the prices for the additional Work cannot be determined in the manner specified in sub clause (i) or (ii) above, then the Contractor shall within seven (7) days of the date of receipt of the order to carry out the additional Work and submit to the ILIFO in writing the price he intends to charge for the additional Work. This shall be supported by an analysis of the cost for the additional Work including an analysis of the cost for material and labour and the ILIFO shall verify the cost on the basis of the prevailing market costs. The Contractor shall be allowed an amount of twenty (20) percent over and above the cost to cover the Contractor's supervision, overheads and profit. The CLE shall then authorize the Contractor in writing to carry out the additional Work based on the price to be paid to the Contractor for such additional Work on a mutually agreed basis.

29.5. The amount to be allowed in respect of authorized variation and additional Work as described above shall be added or deducted from the Contract price as the case may be.

29.6. Same as expressly provided herein there shall be no variation in the amount payable for the execution and completion of the Works by CLE to the Contractor except for statutory variation in Works Contract Tax and Customs Duty. It is understood that no account shall be taken by CLE of any amount by which any cost incurred by the Contractor shall have been increased due to any law or of any order, regulation, or by-law having the force of law or by reason of any rise in the rates of raw materials, fabrication materials, components, items, machinery, wages payable to labour or in the cost of the fuel or transport or otherwise due to any other reasons.

### **30. Deduction from Money due to the Contractor**

30.1. All losses, costs, damages and expenses and other money payable to CLE by the Contractor under any stipulation in this Contract may be retained out of any money then due or which subsequently becomes due from CLE to the Contractor under this Contract or any other Contract or otherwise howsoever and in case such money then due or to become due to the Contractor by CLE shall be insufficient to pay such losses, costs, damages and any other money payable to CLE by the Contractor, it shall be lawful for CLE without any further consent on the part of the Contractor, to sell and dispose of any or all of the securities deposited with CLE by the Contractor as aforesaid and with and out of the proceeds of such sale, after payment of all expenses connected therewith or reimbursed and pay to CLE all such losses, costs, damages and expenses and any other money payable to CLE by the Contractor and in case such proceeds of sale of the said Government promissory notes or securities shall be insufficient for such purpose, then and in that case, it shall be lawful for CLE to recover the residue thereof, if necessary by legal proceedings against the Contractor.

**31. No Payment on Contractor's Non-Compliance**

- 31.1. So long as any lawful or proper direction concerning the Work or materials or the performance of the Contract, given by the CLE remain uncomplied with, the Contractor shall not be entitled to have any payment rendered on account of Work completed or articles delivered until such lawful or proper direction aforesaid has been fully and satisfactorily complied with.

**32. Materials Brought to Site**

- 32.1. Materials brought to site for incorporation in the Works consisting of plant, machinery, tools, tackles, raw materials, components, parts, spares and all other materials required for the execution of the Works and provided by the Contractor which have been delivered to and placed on or adjacent to the Site of Works shall not be removed except for use in the Works unless the CLE has consented in writing for such removal. However, the Contractor shall remain responsible for loss or damage to such materials and goods.

**33. Examination of Work before Covering Up**

- 33.1. No Work shall be covered up or put out of view without the approval of the ILIFO and the Contractor shall afford full opportunity for the ILIFO to examine and measure and Work which is about to be covered up or put out of view and to examine foundations before permanent Work is placed thereon. The Contractor shall give due notice to the ILIFO whenever any such Work or foundations is or are ready or about to be ready for examination and the ILIFO shall without unreasonable delay, unless he considers it unnecessary and advises the Contractor accordingly, attend for the purpose of examining and measuring such Work or examining such foundations.

**34. Quality of Articles, Materials, Equipment and Workmanship**

- 34.1. Articles, materials and equipment to be incorporated into the Work under the Contract shall be new and unused unless otherwise specified.
- 34.2. Unless otherwise authorized, articles, materials and equipment which are specified to be in accordance with referenced standards, published specifications (as cited in the Technical Specifications), shall meet the requirements of the applicable standard, published specifications and revisions thereof and amendments thereto current on the date of the Tender.
- 34.3. All parts shall be made accurately to standard gauge where prescribed to a longer extent possible, so as to facilitate replacement and repairs insofar as practicable. Incidental fittings, fixtures, accessories and supplies shall be new of approved manufacturer and of standard first grade quality.
- 34.4. All materials, supplies or articles required in the Work which are not covered by detailed specifications herein shall be standard products of reputable manufacture and suitable for the intended use. Unless so directed by the CLE tests for these items will not be required but such items will be subject to the approval of the CLE. Tests, if

directed, shall be in conformity with approved modern methods for the particular item and class of Work.

- 34.5. All Work shall be performed and completed in a thorough, workman like manner and shall follow the best Engineering practice in the manufacture of high grade equipment and fabrication of materials, notwithstanding any omission in the Specifications or Drawings. All Work shall be performed by tradesmen skilled in their various trades.

### **35. Samples**

- 35.1. Where materials and fittings are specified to be "approved", samples shall be submitted for approval before ordering of the materials or delivery to the Site. All samples which are approved will indicate the standard to be maintained in the execution of the Works and shall be so marked and retained by the CLE until the completion of the Works. In the case of rejection, further samples shall be submitted until they are approved. The CLE may reject any material or Workmanship that is, in his opinion, not up to the approved standard. All samples submitted shall be free of cost.

### **36. Materials, Services and Facilities**

- 36.1. It is understood that, except as otherwise specifically stated in the Contract documents, the Contractor shall provide and pay for all materials, labour, tools, equipment, water, light, power, transportation, superintendence and all other services and facilities of every nature whatsoever necessary to execute, complete, and deliver the Work within the time stated in the Contract.

### **37. Manufacturers of Specified**

- 37.1. The Contractor shall procure and supply equipment of the makes as specified in the Contract document only. Failure to do so shall result in the rejection of the equipment. Any request for post-facto vendor approval shall not be entertained. In any case before finalizing an order on a vendor the Contractor shall submit to the ILIFO the list of vendors from whom the Contractor intends to procure the particular equipment as well as the detailed ordering technical specifications. On receipt of the correct detailed specifications, ILIFO will review, comment and accord approval so long as the specifications are in accordance with the requirements of the Contract and suitable for the duty conditions. Such reviews, approvals or disapprovals will not be unreasonably withheld.

Any such consent shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for all the acts, defaults and negligence of any vendor, as fully as if they were the acts, defaults and negligence of the Contractor.

- 37.2. In the event of any omission in the make of the equipment or item, the Contractor shall submit to the ILIFO in writing details of the equipment or item proposed for approval, prior to purchase or fabrication of such equipment or item. Subject to the provisions of any applicable laws, approval shall be at the sole discretion of the ILIFO

in writing and the decision of the CLE shall be final. The CLE or ILIFO may require tests of all materials so submitted to establish quality standards at the Contractor's expense. All directions, specifications and recommendations by manufacturers for installations, handling, storing, adjustment and operation of their equipment shall be complied with; responsibility for proper performance shall continue to rest with the Contractor.

### **38. Inspection and Testing**

- 38.1. The Contractor shall carry out inspection and testing as described in the Specifications. All inspection and testing are to be performed as per the applicable codes, standards and accepted engineering practices and to the entire satisfaction of the ILIFO and Vishtan.
- 38.2. The ILIFO shall be entitled at all reasonable times during the progress of the Works to examine and test all materials to be used and all permanent plant to be supplied under the Contract and to inspect the Workmanship of those employed in the Works. If any part of the materials, fittings, items, components or equipment to be incorporated in the Works is manufactured on other premises the Contractor shall obtain for the ILIFO permission to examine and test as if the same were being manufactured on the Contractor's premises. The Contractor shall provide at his own expense such assistance, equipment and materials as may be required by the ILIFO for testing materials, fittings, plant and Workmanship. If required, the Contractor shall produce evidence of accuracy of instruments and gauges used.
- 38.3. If after inspecting, examining or testing the ILIFO decide that any part, materials, fittings, items, components or equipment, permanent plant or portions of the Works are not in accordance with the Contract, he may reject the same by giving the Contractor within a reasonable time notice in writing stating therein the grounds upon which his decision is based.
- 38.4. If upon inspection and testing any portion of the Work fails to fulfill the Contract requirements and is altered, renewed or replaced, tests on that portion so altered, renewed or replaced, together with all other portions of the Work as are affected thereby, shall, if so required by the ILIFO, be repeated within reasonable time and in accordance with the specified conditions, at the Contractor's expense.
- 38.5. All samples for testing shall be provided by the Contractor at his cost.
- 38.6. Any Work that fails any of the above mentioned inspections or tests shall be corrected by the Contractor at his own expense, within the time limits set by the CLE or ILIFO. All such Work shall be subject to re-testing or re-inspection as above.
- 38.7. Unless waived in writing all inspection and testing shall be made in the presence of ILIFO or an Inspector representing CLE and five copies of all inspection and test reports showing the results thereof shall be furnished to CLE. Where the presence of the inspector is waived, five (or more) certified copies of the inspection / test reports shall be furnished to CLE. Notwithstanding the waiver, the Contractor shall ensure

that the inspection and testing is carried out in the presence of his inspector and duly evidenced in the inspection / test report.

- 38.8. Failure to correct the defects in the Works in the manner prescribed by the ILIFO shall be violation of this Contract of sufficient magnitude to justify remedial action by the ILIFO at the risk and cost of the Contractor.

### **39. Operation & Maintenance Manuals**

- 39.1. The Contractor shall furnish to the CLE and ILIFO, Operation and Maintenance Manuals together with Drawings wherever necessary as specified (other than shop drawings) for all Plant and Equipment supplied under this Contract in sufficient detail to enable CLE to operate, maintain, dismantle, re-assemble and adjust all parts of the Plant and equipment supplied.
- 39.2. If it shall emerge during erection, commissioning or maintenance period of the equipment that the operation and maintenance instructions are inadequate or inaccurate, the Contractor shall carry out and supply the necessary corrections and supplements. This shall be handled in the following manner.
- 39.3. All amendment to drawings shall be made by the Contractor free of charge. Drawings which have been modified shall be re-submitted.

### **40. Standards**

- 40.1. The Contract Drawings and Specifications are based on primarily Indian, British and American Standards. Materials, Workmanship, equipment, procedures, etc which meet other National or International Standards or the National Standards of the country of origin of the equipment will be acceptable. However, the specifications of the equipment or item shall be in accordance with the specifications of the Tender document.
- 40.2. In any event the Contractor shall submit two copies each of the appropriate Standards in the English Language to the ILIFO as part of his shop Drawings for which the proposed Standard will apply. Evaluation and approval of alternative reference Standards will not be made prior to award of the Contract. The Contractor shall submit proof that the alternative International Standards offered are equivalent to or of higher quality than those listed in the Specifications and the ILIFO's decision to accept or reject such alternative is final.

### **41. Metrication**

- 41.1. The Works have been designed in the Metric System (System International) units.
- 41.2. The equipment and materials required for the completion of the Works shall be supplied in metric dimensions. In particular, all pipe joints, and all nuts, bolts, washers, etc. shall be supplied in accordance with the relevant metric standard.

- 41.3. Where standards or codes referred to in these documents have been superseded by an equivalent standard or code expressed in metric units, then the latter shall be used.

#### **42. Security Deposit**

- 42.1. The Contractor shall as a condition precedent to the commencement of any Work under this Contract, furnish a Bank Guarantee as per the format of the Security Deposit Bank Guarantee equivalent to five (5) percent of the Contract Price of the Works for the due and faithful performance of the Contract.
- 42.2. The Bank Guarantee shall be from a Nationalized bank in India. The Bank Guarantee shall be on a non-judicial stamp paper of value not less than Rs. 100/ for five (5) percent of the Contract Price in INR.
- 42.3. The Security deposit shall have validity until end of the execution, i.e., until the completion certificate issued to the contractor. Thereafter the security deposit shall be converted into performance bank guarantee. The performance bank guarantee shall be valid until the entire period of defect liability period.

#### **43. Billing Schedule**

- 43.1. Within thirty (30) days following commencement of the Works, the Contractor shall submit to the CLE as well as ILIFO a Billing Schedule. The Billing Schedule shall be based on prices as quoted in the Schedule of Prices and shall indicate the breakdown of quantities and prices of the various items of Work in the Schedule Prices. The sum total of the Billing Schedule shall equal the lump sum Contract Price.
- 43.2. Payment to the Contractor against the monthly invoices shall be made based on the approved Billing Schedule only.
- 43.3. The total number of RA bill till the completion of the project shall not exceed six in numbers in totality.

#### **44. Progress Payments**

- 44.1. The Contractor shall submit to the CLE, Vishtan as well as ILIFO at the beginning of each succeeding month a statement of Work done together with the values as per the approved Billing Schedule.

PMC, shall except as otherwise provided, ascertain and determine by measurement, the value in accordance with the contract of work done. All measurements and levels shall be taken jointly by the PMC, Vishtan or his authorized representative and by the contractor or his authorized representative from time to time during the progress of work and such measurements shall be signed and dated by all concerned. The contractor shall without any extra charge provide all assistance with every appliance, labour and other things required for measurements and recording levels.

Except where any general or detailed description of the work expressly shows to the contrary, measurements shall be taken in accordance with the procedure set for thin the specifications notwithstanding any provision in the relevant Standard Method of measurement or any general or local custom. In the case of items which are not covered by specifications, measurements shall be taken in accordance with the relevant standard method of measurement issued by the Bureau of Indian Standards and if for any item no such standard is available, then a mutually agreed method shall be followed.

Upon approval of the statement of Work, the Contractor shall immediately submit the invoice to Vishtan and copy to ILIFO and CLE for payment which shall be based on the approved statement of Work done in the previous month together with the values as per the approved Billing Schedule. The notice shall be accompanied by such supporting documents as may be required under the provisions of the Contract. At the discretion of the ILIFO, more than one invoice per month may be submitted by the Contractor. Vishtan will certify the bills and sent to ILIFO for verification.

- 44.2. Within Ten (10) days from the date of receipt of the invoice, the ILIFO shall furnish a Payment Report to the CLE which will have the details of Work in Progress, along with Site Photographs. The CLE will process the payment to the Contractor in connection with the Work referred to in that report, subject to any deductions as per the provisions of the Contract. Prior to processing of bills, CLE may send the payment report and the invoice to technical agency appointed by CLE, whenever required.
- 44.3. No certification of the ILIFO shall be considered conclusive evidence as to the sufficiency of any Work to which it relates nor shall it relieve the Contractor from his liability to amend and make good all defects, shrinkage's, other faults or damages as provided by this Contract.

#### **45. Payment of RA Bills**

- 45.1. The Contractor shall submit to the CLE as well as to the PMC at the beginning of each succeeding month a "Statement of Work Done" together with the values as per the approved Billing Schedule. The 'Statement of Work Done' should be prepared by the Contractor as per the BOQs given in the Work Order, and the approved rates. This should be got verified by the PMC, with reference to the BOQ quantities and rate approved, vis-à-vis the work done. The statement of work done prepared by the contractor duly counter signed by PMC with signature seal and date.

Accordingly the invoice should be raised by the Contractor and the same shall be submitted to the CLE under copy to PMC. The PMC has to verify the invoice and supporting documents including the Statement of Work Done and forward its finding to Technical Agency for its recommendations. The process should be repeated for each RA bills and second RA Bill onwards the previous BOQ's wise quantities for



which payment made, and the amount should be indicated in the each subsequent statement of RA Bills. The notice shall be accompanied by such supporting documents as may be required under the provision of the Contract.

At the discretion of the PMC, more than one Invoice per month may be submitted by the Contractor.

Under no circumstances, the PMC-ILIFO/Technical Agency should certify in the Statement of Work Done any excess work done over and above the approved BOQ quantities under the contract. If any work subsequently is felt to be carried out which is beyond the BOQ's given, due to whatsoever reasons, this should be done outside the scope of the contract. This means, the expenses for the work done beyond approved BOQ quantities by the contractor is not the responsibility of the CLE and this should not be billed to the CLE. The Contractor should raise separate Invoice to the promoter VISHTAN and submit to the VISHTAN and PMC. As such, this should be dealt separately between the promoter organization VISHTAN, PMC and the contractor outside the work contract of CLE.

#### **46. Retention Money**

- 46.1. The limit of retention money shall be ten (10) percent of the Contract Price from each progress payment shall be deducted as retention money. This money shall be recovered by on or before the attainment of Substantial Completion.

#### **47. Assignment**

- 47.1. The Contractor shall not under any circumstances assign the Contract or any part thereof or any benefit or interest therein or hereunder.

#### **48. Sub-Contract**

- 48.1. The Contractor shall not without the prior written approval of the CLE sub-contract any portion of the Works; which approval shall not be unreasonably withheld. In the event of any portion of the Works being sub-contracted, the Contractor shall be solely responsible for the due observance of the schedules and specifications by such authorized sub-contractors and all the terms, stipulations and conditions herein expressed. In order to obtain such an approval the Contractor shall submit the credentials of the sub contractor such as organization profile, list of similar Works executed in the past five years with value, client list and testimonials for the satisfactory completion of the Work, list of machinery and experts in the organization. On receipt of the particulars the CLE will review and either approve or disapprove in writing. The communication for the approval or the disapproval will not be unreasonably withheld.

- 48.2. Any such consent shall not relieve the Contractor from any liability or obligation under the Contract and he shall be responsible for all the acts, defaults and negligence

of any sub-contractor, as fully as if they were the acts, defaults and negligence of the Contractor.

#### **49. Employment of Children**

**49.1.** No child under the age of eighteen (18) years shall be employed in any Work to be performed under this Contract.

#### **50. Fair Wages**

50.1. The Contractor shall recognize the freedom of all his Workmen to be members of Trade Unions.

50.2. The Contractor shall in respect of all Workmen employed by him in and for the performance of this Contract pay rates of wages and observe hours and conditions of employment as per the established industrial rates and conditions of employment as existing in Chennai and in no case less favourable than such established industrial rates, hours and conditions of employment.

50.3. If no established industrial rates and conditions exist the Contractor shall in respect of the said Workmen pay rates of wages and observe hours and conditions of employment not less favourable than the general rates of wages, hours and conditions observed by other employers of labour whose general circumstances in the trade or industry in which the Contractor is engaged, are similar.

50.4. In this clause the expression "established industrial rates and conditions" means rates of wages and hours and conditions of employment established for the trade or industry concerned by agreement, negotiation or arbitration, the parties to which are organizations of employers and trade unions representing respectively substantial proportions of the employers and Workmen engaged in the said trade or industry. Notwithstanding the preceding sub-clauses, the Contractor in any case shall not pay wages which are below the rates prescribed for minimum wages as per law in the State of Tamil Nadu.

50.5. The Contractor shall notify the CLE and the Commissioner of Labour of the names and addresses of all his sub-contractors. All the stipulations for payment of wages as mentioned above for the Contractor shall also be applicable to the authorized sub-contractors and the Contractor shall be solely responsible in ensuring their adherence.

50.6. The Contractor shall cause notices stating hours of Work, period of meals and rests, rates of pay, rates for overtime, dates of holidays and details of any other condition affecting total emoluments and terms of employment, to be posted conspicuously in all places where Workmen are employed under this Contract at Site.

50.7. The Contractor and his sub-contractors shall maintain and make available at the site of the Works all registers and documents as required under the law in the employment

of labour and shall faithfully adhere to all the rules and regulations as promulgated by the State or Central Government from time to time and any amendments thereof and shall be solely responsible for their adherence throughout the currency of the Contract.

- 50.8. The Contractor shall obtain an insurance policy for the work force exclusively deployed at work-site for a minimum period of 6 months to cover all types of compensations arising out of all types of accidents, riots and unforeseen activities besides compensating properly in conformity to prevailing Market practice.

## **51. Disputes in the Payment of Wages**

- 51.1. In the event of any dispute or difference arising as to the rates of wages to be paid or the conditions of employment to be observed in accordance with clause 50 such dispute or difference shall, unless otherwise disposed of, be referred to the Commissioner of Labour for a final decision which shall be binding on the Contractor or his sub-contractor, as the case may be.

## **52. Wage Books & Time Sheets**

- 52.1. The Contractor shall keep proper wage books, time sheets, registers and records as required under the State and Central Government laws showing the wages paid and the time Worked by all Workmen employed by him or his sub-contractors in the performance of the Contract and shall produce such wage books, time sheets, registers and records on demand for inspection by the ILIFO or the Commissioner of Labour. The Contractor shall also furnish to the ILIFO such information relating to the wages and conditions of employment of such Workmen employed by the Contractor or his sub-contractors as the ILIFO or the Commissioner of Labour or any other Department of the Government may from time to time require.

## **53. Default in Payment of Wages**

- 53.1. In the event of default being made in the payment of any money in respect of wages or any dues of any Workmen employed by the Contractor or his sub-contractors in and for the performance of this Contract and if a wage or dues claim is filed with CLE or with the Commissioner of Labour and proof thereof is furnished to the satisfaction of CLE or the Commissioner of Labour, CLE may failing the payment of the said money by the Contractor make payment against such claim of wages or dues to the Commissioner of Labour out of any moneys at any time due to the Contractor under this Contract and such payment shall be deemed to be a payment made to the Contractor under and by virtue of this Contract.

## **54. Overtime and Bonus Payment**

- 54.1. The Contractor shall allow in his Tender for all bonus payments or other incentive payment schemes, which he deems necessary to complete the Works in time.

54.2. The Contractor, if he considers that it may become necessary to cause overtime to be Worked in order to complete the Contract by the date for completion, shall request for written permission from the ILIFO and allow for such a contingency in his Tender Price.

54.3. It shall be clearly and definitely understood by the Contractor that no claims for any additional compensation in respect of any of the illustrated above, shall be entertained by CLE.

#### **55. Central Provident Fund Contribution by Contractor**

55.1. The Contractor shall be deemed to have included in his Tender Price his contributions to the Central Provident Fund and any other benefits to the Workmen employed by him in accordance with the rules and regulations of the State and Central Government.

#### **56. Labour Lines**

56.1. Labour lines shall not be erected on Site without the approval of the ILIFO. Notwithstanding any such approval given by the ILIFO, the Contractor shall be responsible for such temporary housing as he may erect on Site and for the general welfare of his labour force while on Site.

#### **57. Sanitary Precautions for Staff**

57.1. Sanitary conveniences, properly screened from public observation for the use of all persons employed at Site including those employed by the sub-contractors shall be provided in sufficient numbers and in such manner as the occasion requires. The Contractor shall rigorously prohibit the committance of nuisances within, on, or about the Site. Any employee found violating these provisions shall be discharged and may not again be employed at the Site without the written consent of the ILIFO.

#### **58. Health Services**

58.1. The Contractor shall provide first aid and medical services suitable for the size and composition of his site staff, labour force, and camps (if any). The Contractor shall comply fully with all rules and regulations from time to time issued and orders given by the Health Service of the Government or the local medical or sanitary authorities. The Contractor shall periodically carry out disinfection and fumigation at the labour camps so as to sustain the health of the labour and for ecological safety.

#### **59. Contractor to Appoint Safety Officers**

59.1. The Contractor shall appoint a Safety Officer at Site to oversee adherence of all safety measures and precautions as per laws towards the prevention of accidents. The name, position, addresses and contact no. of the Safety Officer shall be prominently

displayed at Site and reported to the ILIFO. The person so designated shall be available by phone during non-Working hours.

## **60. Penalty for Delay in Completion**

- 60.1. If the contractor fails to maintain the required progress or to complete the work and clear the site on or before the contract or extended date of completion, he shall, without prejudice to any other right or remedy available under the law to the CLE on account of such breach, pay as agreed compensation the amount calculated at the rates stipulated below:

Compensation @1.5% per month of delay for delay of work to be computed on per day basis.

This will also apply to items or group of items for which a separate period of completion has been specified.

- 60.2. The total amount of penalty for delay in completion shall not exceed ten percent (10%) of the Contract Price. The PMC may authorize deduction of penalty from payment due to the Contractor. Payment or recovery of penalty shall not affect the Contractor's liabilities.
- 60.3. The amount of compensation may be adjusted or set-off against any sum payable to the Contractor under this or any other contract with the CLE. In case, the contractor does not achieve a particular milestone or progress of work, the amount shown against that milestone shall be withheld, to be adjusted against the compensation levied at the final grant of Extension of Time. With-holding of this amount on failure to achieve a milestone, shall be automatic without any notice to the contractor. However, if the contractor catches up with the progress of work on the subsequent milestone(s), the withheld amount shall be released. In case the contractor fails to make up for the delay in subsequent milestone(s), amount mentioned against each milestone missed subsequently also shall be withheld. However, no interest, what so ever, shall be payable on such withheld amount.

## **61. Delay and Extension of Time**

- 61.1. If the Works be delayed due to any unavoidable hindrance, due to no fault of the Contractor, then the Contractor shall submit a written application to CLE for extension in time giving justifications thereof.
- 61.2. The CLE shall review the application and after carefully considering the facts either reject the request for the extension in time or make an appropriate recommendation to CLE for favourable consideration.

- 61.3. CLE at its sole discretion may grant such extension in time as may be reasonable without any additional financial implications to CLE. The decision of CLE whether to grant extension of time or not will be final and binding on the Contractor.
- 61.4. The ILIFO shall recommend extension to the completion schedule if a Compensation Event occurs or Variation/Additional Work is issued which makes it impossible for the completion to be achieved within the original completion schedule without the Contractor taking steps to accelerate the remaining Work and which could cause him to incur additional cost.
- 61.5. The ILIFO shall decide whether and by how much to extend the completion schedule within twenty one (21) days of the Contractor requesting the ILIFO for a decision upon the effect of Compensating Event/Variation/Additional Work and submitting full supporting information. If the Contractor fails to give early warning of a delay or has failed to cooperate in dealing with the delay, the delay by this failure shall not be considered in assessing the extension to the completion schedule.
- 61.6. The following are the Compensating Event unless they are caused by the Contractor:
- a) CLE modifies the schedule of the other contractors in a way which affects the Work of the Contractor under the Contract
  - b) The ILIFO does not approve of a vendor or a sub – contractor within 21 days of submission of all correct details.
  - c) The ILIFO gives an instruction for dealing with an unforeseen condition caused by the Employer or additional Work required for safety or other reasons.
  - d) Other contractors, public authorities, utilities or CLE does not Work within the dates and they cause delay or extra costs to the Contractor

## **62. Defects after Completion**

- 62.1. Subject to clauses in the Specification relating to guarantee for any defects, shrinkages, breakages, cracks etc., or any other faults which shall appear in the other parts of the Works from whatever cause within the Defects Liability Period hereof the Contractor shall within a reasonable time after receipt of the ILIFO's written instructions rectify or replace at his cost as the case may be, the defects, shrinkages, breakages or faults to the satisfaction of the ILIFO.
- 62.2. If the Contractor shall fail to carry out the rectification or replacement as stipulated in the preceding sub-clause within the reasonable time as allowed by the ILIFO, CLE shall either have the option to replace/rectify the defect(s) through other agencies and recover the entire cost including the cost of supervision and such other costs as may have been reasonably incurred from any payments due to the Contractor or encash the Performance Bank Guarantee for failure on the part of the Contractor to rectify the defect(s) within a reasonable time and the decision of the CLE in this matter shall be final and binding on the Contractor.

**63. Protection of Work & Vishtan's Property**

- 63.1. The Contractor shall at all times safely guard Vishtan's property from injury or loss in connection with this Contract. He shall at all times safely guard and protect his own Work, and that of adjacent property, from damage. The Contractor shall replace or make good any such damage, loss or injury.
- 63.2. The Contractor shall take all necessary precautions for the safety of employees on the Work, and shall comply with all applicable provisions of the Indian safety laws and fabrication codes to prevent accidents or injury to persons on, about, or adjacent to the premises where the Work is being performed. He shall erect and properly maintain at all times as required by the conditions and progress of the Work, all necessary safeguards for the protection of Workmen and the public; and shall post danger signs warning against the hazards created by such features of fabrication as protruding nails, window openings, stairways, and falling materials. He shall designate a responsible member of his organization whose duty shall be prevention of accidents. The name and position of any person so designated shall be reported to the ILIFO, and the designated person shall be available by phone during non-Working hours.
- 63.3. In the event of temporary suspension of Work or during inclement weather or whenever the ILIFO shall direct, the Contractor shall cause his sub-contractors to protect carefully his and their Work and materials against damage or injury from the weather. If, in the opinion of the ILIFO, any Work or materials shall have been damaged or injured by reason of failure on the part of the Contractor or any of his sub-contractors to so protect his Work, such materials shall be removed and replaced at the expense of the Contractor.

**64. Essential Hired Plants**

- 64.1. The expression "Essential hired plant" shall mean all constructional Plant, Temporary Works and materials for Temporary Works, the withdrawal of which in the event of termination of the Contract under clause 73 hereof might (having regard to the methods of construction / fabrication employed prior to determination) endanger the safety or stability of or result in serious disturbance to the execution of any part of the Works and which are held by the Contractor under any agreement for hire thereof.
- 64.2. The Contractor shall not remove the hired plant without the written permission of the ILIFO.

**65. Conditions of Hire of Plant**

- 65.1. With a view to securing in the event of termination of the Contract under clause 73 hereof the continued availability for the purpose of executing the Works of any Essential Hired Plant, the Contractor shall not bring on to the site Hired Plant unless the agreement for hire thereof contains a provision that the owner thereof will on request in writing made by CLE within seven days after the date on which such

termination has become effective and on CLE undertaking to pay all hire charges in respect thereof from such date hire such Hired Plant to CLE on the same terms in all respects as the same was hired to the Contractor so that CLE shall be entitled to permit the use thereof by any other Contractor employed by them for the purpose of completing the Works under the terms of the said clause 73.

## **66. Damages to Persons & Property Insurance**

- 66.1. The Contractor shall be liable for and shall indemnify CLE against all liabilities, losses, claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect of personal injury to or death of any person whomsoever arising out of or in the course of or by reason of the execution and maintenance of the Works.
- 66.2. The Contractor shall be liable for and shall indemnify CLE against all liabilities, losses, claims, demands, proceedings, damages, costs, charges and expenses whatsoever in respect of any injury or damage to any property real or personal arising out of or in the course of or by reason of the execution and maintenance of the Works. To this end, the Contractor shall at his expense, shore, sling, protect, support, alter, restore and make good all houses, electric posts, fence or any other properties or things which may be disturbed or damaged during the execution of the Works. Should he fail to do so, the same shall be carried out by CLE and the cost thereof recovered from the Contractor.
- 66.3. The Contractor shall not commence any Work in or upon, under, across or through any land, house, building, shed, yard, area, roadway, ground, garden or any other place being private property, until authorized in writing by the ILIFO to do so. In the case of property belonging to CLE (other than property forming part of the Works prior to taking over by CLE) or to any statutory or Government Departments other than CLE (hereinafter in this sub-clause referred to as "such authority") the cost of making good any such injury or damage as aforesaid shall be recoverable by CLE from the Contractor by payment or by deduction under clause 29 herein above on presentation of an itemized certificate from CLE or of such authority, as the case may be, specifying the amount payable, the Contractor or his insurers to be allowed a period of two weeks to make representations why such payment or deduction should not be made and the decision of CLE after receipt of such representation of the Contractor or his insurers or after the said period of two weeks without such representations having been received shall be deemed to be the decision of the ILIFO.
- 66.4. The Contractor shall report to ILIFO, Vishtan and CLE any and every accident within 24 hours of its occurrence.
- 66.5. The Contractor shall forthwith and as a condition precedent to the commencement of any Work under this Contract insure against the aforesaid risks or matters with an insurance company approved by Insurance Regulatory Authority of India and shall make all payments necessary for the above purposes on the first day on which the



same ought to be paid. The Contractor shall produce on demand to CLE the insurance policies and the receipt of each of the said payment a photocopy of the insurance policy obtained for verification as may be required.

#### **67. Employees' State Insurance Act**

- 67.1. The Contractor shall hereby accept full and exclusive liability for the compliance with all obligations imposed by the Employee's State Insurance Act 1948 and the Contractor further agrees to defend, indemnify and hold CLE harmless from any liability or penalty which may be imposed by any Central, State or local authority by reason of any asserted violation by the Contractor or his sub-contractor, of the Employees' State Insurance Act 1948 and also from all claims suits or proceedings that may be brought against CLE arising under, growing out of or by reason of the Work provided for by this Contract whether brought by employees of the Contractor, by third parties, or by Central or State Government authority or any political sub-division thereof.
- 67.2. The Contractor agrees to file with the Employees' State Insurance Corporation, the Declaration forms and all forms which may be required in respect of the Contractor's or sub-contractor's employees who are employed in the Work provided for under the agreement. The Contractor shall deduct and secure the agreement of the sub - contractor to deduct the employees' contribution as per the first schedule of the Employees' State Insurance Act from wages and affix the Employees' contribution cards at wages payment intervals. The Contractor shall remit and secure the agreement of the sub-contractor to remit to the State Bank of India, Employees' State Insurance Corporation Account, the Employers contribution as required by the Act. The Contractor agrees to maintain all cards and records as required under the Act in respect of employees and payments and the Contractor shall secure the agreement of the sub-contractor to maintain such records. Any expenses incurred, for the contribution, making contribution or maintaining records shall be to the Contractor's or sub-contractor's account.
- 67.3. CLE will retain such sum as may be necessary from the total Contract price until the Contractor shall furnish satisfactory proof that all contributions as required by the Employees' State Insurance Act, 1949 have been paid.

#### **68. Workmen's Compensation and Employer's Liability Insurance**

- 68.1. The Contractor shall forthwith and as a condition precedent to the commencement of any Work under this Contract take out at his own expense with an insurance company to be approved by CLE in writing a policy or policies of insurance indemnifying the Contractor and CLE from all liabilities arising out of claims by any and every Workman employed in and for the performance of this Contract for payment of compensation under or by virtue of the Workmen's Compensation Act or other law

amending or replacing such Act and from all cost and expenses incidental or consequential thereto.

- 68.2. The said policy or policies so taken out shall be maintained by the Contractor in full force and effect payments of all premiums from time to time on the first day on which the same ought to be paid and until the completion of this Contract. Upon demand the Contractor shall produce to CLE the policy and the receipts for payment of premiums for verification as may be required.
- 68.3. If any default is made by the Contractor in complying with the terms of this clause CLE may without prejudice to any other remedy available to CLE for breach of any terms of this Contract:
- (i) with hold all payment which would otherwise be due to the Contractor under this Contract and out of such moneys so withheld satisfy any claims for compensation by Workmen that would have been borne by an insurance company had the Contractor not made default in maintaining a policy of insurance and/or
  - (ii) with hold any payment due as may be reasonable till such time the premiums have been paid and the policy made effective.
- 68.4. Nothing in this clause shall be construed to take away or to waive or in any manner to modify the right of CLE to be indemnified by the Contractor in respect of all compensation, costs and other expenses whatsoever which by reason of the Contractor's default or otherwise become payable by CLE under the said Act or other law.

#### **69. Janata Personal Accident Insurance**

- 69.1. The Contractor shall also take out the Janata Personal Accident Insurance Policy or any other policy approved by IRDA in favour of each Workmen employed by him on any job pertaining to this Contract. He shall also ensure that similar Janata Personal Accident Insurance Policy in respect of each Workman employed by his sub-contractor if any, is taken out. All such policies in favour of the Workmen of the Contractor as well as the sub-contractor shall be registered with CLE before the commencement of the Work. If the Contractor fails to take out the Janata Personal Accident Insurance Policy as above and any accident occurs, an equivalent amount equal to the compensation payable under the Janata Personal Accident Insurance Policy-according to the nature of the of accident will be deducted from the moneys payable to the Contractor for the Work done or from any other dues payable to the Contractor, and kept in Deposit Account to be paid ultimately to the injured person or their heirs in case of death.
- 69.2. Insurance under the Janata Personal Accident Insurance Policy will be addition to the Insurance under Workmen's Compensation Act 1923, Employees' State Insurance and any other insurance required under the conditions of the Contract.

**70. All Risk Insurance of Contract Works**

- 70.1. The Contractor shall forthwith and as a condition precedent to the commencement of any Work under this Contract, insure against loss or damage by fire or other causes all Works and buildings constructed or in the course of erection in pursuance of or for the purposes of this Contract and all materials and other things delivered on to the site and approved by the ILIFO and ready for incorporation in such Works and buildings and shall keep the same insured until such Works, buildings and things respectively are handed over to CLE.
- 70.2. The said insurance shall be effected with an insurance company approved by CLE for the full value of the Works executed together with all materials on site including any materials supplied by or the property of CLE. The Contractor shall produce to CLE the policies and the receipt for the premium paid for verification as may be required.
- 70.3. In case of failure by the Contractor to effect or renew such insurance, CLE may withhold any payment due as may be reasonable till such time the premiums have been paid and the policy made effective.
- 70.4. In the event of loss or damage by fire or other causes to any Works, buildings, materials or things explained in this clause, the Contractor shall forthwith arrange for inspection by the Insurance company and without any loss of time arrange to file the claim under Insurance. Notwithstanding the filing of claim under Insurance or any settlement thereof by the Insurance Company, the Contractor shall without any delay proceed to rectify the damage including replacement of equipment, items, parts, components, spares, things etc., with minimum loss of time.

**71. Suspension of Progress**

- 71.1. The Contractor shall without any recourse to any claim or demand, delay or suspend the progress of the Works or any part thereof if and when and so often as required by the CLE / ILIFO and such time or times, as may in the judgment of the CLE / ILIFO be necessary for the purposes or advantages of CLE and shall whenever directed by the CLE / ILIFO and upon all needful occasions whether directed or not at the Contractor's expense properly cover down and secure so much of the Works as may be liable to sustain damage from weather or any other cause during the suspension of the progress of the Work and shall at all times and forthwith when required properly make good to the satisfaction of the ILIFO all damages or injury which such Works or any part thereof may have sustained.
- 71.2. Consequently any increase to the Contract Price and any extension to the completion schedule shall be decided by the CLE / ILIFO based on the details of the additional cost incurred and additional time requirement to be submitted by the Contractor.

**72. Power to Take Works Out of Contractor's Hand**

- 72.1. If the Contractor, after receipt of a written notice from the CLE / ILIFO requiring compliance within seven days, fails to comply with such further drawing and/or ILIFO's instructions, CLE may employ and pay other persons to execute any Work whatsoever which may be necessary to give effect thereto and all costs incurred in connection therewith shall be recoverable from the Contractor by CLE as a debt or may be deducted by CLE from any moneys due or to become due to the Contractor.

**73. Termination of Contract**

- 73.1. If the Contractor shall make default in any of the following namely:

- (i) Without reasonable cause wholly suspends the Works before completion;
  - (ii) Fails to proceed with the Works with reasonable diligence;
  - (iii) Refuses to comply with the requirements for insurance.
- (i) Refuses or to a substantial degree persistently neglects after notice in writing from the ILIFO to remove/rectify defective Work or improper defective / substandard materials;

then, if any such default shall continue for seven (7) days after a notice is sent by Registered Post to the Contractor from the ILIFO specifying the same, CLE may without prejudice to any other rights herein contained thereupon by notice sent by Registered Post terminate this Contract on the recommendation of the ILIFO.

- 73.2. If the Contractor:

- (i) During the continuance of the Contract commits an act of bankruptcy;
- (ii) Becomes insolvent or compounds with or makes any assignment for the benefit of his creditors;
- (iii) Assigns or sub-contracts the Contract or any portion thereof without the written permission of the ILIFO

Then, and in any such event, CLE may without prejudice to any other rights herein contained by a notice sent by Registered Post to the Contractor terminate this Contract on the recommendations of the ILIFO.

- 73.3. In any of the above cases the following shall apply, namely:

- (i) CLE may carry out and complete the Works departmentally or employ and pay another agency to carry out and complete the Works and they may enter the Site and use all materials, temporary buildings, plant and appliances thereon, and may purchase all materials necessary for the purpose aforesaid.

- (ii) The Contractor shall if so required by the PMC assign to CLE without further payment the benefit of any Contract for the supply of materials and/or Works intended for use under this Contract or for the execution of any Works and CLE shall pay the agreed price (if unpaid) for such materials or Works supplied or executed after the said termination.
  - (iii) The Contractor shall during the execution or after completion of the Works under this clause as and when required remove from the site his temporary buildings, plant, appliances and any materials as authorized by the ILIFO within such reasonable time as the ILIFO may specify in a written notice him and in default CLE may without being responsible for any loss or damage remove and sell the same holding the proceeds with CLE till the recovery of all costs from the Contractor.
  - (iv) Until completion of the Works under this clause no payment shall be made to the Contractor under this Contract; provided that, upon completion as aforesaid and the verification within a reasonable time of the accounts therefore, the ILIFO shall certify the amount of expenses properly incurred by CLE, and if such amount added to the moneys paid to the Contractor before such termination exceeds the total amount which would have been on due completion the difference shall be debt payable to CLE by the Contractor; and if the said amount added to the said be less than the said total amount the difference shall not be payable by CLE to the Contractor. In the event payment is due to CLE by the Contractor, CLE shall be at liberty to take whatever course of action as may be justified including encashment of the Security Deposit Bank Guarantee for the recovery of the dues.
  - (v) In the event of the completion of the Works being undertaken departmentally, allowance shall be made when ascertaining the amount to be certified as expenses properly incurred by CLE for the cost of supervision, interest and depreciation on plant and all other usual overhead charges and profit, as would be incurred were the Work carried out by the Contractor.
- 73.4. Notwithstanding the above, CLE may terminate the Contract or part thereof for convenience.
- 73.5. If the Contract is terminated at CLE's convenience, the ILIFO shall issue a certificate for the value of Work done, the reasonable cost of the removal of equipment, repatriation of the Contractor's personnel employed solely on the Works and the Contractor's cost of protecting and securing the Works and payments received upto the date of the certificate.
- 73.6. The Contractor shall not be entitled to compensation to the extent that CLE's interests are adversely affected by the Contractor not having given early warning or not having cooperated with the ILIFO.

**74. Gifts, Bribes & Inducements**

**74.1.** CLE shall be entitled to terminate the employment of the Contractor under this Contract and to recover from the Contractor the amount of any loss resulting from such termination, if the Contractor shall have offered or given or agreed to give to any person any gift, bribe or consideration of any kind as an inducement or reward for doing or forbearing to do so for having done or forborne to do any action in relation to the obtaining or execution of this Contract with CLE or for showing or forbearing to show favour or disfavour to any person in relation to this Contractor or any other Contract with CLE, or if the like acts shall have been done by any person employed by the Contractor or acting on his behalf (whether with or without the knowledge of the Contractor), then the ILIFO shall have full authority to expel the Contractor there from and the provision of clause 73 shall become applicable.

**75. Settlement of Disputes**

**75.1.** Any dispute or difference arising on any matter in connection with the execution of Contract whether during the progress of the Works or after the completion of the Contract shall be referred to the Dispute Resolution Board.

**75.2.** The Dispute Resolution Board shall comprise of Senior Executive of CLE, Consultant and Contractor. Each party can nominate a maximum of two (2) representatives.

The Dispute Resolution Board shall deal with all matters of disagreements particularly those arising out of interpretation of drawings, specifications, delays, quality of Works, additional Work, modifications/alterations in Work, changes in site conditions, commercial terms and conditions and additional costs etc. The Dispute Resolution Board will endeavor to arrive at an agreed resolution of all issues thereby avoiding further litigation. The Dispute Resolution Board will:

- a) Issue all necessary clarifications on the matters referred to it.
- b) Decide on extra payment/rebate, if any, in respect of any of the matters.
- c) Suggest steps for prevention of recurrence of similar problems in future.

In the event that no consensus can be arrived at on any of the issues by the Dispute Resolution Board such outstanding issues will be referred to Arbitration.

**76. Arbitration**

**76.1.** Disputes unresolved by the procedures cited above which shall at any time arise between the parties hereto touching or concerning the Works or the execution or maintenance thereof of this Contract or the rights touching or concerning the Works or the execution or maintenance thereof of this Contract or the erection, maintenance, operation or effect thereof or to rights or liabilities of the parties or arising out of or in relation thereto whether during or after completion of the Contract or whether before

or after determination, fore-closure or breach of the Contract (other than those in respect of which the decision of any person is by Contract expressed to be final and binding) shall after written notice by either party to the Contract to the other be referred for adjudication to a panel of two (2) Arbitrators and one (1) Umpire to be appointed as hereinafter provided.

- 76.2. For the purpose of appointing the Arbitrators referred to above, CLE and the Contractor shall appoint one (1) Arbitrator each preferably the members of the Institution of Engineers (India). The Arbitrators before taking upon themselves, the burden of proceedings appoint an Umpire preferably being a member of the Institution of Engineers (India). The appointment of the Arbitrators and the Umpire shall be completed within thirty (30) days from the date of written notice by either party to the Contract to the other.
- 76.3. The Work under the Contract shall, however, continue during the arbitration proceedings and no payment due or payable to the Contractor shall be withheld on account of such proceedings.
- 76.4. The Arbitrators shall be deemed to have entered on the reference on the date they issue notice to both the parties fixing the date of the first hearing.
- 76.5. The Arbitrators may, from time to time with the consent of the parties extend the time for making and publishing the Award.
- 76.6. The Arbitrators shall give separate awards in respect of each dispute referred to them.
- 76.7. The venue of arbitration shall be in Chennai.
- 76.8. The fees if any of the arbitration shall if required to be paid before the award is made and published, be paid half and half by each of the parties. The costs of the reference and of the award including the fees, if any of the arbitration shall be at the discretion of the Arbitrators who may direct to and by whom and in what manner such costs or any part thereof shall be paid and may fix or settle the amounts of costs to be so paid.
- 76.9. The award of the Arbitrators and the decision of the Umpire shall be final and binding on both the parties.
- 76.10. Subject to the aforesaid the provisions of the Arbitration Act 1940 or any statutory modification or re-enactment thereof and the rules made there under, and for the time being in force shall apply to the arbitration proceeding.

## **77. Jurisdiction**

- 77.1. This Contract shall be subject to the laws of the Government of India and any disputes under this Contract shall be subject to the jurisdiction of the Courts in Chennai only.

**78. Notice of Decree**

- 78.1. The Contractor shall not cause, permit or suffer to be issued in satisfaction of any decree, judgment or order given or to be given against the Contractor any notice of lien binding any property of the Contractor which is brought to Site or which is in the possession of CLE.

**79. Stamp Duty**

- 79.1. The proper stamp duty, if any, on this Contract shall be borne by the Contractor.

**80. Force Majeure**

- 80.1. Any delays or failure in the performance of the Contract by the Contractor shall not constitute a default hereunder or give rise to any claims for damages, if any, to the extent that such delays or failure of performance is caused by occurrences such as Acts of God, or expropriation or confiscation of facilities by Government authorities, compliance with any order or request of any Government authorities, acts of war, rebellion, sabotage, calamity, commotion, insurrection, military action, usurped power, floods, earthquake, transport strike, general strikes and riots. The question of continuance of the suspension of Works due to conditions of Force Majeure or termination of the Contract shall be settled by mutual agreement between CLE and the Contractor failing which such agreement shall be settled as provided in clause 76.

**81. Patent Rights & Royalties**

- 81.1. The Contractor shall indemnify CLE against all actions, claims, demands, costs, charges and expenses arising from or incurred by reason of any infringement or alleged infringement of letters, patent design, trade mark, or name copyright or other protection rights, in respect of any goods, materials and plant supplied by the Contractor. The Contract price shall be inclusive of all royalty payments and no price increase can be separately claimed on this account.
- 81.2. In the event of any claim being made or action brought against CLE in respect of any such matters, as aforesaid, the Contractor shall be immediately notified thereof, and he shall at his sole expense conduct all negotiations for the settlement of the claim or action or any litigation that may arise there from with no liability to CLE.
- 81.3. Provided that the conduct of such negotiations or litigations shall be conditional upon the Contractor giving to CLE such security as shall from time to time be required by CLE to cover the ascertained or agreed amount, as the case may be, of any compensations, damages, expenses and costs which might be payable by CLE in respect of, or as a result, of any such negotiations or litigations.



**82. Fossils Etc.**

- 82.1. Any fossils, coins, articles of value or antiquity and structures and other remains or things of interest discovered on the site of the Works shall be deemed to be the absolute property of CLE. The Contractor shall take reasonable precautions to prevent his Workmen or any other persons from removing or damaging any such article or thing and shall immediately upon discovery thereof and, before removal, acquaint the ILIFO of such discovery and carry out his orders as to the disposal of the same.

**83. Advertisement Prohibited**

- 83.1. The Contractor shall not exhibit or permit to be exhibited any advertisement on the Work site, construction plant, or temporary Works. Any such authorized advertisement shall be subject to the approval of ILIFO, Vishtan and CLE before it is put up and shall be immediately removed if ILIFO, Vishtan and CLE so demands.

**84. Cleaning up Periodically and on Completion**

- 84.1. The Contractor shall periodically and as often as the ILIFO directs, clean the site where Work is in progress. No excavated material or debris unused will be permitted to remain at the site of the Work.
- 84.2. On completion of the Work the Contractor shall clean up all Work areas and leave the site as clean as possible to the satisfaction of the ILIFO.

**85. Contractor on Completion to remove all Plant, etc.**

- 85.1. The Contractor shall on completion of the Works or when directed by the ILIFO remove all plant, tools, materials and rubbish which may have been used or may have accumulated during the progress of the Works other than those permanently taken into the Work, and all rubbish or surplus materials or plant which the ILIFO may require the Contractor to remove at any time shall be removed by the Contractor within seven days after the receipt of written notice from the ILIFO requiring him to remove the same, and in default of compliance with such notice, CLE may forthwith remove such rubbish surplus materials of plant at the Contractor's expense.

**86. Contract and Contract Documents**

- 86.1. Notice inviting tender, instructions to bidders, general conditions of contract, tender specifications including, Civil, electrical, bill of quantities, drawings, amendment to tender documents, if any, tender submitted by the tenderer, clarifications or undertaking provided by the bidders, Form of Tender, Tender Deposit, EMD, Performance security Deposit, Special Conditions of Contract, Specifications and any Addenda to be issued, enumerated below shall form part of this Contract and the provisions thereof shall be as binding upon the parties hereto as if they were herein fully set forth. The Table of Contents, titles and headings contained herein in said documents are solely to facilitate reference to various provisions of the Contract

Documents and in no way affect, limit, or cast light on the interpretation of the provisions to which they refer.

## 87. Drawings and Specifications

The following are the Drawings, Specifications forming a part of this Contract:

### Drawings

- 87.1. The drawings have been prepared by the Indian Leather Industry Foundation (ILIFO), Chennai and are included with the Tender document for bidding purpose. Further drawings or details, for clarification but not extension of the Work, may if required, be furnished to the Contractor who shall execute the Work in accordance therewith as if such detail drawings had been attached hereto.
- 87.2. The Contractor shall submit the various drawings and documents as per the following schedule:-

DRAWINGS FOR APPROVAL	WITH IN TWO WEEKS OF AWARD OF CONTRACT
FEED BACK DATA	WITHIN TWO WEEKS OF AWARD OF CONTRACT.
FINAL DRAWINGS	WITHIN 15 DAYS FROM COMPLETION OF WORK.
AS FITTED DRAWINGS	AS REQUIRED BY CEIG SHALL BE GOT APPROVED BY CEIG

- 87.3. All detailed working drawings shall be prepared by Contractor only. The details shown in the drawing shall be as follows:-

- Layout of Electrical Room
- All conducting works for Lighting / Power/ UPS Distribution / Data /Voice.
- Cable Tray Layouts
- Earthing layouts
- Preparation of detailed circuit drawings for Lighting/ Power / 5A Sockets / 15 A Sockets etc. The drawing shall show details of Phase / Circuit No. of every outlet and shall be correlated with Phases and Single Line Diagram.

- For electrical, this category shall include layout drawings showing locations of all electrical Equipment including motors, controls, limit switches, solenoid valves etc., motor list, list of electromagnetic valves, single line inter-locking and sequence diagrams for control , signaling and communication system, location of devices on switch- gear, control panels, desks etc., including sectional views. The details furnished shall include complete cabling drawings giving details of power, lighting and control cables, terminal details, layout of trenches and cable racks / tunnels, conduits etc. The drawings shall also show details of Phase and Circuit Numbers of each and every outlet.
- Drawings for approval of any statutory authorities such as Electrical Inspectorate, Electricity Board etc.
- Preliminary foundation out line drawings, including excavation drawings, load data and bolt locations as well as any specific design criteria, such as thermal protection acid / alkali resistance measures etc that may be required.

#### **FEED BACK DATA**

- 87.4. Certified dimension drawings showing plan, front, rear and sectional views indicating location of each individual Equipment, including where necessary, its auxiliaries and control panels being supplied under the Contract, and also space requirement for operation and maintenance, position of power and control entries and utilities connecting points and connection details.
- 87.5. Electrical power, lighting, control and instrumentation schematic and erection drawings giving power load cable dimensions etc. Circuit numbers, Phase identification of individual outlets.

#### **FINAL DRAWINGS**

- 87.6. Along with the supply of Equipment or along with assembly and erection instructions and drawings covered under drawings , one set of reproducible and six (6) sets of prints shall be furnished for each original drawings, specifications, bill of material, calculation sheets etc., made by the Contractor and his sub contractors under Article 12 incorporating all changes made during the execution of the work, including those made at site during erection, assembly and start-up indicating the authorities who made the changes.

#### **88. Responsibility for Drawings**

- 88.1. The Contractor shall be responsible for any discrepancies, errors or omissions in the drawings and other particulars supplied by him, whether such drawings and particulars have been approved by the ILIFO or not, provided that such discrepancies, errors, or omissions be not due to inaccurate information or particulars furnished in writing to the Contractor by the ILIFO.

**89. Record Drawings and Documents**

- 89.1. On completion of the installation and upon commissioning or final testing the Contractor shall submit two copies of the `as built' drawings for approval and upon approval shall submit two copies in black and white prints on linen-backed paper.
- 89.2. The `as built' drawings shall be prepared in metric paper of A1 size and all units used shall be in metric. The black and white prints shall be produced on good quality, thick and durable linen-backed paper and shall be sharp and clear.
- 89.3. The Contractor shall also supply all `as built' drawings in AutoCAD format (Latest version) on a CD.
- 89.4. The digitized drawings will only be accepted when a test plot of the drawings on CLE's CAD system is successful.

## Specifications

- 89.5.** The General Specifications for the Works to be executed and other technical particulars are contained in the Tender document.

**90. General**

- 90.1. The Special Conditions of the Contract shall be read in conjunction with the General Conditions of the Contract, Specifications, Drawings and any other documents forming part of this Contract wherever the context so requires.
- 90.2. The Contract Documents are complementary; what is called for by one shall be as binding as if called for by all. In the case of any discrepancy, defective description, errors, omissions or ambiguity between or in any of the Contract Documents, the Contractor shall promptly submit the matter, in writing, to the ILIFO who will, within a reasonable time, make a determination in writing. In all such cases, the Contractor shall promptly proceed in accordance with the instructions given by the ILIFO. Should there be any additional cost or time implication the same shall be dealt with in accordance with the provisions of para 29 and para 61 of the General Conditions of Contract. In the case of any inconsistency between Technical Specifications and the Drawings, the former shall take precedence. In cases of any inconsistency between Technical Specifications and the Drawings, the former shall take precedence. In cases of any inconsistency between the Contract Agreement, and any other part of the Contract Documents, the Contract Agreement shall take precedence.
- 90.3. Where it is said that the Contractor shall perform certain work or provide certain facilities, it is understood that the Contractor shall do so at his cost, which is deemed to have been included in his price.
- 90.4. The materials, design, workmanship shall satisfy the relevant Indian Standard, British Standard and American Standard, the Technical Specification contained herein and

codes referred to. Materials, Workmanship, equipment, procedures, etc which meet International Standards or the National Standards of the country of origin of the equipment will be acceptable. However, the specifications of the equipment or item shall be in accordance with the specifications of the Tender document.

Where the technical specification stipulate requirements in addition to those contained in the standard codes and specifications, these additional requirements shall also be satisfied. In the absence of any Standard Specification covering any part of the work covered in this Tender, the instructions/directions of ILIFO will be binding on the Contractor.

- 90.5. Where any portion of the General Conditions of the Contract is repugnant to or at variance with any provisions of the Special Conditions of the Contract, then the provisions of the Special Conditions of Contract shall be deemed to override the provisions of the General Conditions of Contract to the extent such repugnancy or variations prevail.

## **91. Statutory Approvals**

- 91.1. It shall be the Contractor's responsibility to obtain all approvals from any Authority required in accordance with the statutory rules and regulations of Central / State Government.
- 91.2. The application on behalf of CLE for submission to relevant Authorities together with copies of required certificates complete in all respect shall be prepared and submitted by the Contractor well ahead of time so that the fabrication or erection work is not delayed for want of approval/clearance by the concerned Authorities. The Contractor shall carry out the necessary coordination and liaison work in this respect. All necessary statutory fees shall be paid by CLE.
- 91.3. Any changes / additions to the work required as stipulated by the statutory authorities shall be carried out by the Contractor expeditiously. The inspection of the Works by the statutory authorities shall in no way absolve the Contractor of his responsibilities. All documentation necessary including drawings etc. shall be submitted by the Contractor to the Authorities in this regard. Should there be any additional cost and time implication the same shall be dealt with in accordance with the provisions of the General Conditions of Contract.

## **92. Temporary Lighting and Power**

- 92.1. The Contractor shall provide for all necessary lighting and electrical power required for the Works, including that for his sub-contractors, suppliers and specialists with all temporary wiring, switchboard and meters etc; and shall alter, adopt and maintain as necessary and pay all energy charges in connection therewith. The temporary electricity connection shall be provided by the promoter. However the Contractor has

to pay completely for the usage of electricity, including those of site office that might be set up by the PMC or Vishtan.

- 92.2. All temporary electrical supply/installations shall be in accordance with the rules and regulations of the Indian Electricity Rules 1956 and the Indian Electricity Act 1910 with latest amendments and shall be in accordance with the rules/approval of the TANGEDCO.
- 92.3. The Contractor shall not claim any compensation for any interruption or failure in power supply caused by whatever reason. The Contractor shall make available at the site diesel operated generator sets of sufficient capacity so that work can progress uninterruptedly in case of power failure.
- 92.4. All wiring and temporary electrical installations shall be removed by the Contractor on completion of the Work and all disturbed areas reinstated and made good to the satisfaction of CLE.
- 92.5. Alternatively if available and possible CLE/VISHTAN may also arrange for the construction power which will be charged to the Contractor as per prevailing rates of TANGEDCO as applicable for the construction power. However, the Contractor is advised to make his own arrangement for the requirement of construction power and not depend on CLE.

### **93. Water Supply**

- 93.1. Water supply for potable use and sanitary facilities for persons employed at the Works under the Contract shall be provided and maintained by the Contractor at his own cost to the extent and in such a manner that this meets the mandatory requirement and meets the welfare of employees.
- 93.2. It shall be the responsibility of the Contractor to make arrangements for obtaining the water for the full duration of the Contract and shall not claim any compensation for any failure in water supply due to whatsoever reason.
- 93.3. The Contractor shall be responsible for ensuring sufficiency and quality of water as per standards by providing storage tanks with adequate capacity to meet the needs of his workmen and he shall make all temporary arrangements for the proper discharge of sewage and drainage from or in connection with the work inclusive of maintenance. On completion of the Works all temporary water supply installations shall be removed from the site and all areas so disturbed made good to the satisfaction of the ILIFO.

### **94. Contractor's Programme and Methods**

- 94.1. Within one (1) week of notification of acceptance of his Tender, the Contractor shall, submit a work programme based on the "Critical Path Method" to the ILIFO for

approval. Upon receipt of approval, the Contractor shall submit six (6) copies of this critical path network to the ILIFO.

- 94.2. The Contractor shall employ person experienced in this technique, and shall provide him with all necessary information to permit a regular analysis of the Work and make any necessary adjustments to the programme of Work from time to time. Sub-contractors will also be required to provide the necessary information for the regular analysis and adjustments of their programme. The Contractor shall, on the first day of each month throughout the duration of the Works, review and update if necessary, the critical path network.
- 94.3. The Contractor shall programme the fabrication and erection of the Works with due regard to the dates that the equipment and materials are to be delivered to the Site, together with the completion schedule.

#### **95. Completion Schedule**

- 95.1. The entire Works shall be completed within a total period of eight (8) months from the date of notice of award of the Contract/work order/letter of intent inclusive of monsoon period.
- 95.2. The Contractor shall attain Substantial Completion of the entire Works within eight (8) months. All testing of equipment and appurtenances shall be carried out by the Contractor to ensure full compliance with the Specifications. Inspection of the Works and testing shall be carried out to the satisfaction of the PMC / Technical agency.
- 95.3. The Contractor shall carry out the testing and commissioning of the Works, to ensure system adequacy, rectify any deficiencies. The Contractor is expected to achieve this in one (1) month time from Substantial Completion.

#### **96. Defects Liability Period**

- 96.1. Notwithstanding the Final Acceptance Certificate issued by CLE any defect arising out of shrinkages, defective materials, workmanship or other faults whatsoever with respect to the Works shall be guaranteed for the periods as follows. During these periods, the Contractor shall replace or rectify any portion of Works that shall be found to be defective immediately upon receipt of the intimation from CLE to this effect.

a	Defects Liability Period for all the works executed and equipments supplied by the Contractor	:	One (1) year from the date of issue of the Final Acceptance Certificate.
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the Contractor shall carry out all the necessary works and all associated activities as may become necessary for rectification or replacement of the defective equipment or structure during the Defects Liability Period entirely at his cost.

- 96.2. The portion of the works so rectified / replaced as per sub-clause 103.5 shall be liable for guarantee for a further period of one (1) year for items falling under sub-clause 99.3(a) from the date of successful completion of the replacement / rectification.
- 96.3. During the Defects Liability Period, the Contractor shall pay and make good to CLE and all other person or parties legally entitled thereto all losses, damages, costs and expenses they or any of them may incur or be put or be liable to by reason or in consequence of the operations of the Contractor or of the failure from whatever causes of the Works or any of them during the time the Contractor is responsible thereof or parties as aforesaid from and against the same and from and against all actions, suits, claims and demands whatsoever by reason of an account thereof or CLE will be at liberty to encash the Performance Bank Guarantee and pay to such other persons or parties entitled as aforesaid the amount of such losses, damages, cost of expenses, without prejudice to CLE's right to seek additional compensation if any, through legal means.

#### **97. Rate of Progress and Continuous Working**

- 97.1. If for any reason, which does not entitle the Contractor to an extension of time, the rate of progress of the Works or any Section is at any time, in the reasonable opinion of the ILIFO, too slow to ensure completion as per the Contract, the ILIFO may so notify the Contractor in writing and the Contractor shall there upon take such steps as are necessary that the ILIFO may approve to expedite progress so as to complete the Works or such section. If so required by the ILIFO, the Contractor shall commence and proceed with the Work at more than one place. He shall employ such number of men as may be considered necessary by the ILIFO for the efficient and expeditious execution of the Work. The Contractor shall not be entitled to any additional payment for taking such steps. If, as a result of any notice given by the ILIFO under this clause, the Contractor shall seek the ILIFO's permission to do any work at night or on Sundays, such permission shall not be unreasonably refused.

#### **98. Site Meetings**

- 98.1. The Contractor shall attend site meetings with the ILIFO and his representative to review work progress, at frequency of not less than once a month, or as directed by the ILIFO. The Contractor shall cause his suppliers and sub-contractors to attend these meetings whenever their work or progress is to be discussed and if necessary. The ILIFO shall advise the Contractor beforehand, of the date, time, and place of such meetings. Should the Contractor require a meeting with the ILIFO, the Contractor shall notify the ILIFO in writing of his request. Once the request is received, the ILIFO will advise the Contractor of the date and time of the meeting. The Contractor



shall record the minutes of each meeting and shall within two days of the meeting submit five copies of the typed minutes to the ILIFO.

## **99. Shop and Working Drawings**

- 99.1. Within thirty (30) days of the commencement of the Contract, the Contractor shall progressively submit to the ILIFO shall submit the electrical, instrumentation and mechanical engineering designs, calculations and detailed engineering drawings and technical specifications for all equipment for the mandatory approval of the ILIFO before the start of any fabrication or erection activities at site or procurement initiatives.
- 99.2. Within this period the Contractor shall also furnish manufacturer's shop drawings, specific design data as required in the detailed specifications or as directed by the ILIFO and technical literature covering all equipment and fabricated materials which he proposes to furnish under the Contract in sufficient details to indicate full compliance with the quoted and Contract specifications.
- 99.3. Approval of the Contractor's engineering drawings/shop drawings, specifications, designs etc shall be done in the following manner:
- a) Drawings shall be submitted in five (5) prints. Should any of the information submitted in the drawing be totally in variance with the Contract specifications which in the opinion of the ILIFO are unacceptable such drawings shall be returned to the Contractor marked "Not Approved". The Contractor shall resubmit the drawings in accordance with the specifications of the Contract.
  - b) Should any of the information submitted in the drawing be marginally in variance with the Contract specifications which in the opinion of the ILIFO is easily correctable, the ILIFO shall return one copy of the drawing to the Contractor making the corrections and with the marking "Approved as noted". The Contractor shall correct the drawings with the markings as shown and shall resubmit the drawings. The Contractor shall proceed ahead with the work on the basis of the drawings marked "Approved as noted".
  - c) On receiving the "Approved as noted" drawings, the Contractor shall submit five (5) copies of each drawing incorporating the corrections. Two (2) copies of the drawings shall be marked "Approved" and returned to the Contractor. The drawings shall also be submitted in an AutoCAD (latest version) CD format.
- 99.4. Shop Drawings shall indicate the method of installing, the exact layout dimensions of the equipment or materials, including the location, size and details of equipment/items etc. No equipment or materials shall be delivered, or, if necessary shipped until the manufacturer's shop drawings and specifications or other identifying data, assuring compliance with these Specifications are approved by the ILIFO.

- 99.5. The Contractor shall check and verify all field measurements and shall be responsible for the prompt submission of all shop and working drawings so that there shall be no delay in the work.
- 99.6. Regardless of corrections made in or approval given to such drawings by the ILIFO, the Contractor shall be responsible for the accuracy of such drawings and for their conformity to the Drawings and Specification, unless he notifies the ILIFO in writing of any deviations at the time he furnishes such drawings.
- 99.7. Approval by the ILIFO of any deviation in materials, workmanship or equipment proposed subsequent to approval of the shop drawings or design data, shall be requested in writing by the Contractor.
- 99.8. All shop drawings submitted by his sub-contractors for approval shall be sent directly to the Contractor for preliminary checking. The Contractor shall be responsible for their submission at the proper time so as to prevent delays in delivery of materials.
- 99.9. The Contractor shall check all his sub-contractor's shop drawings regarding measurements, size of members, material and details to satisfy himself that they conform to the intent of the contract Drawings and Specifications. Drawings found to be otherwise in error shall be returned to the sub-contractors for correction before submission thereof.

#### **100. Photographs of the Project**

- 100.1. Prior to erection, the Contractor shall take colour photographs of the project site and all locations of the proposed Works and any additional areas that may be disturbed during erection activities. During erection, the Contractor shall take an average of 20 colour photographs / slides per month of the Works during his progress and 25 colour photographs / slides of the completed facilities. The photographs / slides shall be of such views and taken at such times as the ILIFO directs.
- 100.2. All photographic work shall be done by a qualified, established commercial photographer acceptable to the ILIFO. Two prints of each photograph shall be furnished promptly to the ILIFO, and each print shall have a glossy finish and be mounted on a substantial backing. These photographs shall be supplied with an album of a type and size approved by the ILIFO.
- 100.3. Each print of minimum maxi size shall have the following title at the bottom of the photograph :
- Client's and Project Name
  - Short Description of View and
  - Contractor's Name
  - Photo Number and Date Taken

100.4. The Contractor is deemed to have made all allowances in his tender for this photographic work. All film negatives and slides shall be submitted to the Engineering approved air-tight storage containers and become the property of CLE.

### **101. Marking of Equipment and Spares**

101.1. Each package containing material or equipment delivered to site in connection with the Work or plant supplied under this Contract must be clearly and durably marked with the Contract number and site address and such other markings as directed by the ILIFO, but no Contractor's name plate shall be fixed or cast on any item of plant or equipment unless approved by the ILIFO. Diagrams showing all such markings shall be supplied. Each piece or sub-assembly separately packaged for shipment shall be labeled or tagged with the specification number and mark number of such piece.

101.2. The package of item of spares shall be collected together by the Contractor into consignments of reasonable size and then packed in secure cases each of which shall contain contents lists. Each box or package shall be properly marked to show its weight in addition to its contents.

### **102. Shipping Instructions**

102.1. The Contractor shall prepare all materials and equipment for shipment in such manner as to protect them from damage in transit, and during a storage period in the hot, humid climate prevailing in India.

102.2. Any articles or materials that might otherwise be lost shall be boxed or wired in bundles and plainly marked with item number, delivery point and any other designation required to permit positive identification for unloading, storage and rehauling purposes. All parts shall be prepared for shipment so that slings for handling may be readily available while the parts are on railroad cars, trucks, or ship.

102.3. Where it is unsafe to attach slings to the box, boxed parts shall be packed with slings attached to the part, and the slings shall project through the box or crate so that attachment can be made readily.

102.4. All ferrous surfaces shall be coated with rust-preventative compound and all finished non-ferrous metal work and devices subject to damage shall be suitably wrapped or otherwise protected from damage during shipment. Rust preventative compound shall be readily removable with mineral spirits or safety solvents. Benzene (Benzol), gasoline or toxic or highly flammable solvents shall not be used for thinning or removing rust-preventative compound.

102.5. It should be noted that if the specified shop painting is not considered by the manufacturer to be adequate protection during shipment and storage then additional protection shall be provided which shall be compatible with the shop painting and the specified field painting.

- 102.6. All exposed machined surfaces and, all equipment openings including pump suction and discharge openings shall be sealed by temporary covers to prevent entrance of foreign matter and to protect finished surface during shipping and storage.
- 102.7. Adequate protection must also be taken for packing machines that have ball and/or roller bearings so as to minimize the risk of damage to the bearings during transit.
- 102.8. Particular care shall be taken in the packing of electrical apparatus. It shall be packed separately in sealed polythene or similar approved bags (including liberal supply of desiccant) taking all precaution to exclude moisture and dust. Cases shall be robust enough to withstand the shipment.
- 102.9. All spares shall be crated separately. All crates shall have their contents indelibly stenciled on the outside; all crate marking shall be in the English Language.
- 102.10. Two sets of the packing list shall be submitted to the ILIFO in advance and prior to shipment. Each packing list shall give descriptions of the items, quantity, size of the packing, gross weight and the serial number of the package, name of the Consignor, Consignee, and Contract number. The Contractor shall be responsible for receiving, unloading, arranging and stacking of the materials at the work Site.
- 102.11.** No equipment, component, part or material shall be dispatched to Site unless it is inspected and cleared by the ILIFO or by an Inspection Agency appointed by CLE. On recommendation of the ILIFO / CLE may at its discretion waive the inspection of any equipment, component, part or material in which case the same shall be dispatched after inspection of the item by the Contractor and upon the Contractor satisfying himself that the item has been manufactured in accordance with the contract specifications. The ILIFO will not take cognizance of any consignment dispatched to Site without inspection and a valid inspection certificate.

### **103. Substantial Completion (Preliminary Acceptance)**

- 103.1. The entire activity involved in the Works shall be completed in eight (8) months as per the specifications. Substantial completion also means the positioning of all mechanical, electrical, instrumentation equipment, items, appurtenances, in their original place, isolation of any temporary connections, rectifications of deficiencies as per clause 103.5 so that the System is ready to commence the trial runs and commissioning on load.
- 103.2. Tests shall be performed on the individual sub-assemblies of the unit and shall be designed to conduct the systematic check of the components and of the functional operation thereof.
- 103.3. Tests shall be conducted by the Contractor under his sole responsibility and employing his personnel. Representative of the ILIFO shall, however, be present during such tests.

103.4. A detailed programme of tests shall be drawn up by the Contractor and shall be subject to the approval of the ILIFO. Such programme may be revised and adjusted as may be required by the ILIFO.

103.5. As soon as the Works have been completed the Contractor shall intimate the ILIFO in writing that the Works has attained Substantial Completion and is ready for trial runs and commissioning. The ILIFO shall verify the claim of the Contractor and if necessary issue a list of defects/short comings for rectification by the Contractor. Upon satisfactory completion of the rectification and the tests as per sub clause 103.2 above the ILIFO shall satisfy that the Works have been completed in accordance with the stipulation of the Contract.

103.6. The Contractor will now be eligible for the Preliminary Acceptance Certificate which will normally be issued within thirty (30) days from the date of Substantial Completion and satisfactory rectification of all defects/short comings.

#### **104. Final Acceptance**

104.1. On successful completion of entire work rectification of all defects/deficiencies and upon completion of all contractual obligations the Contractor will be eligible for the Final Acceptance Certificate.

104.2. The issuance of the Final Acceptance Certificate signifies:

- a) The Contractor has set right the defects, if any, prior to issuance of the Final Acceptance Certificate,
- b) Final documentation incorporating any latest modification, as built drawings, Operation and Maintenance manuals have been submitted by the Contractor in the form and manner as specified,
- c) The taking over of the System by CLE,
- d) The start of the Defects Liability Period

104.3. The Final Acceptance Certificate will be issued only upon the satisfactory completion of the entire works.

104.4. The issue of the Final Acceptance certificate does not relieve the Contractor from his contractual obligations under the Contract.

#### **105. Release of Retention Money**

105.1. The Retention Money amounting to ten (10) percent of the Contract Price shall be released as follows:

50% of the retention money will be released on completion of work duly certified by the ILIFO

25% of the retention money will be released after 3 months from the date of completion

Balance 25% will be released after 9 months from the date of completion or production of bank guarantee for the amount covering retention period of 9 months.

#### **106. Release of Security Deposit Bank Guarantee**

106.1. The Security Deposit Bank Guarantee equivalent to five (5) percent of the Contract Price shall be released to the Contractor after 60 days from the date of expiry of defects liability period.

#### **107. Performance Bank Guarantee for Defects Liability Period**

107.1. The Contractor, prior to the commencement of the Defects Liability Period shall submit Performance Bank Guarantee equivalent to five percent of the Contract Price valid for the Defects Liability Period. The performance Bank Guarantees shall be submitted as per the format appended to the Conditions of Contract.

#### **108. Advance Payment**

108.1. **Mobilization advance:** Mobilization advance not exceeding 10% of the contract value may be given, if requested by the contractor in writing within one month of the order to commence the work. Such advance shall be in two or more installments to be determined by the CLE at his sole discretion. The first installment of such advance shall be released by CLE to the contractor on a request made by the contractor to the Engineer-in-Charge in this behalf. The second and subsequent installments shall be released by CLE only after the contractor furnishes a proof of the satisfactory utilization of the earlier installment to the entire satisfaction of CLE.

Before any installment of advance is released, the contractor shall execute a Bank guarantee Bond from scheduled Bank for the amount of advance & valid for the contract period. This shall be kept renewed from time to time to cover the balance amount and likely period of complete recovery, together with interest.

108.2. **Secured Advance on Nonperishable Material:** The contractor, on signing an indenture in the form to be specified by the Engineer-in-Charge, shall be titled to be paid during the progress of the execution of the work up to 70% of the quoted price which are in the opinion of the CLE /PMC non-perishable, non-fragile and non-combustible and are in accordance with the contract and which have been brought on the site in connection there with and are adequately stored and / or protected against damage by weather or other causes but which have not at the time of advance been incorporated in the works. When materials on account of which an advance has been made under this subclause are incorporated in the work, the amount of such advance shall be recovered / deducted from the next payment made under any of the clause or clauses of this contract.

Such secured advance shall also be payable on other items of perishable nature, fragile and combustible with the approval of the CLE provided the contractor provides a comprehensive insurance cover for the full cost of such materials. The decision of the CLE shall be final and binding on the contractor in this matter. No secured advance, other than PEB materials will be admitted.

108.3. **Recovery of Advance Payments:** The mobilization advance and plant and machinery advance in 108.1 and 108.2 bear simple interest at the rate of ten percent (10%) per annum and shall be calculated from the date of payment to the date of recovery, both days inclusive, on the outstanding amount of advance. Recovery of such sums advanced shall be made by the deduction from the contractors bills commencing after first ten percent of the gross value of the work is executed and paid, on pro-rata percentage basis to the gross value of the work billed beyond 10% in such a way that the entire advance is recovered by the time eighty percent (80%) of the gross value of the contract is executed and paid, together with interest due on the entire outstanding amount up to the date of recovery of the installment.

#### **109. Purchase Tax & Excise Duty**

109.1. The Contractor shall include all purchase tax, VAT, excise duty, customs duty, service tax, Works Contract Tax, entry tax/octroi and any other taxes, levies as prevalent in the State of the origin of equipment or Tamil Nadu and those imposed by the Govt. of India on all equipment, items and services procured by him as required in the execution of the Works.

109.2. All tendered rates shall be inclusive of all taxes and levies payable under respective statutes. However, if any further tax or levy of cess is imposed by Statute, after the extensions if any and the contractor thereupon necessarily and properly pays such taxes/levies/cess, the contractor shall be reimbursed the amount so paid, provided such payments, if any, is not, in the opinion of the CLE (whose decision shall be final and binding on the contractor) attributable to delay in execution of work within the control of the contractor.

109.3. The contractor shall keep necessary books of accounts and other documents for the purpose of this condition as may be necessary and shall allow inspection of the same by a duly authorized representative of the CLE and / or the PMC and shall also furnish such other information / document as the PMC or CLE may require from time to time.

109.4. The contractor shall, within a period of 30 days of the imposition of any such further tax or levy or cess, give a written notice thereof to the PMC and CLE that the same is given pursuant to this condition, together with all necessary information relating thereto.

109.5. All types of taxes should be shown separately and included in the total lumpsum price. For the purpose of arriving at the lumpsum prices, taxes shall be included. The

work order will be issued including the taxes. In case of revision of taxes, the actual shall be paid provided the contractor claims the difference with supporting documents such as Government notifications.

109.6. If the taxes are not shown separately in the prices, it will be assumed that the taxes have been included in the lumpsum price.

#### **110. Terms of Payment:**

110.1. The Contractor will be eligible for payment as follows:

- a) 10% advance on submission of the Bank Guarantee
- b) 90% of the value against production of RA Bills after deducting the proportionate amount of advance payment
- c) 10% of the value will be paid on completion along with final bill
- d) 10% Retention Money which will be paid as stated in condition 105
- e) The total of RA Bills should not exceed 6 under any circumstances and each RA bill should indicate the progress total of BOQ for work completion only.

#### **111. Insurance Coverage for Works during the Defects Liability Period**

111.1. The Contractor shall, before the commencement of the Defects Liability Period, ensure that there is in force a general insurance policy indemnifying CLE and the Contractor and all his sub-contractors from all liabilities under the Workmen's Compensation Act, or any statutory modification or re-enactment thereof and from all costs and expenses incidental or consequential thereto arising out of claims for any work carried out during the Defects Liability period. The Contractor shall produce on demand any such policy to CLE before the commencement of the Defects Liability Period provided always that if the Contractor shall at any time fail to effect such policy as aforesaid CLE may do all things necessary to effect or maintain such insurance and deduct any money expended for that purpose from any moneys due or to become due to the Contractor.

111.2. Provided always that the Damages to Persons and Property Policy shall be extended and remain valid upto the end of the Defects Liability Period of the Contract.

#### **112. Completion**

112.1. The Contractor shall request the Employer to issue a Certificate of completion of the works and the Employer will do so upon deciding that the work is completed.



**113. Taking over**

113.1. The Employer shall take over the site and works within seven days of the Employer issuing a certificate of completion.

**114. Review Meeting**

114.1. Contractor at the request of CLE or PMC shall have to attend a review meeting at CLE, Chennai, at their own cost.

**APPENDICES TO CONDITIONS OF CONTRACT**

**FORMAT OF SECURITY DEPOSIT BANK GUARANTEE**

**FORMAT OF PERFORMANCE BANK GUARANTEE**

**FORMAT OF ADVANCE PAYMENT BANK GUARANTEE**

**FORMAT OF AGREEMENT**

## FORMAT OF BANK GUARANTEE FOR SECURITY DEPOSIT

Name & address of the Bank

Bank Guarantee No.

Place :

Date:

To

Council for Leather Exports,  
CMDA Tower II,III Floor,  
Gandhi Irwin Bridge Road,  
Egmore, Chennai - 600 008.  
India

### Bank Guarantee for Security Deposit

In consideration of Council for Leather Exports, a company registered under companies Act, 1956 having its registered office at CMDA Tower II, 3<sup>rd</sup> Floor, Egmore, Chennai - 600 008, Tamil Nadu State, India (CLE) (hereinafter referred to as the "EMPLOYER" which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) having awarded to \_\_\_\_\_ (Name of Contractor), a company incorporated under companies Act 1956 having its registered office at, \_\_\_\_\_ (Address of the Contractor) (hereinafter called "the CONTRACTOR" which expression unless repugnant to the context or meaning thereof, include its successors administrators, executors and assigns), a Contract by issue of Company's Letter of Award No. \_\_\_\_\_ dated \_\_\_\_\_ and the same having been unequivocally accepted by the CONTRACTOR, resulting into a Contract bearing No. \_\_\_\_\_ dated \_\_\_\_\_ valued at INR \_\_\_\_\_ (Rupees \_\_\_\_\_ only) for the work of \_\_\_\_\_, (hereinafter called "the Contract Price"). And whereas it has been stipulated by you in the said Contract that the CONTRACTOR shall furnish you with a Bank Guarantee by a recognized Bank for the sum specified therein as Security Deposit for compliance with the CONTRACTOR'S performance obligations in accordance with the Contract.

Therefore we \_\_\_\_\_ (Name of Bank) having our office at \_\_\_\_\_ (Address of Bank) (hereinafter referred to as the "BANK", which expression shall, unless repugnant to the context of meaning thereof, include its successors, administrators, executor and assigns) hereby affirm that we are Guarantors and responsible to CLE on behalf of the CONTRACTOR up to a total of INR \_\_\_\_\_ (Rupees \_\_\_\_\_ only) and we

undertake to pay CLE, upon its first written demand and without demur declaring the CONTRACTOR to be in default under the Contract and without cavil or argument, any sum or sums within the limits of INR \_\_\_\_\_ (Rupees \_\_\_\_\_ only) as aforesaid.

This Guarantee shall be interpreted and be governed by laws of India. Any dispute arising out of or in relation to this Guarantee shall be subject to exclusive jurisdiction of courts at Chennai, India.

**Notwithstanding anything contained herein above.**

Our liability under this Bank Guarantee is restricted to INR \_\_\_\_\_ (Rupees \_\_\_\_\_ only).

The Bank Guarantee shall be valid up to \_\_\_\_\_ with a claim period of eight (8) months thereafter, after which all CLE's rights under this Guarantee shall be forfeited and the Bank shall be relieved and discharged from all liabilities there under.

We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if the Company serves upon the Bank a written claim or demand on or before \_\_\_\_\_ (Including the eight months claim period).

\_\_\_\_\_

(Signature of the authorized signatory  
of the Bank with Seal of the Bank)

**Witnesses:**

1.

2.

**FORMAT OF PERFORMANCE BANK GUARANTEE**

Bank Guarantee No.

Place :

Date :

To

Council for Leather Exports,

CMDA Tower II,III Floor,

Gandhi Irwin Bridge Road,

Egmore, Chennai - 600 008.

India

WHEREAS \_\_\_\_\_ (Name of Contractor) hereinafter called "the Contractor" has undertaken, in pursuance of Contract No. \_\_\_\_\_ dated \_\_\_\_\_ for the work (description of the work and service) hereinafter called "the Contract".

And whereas it has been stipulated by you in the said Contract that the Contractor shall furnish you with a Bank Guarantee by a Nationalized Bank for the sum specified therein as security for compliance with the Contractor's performance obligations in accordance with the Contract.

And whereas we have agreed to give the Contractor a Guarantee:

Therefore we \_\_\_\_\_ (Name of the Bank) hereby affirm that we are Guarantors and responsible to you on behalf of the Contractor upto a total amount of INR \_\_\_\_\_ (amount of the Guarantee in words and figures) and we undertaken to pay you, upon your first written demand and without demur declaring the Contractor to be in default under the Contract and without cavil or argument, any sum or sums within the limits of INR \_\_\_\_\_ (amount of the Guarantee in words and figures) as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This Guarantee is valid until the \_\_\_\_\_ day of 20\_\_\_\_\_ and with a claim period of six (6) months thereafter.

\_\_\_\_\_

(Signature of the authorized signatory

of the Bank with Seal of the Bank)

Name & address of the Bank/ Financial Institution

## FORMAT OF BANK GUARANTEE FOR ADVANCE PAYMENT

Name & address of the Bank

Bank Guarantee No.

Place:

Date:

To

Council for Leather Exports,  
CMDA Tower II, III Floor,  
Gandhi Irwin Bridge Road,  
Egmore, Chennai - 600 008.  
India

### Bank Guarantee for Advance Payment

In consideration of Council for Leather Exports, a company registered under companies Act, 1956 having its registered office at CMDA Tower II,III Floor, Gandhi Irwin Bridge Road, Egmore, Chennai - 600 008, Tamil Nadu State, India (CLE) (hereinafter referred to as the "Employer" which expression shall unless repugnant to the context or meaning thereof, include its successors, administrators and assigns) having awarded to \_\_\_\_\_ (Name of the Contractor), a company incorporated under companies Act 1956 having its registered office at, \_\_\_\_\_ (Address of the Contractor) (hereinafter called "the CONTRACTOR" which expression unless repugnant to the context or meaning thereof, include its successors administrators, executors and assigns), a Contract by issue of Company's Letter of Award No. \_\_\_\_\_ dated \_\_\_\_\_ and the same having been unequivocally accepted by the CONTRACTOR, resulting into a Contract bearing No. \_\_\_\_\_ dated \_\_\_\_\_ valued at INR \_\_\_\_\_ (Rupees \_\_\_\_\_ only) for the work of .....(hereinafter called "the Contract Price") and the CONTRACTOR, having agreed to deposit with CLE, a Bank Guarantee to Guarantee its proper and faithful performance of the Contract equivalent to an amount of INR \_\_\_\_\_ (Rupees \_\_\_\_\_ only) i.e. ten percent of the said value of the Contract (excluding excise duty and service tax on work contract) to the Employer.

We, the (**Name of Bank**), as instructed by the CONTRACTOR, agree unconditionally and irrevocably to Guarantee as primary obligator and not as Surety merely, the payment to CLE on its first demand without whatsoever right of objection on our part and without his first claim to the CONTRACTOR, in the amount not exceeding INR \_\_\_\_\_ (Rupees \_\_\_\_\_ only) as aforesaid at any time up to \_\_\_\_\_ without any demur reservation, contest, recourse or protest and/or without any reference to the CONTRACTOR

We undertake not to revoke this Guarantee during its currency and further agree that the guarantee herein contained shall continue to be enforceable till the CONTRACTOR discharges this Guarantee.

We further agree that no change of addition to or other modification of the terms of the Contract or Works to be performed there under or of any of the contract documents which may be made between CLE and the CONTRACTOR, shall in any way release us from any liability under this Guarantee and we hereby waive notice of any such change addition or modification.

This Guarantee shall remain valid and in full effect from the date of the advance payment under the Contract and up to\_\_\_\_\_.

This Guarantee shall be interpreted and be governed by laws of India. Any dispute arising out of or in relation to this guarantee shall be subject to exclusive jurisdiction of courts at Chennai, India.

**Notwithstanding anything contained herein above.**

Our liability under this Bank Guarantee is restricted to INR \_\_\_\_\_(Rupees \_\_\_\_\_ only).

The Bank Guarantee shall be valid up to \_\_\_\_\_ after which all CLE's rights under this Guarantee shall be forfeited and the Bank Shall be relieved and discharged from all liabilities there under.

We are liable to pay the guaranteed amount or any part thereof under this Bank Guarantee only and only if CLE serves upon the Bank a written claim or demand on or before \_\_\_\_\_ (Including the six months claim period).

Yours truly,

Signature of the authorized signatory of the Bank with Seal of the Bank

**WITNESSES:**

- 1.
- 2.

**FORMAT OF THE AGREEMENT TO BE SIGNED BY THE  
CONTRACTOR WITH CLE**

**AGREEMENT**

This agreement made this \_\_\_\_\_ day of \_\_\_\_\_ 20\_\_ between Council for Leather Exports, Chennai - 600 008 (hereinafter referred to as the "Employer") of the one part and \_\_\_\_\_ (Name of the Tenderer with full address) (hereinafter referred to as the "Contractor") of the other part.

Whereas CLE is desirous that certain work be entrusted to the Contractor viz \_\_\_\_\_ (brief description of the work) and has accepted a Tender by the Contractor for the work in the sum of \_\_\_\_\_ (Contract Price in words and figures) (hereinafter referred to as the "Contract Price").

Now this agreement witnesseth as follows:

1. In this agreement words and expression shall have the same meanings as are respectively assigned to them in the conditions of Contract referred to.
2. The following documents shall be deemed to form and be read and construed as part of this agreement viz.
  - a. The Tender document issued by CLE and the addenda thereon.
  - b. The Tender submitted by the Contractor including the Schedule of Prices and Annexure to the schedule of Prices.
  - c. The Technical Specifications
  - d. The General Conditions of the Contract
  - e. The Special Conditions of Contract
  - f. Clarifications, declarations provided by the Contractor in response to the queries of PMC or CLE, and
  - g. CLE's notification of award
3. In consideration the payments to be made by CLE to the Contractor as hereinafter mentioned, the Contractor hereby covenants with CLE for the work and services and to remedy defects therein in conformity in all respects with the provisions of the Contract.
4. CLE hereby covenants to pay the Contractor in consideration for the work and services and the remedying of defects therein, the Contract price or such other sums as may become payable under the provisions of the Contract at the time and in the manner prescribed by the Contract.



In witness whereof the parties hereto have caused this agreement to be executed in accordance with their respective laws the day and year first above written.

Signed, sealed and delivered by the

Said \_\_\_\_\_ (for CLE)

In the Presence of \_\_\_\_\_

Signed, sealed and delivered by the

Said \_\_\_\_\_ (for the Contractor)

In the presence of \_\_\_\_\_

Place:

Date:

**SECTION 1-C**  
**SAFETY CODE**

## SAFETY CODE

The following safety code should be adopted by the contractor during designing, procurement, fabrication, erection and commissioning. All the equipments and installations should meet the applicable laws of safety during its functioning in addition to the criteria mentioned below. The following safety code is extracted from IS: 732 – 1989 (Reaffirmed 2005).

**5.0 Fundamental Requirements for Safety**—The requirements for protection for safety of persons, livestock and property involve protection against electric shock, thermal effects, over current, overvoltage and under voltage and a measure of isolation and switching of electric circuits. The protective measures may be applicable to the entire installation or a part or an item of equipment. The requirements stated below in this section are based on the following basic principles.

**5.0.1 Protection against Direct Contact**—Persons and livestock shall be protected against dangers that may arise from contact with live parts of the installation.

This protection can be achieved by one of the following methods:

- a. Preventing a current from passing through the body of any person or any livestock; and
- b. Limiting the current which can pass through a body to a value lower than the shock current.

**5.0.2 Protection against Indirect Contact**—Persons and livestock shall be protected against dangers that may arise from contact with exposed conductive parts.

This protection can be achieved by one of the following methods:

- a. preventing a fault current from passing through the body of any person or any livestock;
- b. Limiting the fault current which can pass through a body to a value lower than the shock current; and
- c. Automatic disconnection of the supply on the occurrence of a fault likely to cause a current to flow through a body in contact with exposed conductive parts, where the value of that current is equal to or greater than the shock current.

**5.0.3 Protection against Thermal Effects in Normal Service**—The electrical installation shall be so arranged that there is no risk of melting besides ignition of flammable materials due to high temperature or electric arc. Also during normal operation of the electrical equipment, there shall be no risk of persons or livestock suffering burns.

**5.0.4 Protection against Overcurrent**—Persons or livestock shall be protected against injury and property shall be protected against damage due to excessive temperatures or electromechanical stresses caused by any over currents likely to arise in live conductors.

This protection can be achieved by one of the following methods:

- a. Automatic disconnection on the occurrence of an overcurrent before this overcurrent attains a dangerous value taking into account its duration; and
- b. Limiting the maximum overcurrent to a safe value and duration.

**5.0.4.1 Overcurrent protection devices**—Where necessary to prevent danger, every installation and every circuit thereof shall be protected against overcurrent by devices which:

- a will operate automatically at values of current which are suitably related to the safe current ratings of the circuit;
- b are of adequate breaking capacity and, where appropriate, making capacity; and
- c are suitably located and are constructed so as to prevent danger from overheating, arcing or the scattering of hot particles when they come into operation and to permit ready restoration of the supply without danger.

Note—Where the supply undertaking provides switchgear or fuse gear at the origin of the installation it may not be necessary to duplicate the means of overcurrent protection for that part of the installation between its origin and the main distribution point of the installation where the next step for overcurrent protection is provided. In domestic installations the protection and isolating functions are combined in the same device.

**5.0.5 Protection against Fault Currents**—Conductors, other than live conductors, and any other parts intended to carry a fault current shall be capable of carrying that current without assuming excessive temperature, until the protective gear operates.

Note 1—Particular attention should be given to earth fault currents.

Note 2—For live conductors, compliance with 5 assures their protection against any fault currents, including overcurrents.

#### **5.0.5.1**

Precautions against earth leakage and earth fault currents—Where metalwork of electrical equipment, other than current-carrying conductors, may become charged with electricity in such a manner as to cause danger if the insulation of a conductor should become defective or if a fault should occur in any equipment:

- a. the metalwork shall be earthed in such a manner as will cause discharge of electrical energy without danger, or
- b. other equally effective precautions shall be taken to prevent danger.

Every circuit shall be arranged so as to prevent the persistence of dangerous earth leakage currents.

Where metalwork is earthed, the circuits concerned shall be protected against the persistence of dangerous earth fault currents by:

- a the overcurrent protective devices required by 5.0.4.1, or
- b a residual current operated device or equally effective device.

The method described in (b) above shall be used whenever the prospective earth fault current is insufficient to cause prompt operation of the overcurrent protective devices.

Where necessary to prevent danger and where metalwork of electrical equipment is earthed for compliance with (a) above and is accessible simultaneously with substantial exposed metal parts of other services, the latter parts shall be effectively connected to the main earthing terminal of the installation.

**5.0.6 Protection against Overvoltage** — persons or livestock shall be protected against injury and property shall be protected against any harmful effects of a fault between live parts of circuits supplied at different voltages.

Persons or livestock shall be protected against injury and property shall be protected against damage from any excessive voltages likely to arise due to other causes (for example, atmospheric phenomena or switching voltages).

## 5.1 PROTECTION AGAINST ELECTRIC SHOCK

### Requirements for Protection against Electric Shock

#### 5.1.1 Protection against both Direct and Indirect Contact

5.1.1.1 **General**—One of the following basic protective measures for protection against both direct contact and indirect contact shall be used:

- a Protection by safety extra low voltage,
- b Protection by functional extra low voltage, and
- c Protection by limitation of discharge of energy.

5.1.1.2 **Protection by safety extra low voltage**—Protection against electric shock is provided when all the following requirements are fulfilled:

- a The nominal voltage of the circuit concerned does not exceed extra low voltage.
- b The supply is from one of the safety sources listed in (1) below.
- c The conditions of (2) below are fulfilled.

Note—Lower voltage limits may be required for certain conditions of external influences.

*Safety sources* — The safety source shall be one of the following:

A class II safety isolating transformer, the secondary-winding being isolated from earth.  
A source of current providing a degree of safety equivalent to that of the safety isolating transformer specified in (a) above (for example, a motor generator with windings providing equivalent isolation).

An electrochemical source (for example, a battery) or another source independent of a higher voltage circuit (for example, an engine-driven generator).

Electronic devices where measures have been taken so that even in the case of an internal fault the voltage at the outgoing terminals cannot exceed extra low voltage.

#### I. Arrangement of Circuits

1. Live parts of safety extra low voltage circuits shall not be connected to earth or to live parts or protective conductor forming part of other circuits.
2. Exposed conductive parts of safety extra low voltage circuits shall not intentionally be connected to any of the following:
  - a. Earth,
  - b. Protective conductors or exposed conductive parts of another system,  
or
  - c. Extraneous conductive parts, except that where electrical equipment is inherently required to be connected to extraneous conductive parts it

shall be verified, that those parts cannot attain a voltage exceeding the limit of the safety extra low voltage circuit. If the exposed conductive parts of safety extra low voltage circuits are liable to come into contact fortuitously with exposed conductive parts of other circuits, the protection no longer depends solely on the measure for protection by safety extra low voltage and shall be in accordance with the requirements for the measures applicable to the latter exposed conductive parts.

II. Live parts of safety extra low voltage equipment other than cables shall be electrically separate from those of higher voltage circuits. The electrical separation between live parts of safety extra low voltage circuits and higher voltage circuits shall be not less than that between the input and output windings of safety isolating transformers.

(i) Safety extra low voltage circuit conductors shall preferably be physically separated from those of any other circuit. Where this requirement is impracticable, one of the following arrangements is required:

- a. Safety extra low voltage circuit conductors shall be insulated in accordance with the requirements of this code for the highest voltage present.
- b. Safety extra low voltage circuit cables shall be non-metallic sheathed cables.
- c. Conductors of circuits at different voltages shall be separated from those at safety extra low voltage by an earthed metallic screen or an earthed metallic sheath.
- d. Circuits at different voltages may be contained in a multicore cable or other grouping of conductors but the conductors of safety extra low voltage circuits shall be insulated, individually or collectively, for the highest voltage present. Note—In arrangements (2) and (3) basic insulation of any conductor need be sufficient only for the voltage of the circuit of which it is a part.

(ii) Plugs and socket outlets of safety extra low voltage circuits shall comply with all of the following requirements:

- a. The plugs shall not be capable of entering socket outlets of other voltage systems in use in the same premises.
- b. The socket outlets shall exclude plugs of other voltage systems in use in the same premises.
- c. The socket outlets shall not have a protective conductor connection.
- d. Mobile safety sources shall be selected or erected in accordance with 5.1.3.2.

(iii) If the nominal voltage exceeds 25 V ac rms 50 Hz, or 60 V ripple-free dc, protection against direct contact shall be provided by one or more of the following:

- a. Barriers or enclosures affording at least the degree of protection IP 2X.
- b. Insulation capable of withstanding a test voltage 500 V dc for one minute.

If the nominal voltage does not exceed 25 V ac rms 50 Hz, or 60 v ripple-free dc, protection against direct contact is not required by this code except as specified below:

#### Application of Protective Measure—Safety extra-low voltage

- a *Where the use of safety extra-low voltage (SELV) is relied upon for protection against direct contact, that is, where live parts are not insulated or provided with barriers and enclosures in accordance with 5.1.1.2(2) (vii), the nominal voltage shall not in any event exceed 25 V rms ac or 60 V ripple-free dc. These voltage limits are applicable only to conditions where simultaneously accessible parts may be touched by a person having a body resistance assumed as conventionally normal, and shall be appropriately reduced in conditions where reduced or very low body resistance is to be expected.*
- b *Where SELV is used for protection against indirect contact only, and where the live parts of the SELV circuit are insulated or provided with barriers and enclosures in accordance with 5.1.1.2(2)(vii), the nominal voltage shall not in any event exceed 50 V rms ac or 120 V ripple-free dc. These voltage limits are applicable only to conditions where simultaneously accessible parts may be touched by a person having a conventionally normal body resistance, and shall be appropriately reduced in conditions where reduced or very low body resistance is to be expected.*

Note—Conventionally normal body resistance relates to a contact involving one hand and both Feet, the skin being dry or moist with perspiration (but not wet). Reduced body resistance may be expected in situations where the hands and/or feet are likely to be wet or where the shock current path may not be through the extremities, and very low body resistance (of the order of one quarter of the conventionally normal body resistance) is to be expected in locations where a person is immersed in water or working in confined conductive locations.

#### **5.1.1.3 Functional extra low voltage systems**

- A. If for functional reasons extra low voltage is used but not all the requirements of 5.1.1.2 regarding safety extra low voltage are fulfilled, the appropriate measures described in (b) to (e) below shall be taken in order to ensure protection against electric shock. Systems employing these measures are termed ‘functional extra low voltage systems’. Note—Such conditions may, for example, be encountered in extra low voltage circuits when one point of the extra low voltage circuit is connected to earth or if the circuit contains components (such as transformers, relays, remote-control switches, contactors) insufficiently insulated with respect to circuits at higher voltages.

- B. if the extra low voltage system complies with the requirements of 5.2.1.2 for safety extra low voltage except that live or exposed conductive parts are connected to earth or to the protective conductors of the systems [see 5.1.1.2(b)(i) and (ii)] protection against direct contact shall be provided by one or more of the following:
- a. Enclosures giving protection at least equivalent to IP 2X.
  - b. Insulation capable for resisting a test voltage of 500 V rms for one minute. Such a system is connected to afford protection against indirect contact. This requirement does not exclude the installation or the use without supplementary protection of equipment conforming to the relevant standard, providing an equivalent degree of safety.
  - c. If the extra low voltage system does not generally comply with the requirements of 5.1.1 for safety extra low voltage, protection against direct contact shall be provided by one or more of the following:
    - (i) Barriers or enclosures according to 5.1.2.2.
    - (ii) Insulation corresponding to the minimum test voltage required for the primary circuit. In addition, protection against indirect contact shall be provided in accordance with (d) below. The extra low voltage circuit may be used to supply factory built equipment whose insulation does not comply with the minimum test voltage required for the primary circuit provided that the accessible insulation of that equipment is reinforced during erection to withstand a test voltage of 1 500 V rms for one minute.
- C. If the primary circuit of the functional extra low voltage source is protected by automatic disconnection, exposed conductive parts of the equipment in the functional extra low voltage circuit shall be connected to the protective conductor of the primary circuit. Note—This does not exclude the possibility of connecting a conductor of the functional extra low voltage circuit to the protective conductor of the primary circuit. If the primary circuit of the functional extra low voltage source is protected by electrical separation, the exposed conductive parts of equipment in the functional extra low voltage circuit shall be connected to the non-earthed protective conductor of the primary circuit. Note—This latter requirement does not contravene 5.1.3.5(c), the combination of the electrically separated circuit and the extra low voltage circuit being regarded as one electrically separated circuit.
- D. The socket outlet of functional extra low voltage systems shall not admit plugs intended for use with other systems in use in the same premises. Application of Protective Measure—Functional extra-low voltage *Where, for functional reasons, extra-low voltage is used but:*
- (i) *One point of the extra-low voltage circuit is required to be earthed, or*
  - (ii) *Live parts or exposed conductive parts of the extra-low voltage circuit are connected to the protective conductors of other systems (whether those protective*



*conductors are earthed or not; or*

*(iii) The insulation between the extra-low voltage circuits and other circuits is not equivalent to that provided by a safety source.*

*The system shall be treated as a functional extra-low voltage system and 5.1.1.3 apply.*

**5.1.1.4 Protection by limitation of discharge of energy**—For equipment complying with the appropriate standard, protection against electric shock is afforded when the equipment incorporates means of limiting the current which can pass through the body of a person or livestock to a value lower than the shock current, Circuits relying on this protective measure shall be separated from other circuits in a manner similar to that specified in 5.1.1.2(2) (iii) and (iv) for safety extra low voltage circuits.

**Application of protective measure—Limitation of discharge of energy**

*This measure shall be applied only to individual items of current-using equipment complying with an appropriate Indian Standard, where the equipment incorporates means of limiting to a safe value the current that can flow from the equipment through the body of a person or livestock. The application of this measure may be extended to a part of an installation derived from such items of equipment, where the relevant Indian Standard concerned provides specifically for this, for example, to electric fences supplied from electric fence controllers.*

## **5.1.2 Protection against Direct Contact**

**5.1.2.0 General**—One or more of the following basic protective measures for protection against direct contact shall be used:

- a Protection by insulation of live parts,
- b Protection by barriers or enclosures,
- c Protection by obstacles, and
- d Protection by placing out of reach.

**5.1.2.1 Protection by insulation of live parts** — Live parts shall be completely covered with insulation which can only be removed by destruction and which is capable of durably withstanding the mechanical, electrical, thermal and chemical stresses to which it may be subjected in service.

Note 1—Where insulation is applied during the erection of the installation, the quality of the insulation should be confirmed by tests similar to those which ensure the quality of the insulation of similar factory built equipment.

Note 2—General purpose, paints, varnishes, lacquers and similar products without additional insulation do not provide adequate insulation for protection against direct contact.

**Application of protective measure—Insulation of live parts**

*This measure relates to basic insulation, and is intended to prevent contact with live parts. It is generally applicable for protection against direct contact, in conjunction with a measure for protection against indirect contact.*

#### **5.1.2.2 Protection by barriers or enclosures**

- a Live parts shall be inside enclosures or behind barriers providing at least the degree of protection IP 2X except that, where an opening larger than that admitted for IP 2X is necessary to allow the replacement of parts or to avoid interference with the proper functioning of electrical equipment both of the following requirements apply:
  - i. Suitable precautions shall be taken to prevent persons or livestock from unintentionally touching live parts, and
  - ii. It shall be established as far as practicable, that persons will be aware that live parts can be touched through the opening and should not be touched.
- b Horizontal top surfaces of barriers or enclosures which are readily accessible shall provide a degree of protection of at least IP 4X.
- c Barriers and enclosures shall be firmly secured in place and have sufficient stability and durability to maintain the required degrees of protection and appropriate separation from live parts in the known conditions of normal service.
- d Where it is necessary to remove barriers or to open enclosures or to remove parts of enclosures, one or more of the following requirements shall be satisfied:
  - (i) The removal or opening shall be possible only by use of a key or tool,
  - (ii) The removal or opening shall be possible only after disconnection of the supply to live parts against which the barriers or enclosures afford protection, restoration of the supply being possible only after replacement or reclosure of the barriers or enclosures, and
  - (iii) An intermediate barrier shall be provided to prevent contact with live parts, such barrier affording a degree of protection of at least IP 2X and removable only by the use of a tool.This requirement does not apply to ceiling roses or to ceiling switches operated by a cord.

#### **Application of Protective Measure—Barriers or enclosures**

- a *This measure is intended to prevent or deter any contact with live parts It is generally applicable for protection against direct contact in conjunction with a measure for protection against indirect contact.*
- b *The exception in 5.1.2.2(a) allowing for openings larger than IP 2X in barriers or enclosures shall be applied only to items of equipment or accessories complying with an Indian Standard where compliance with the generality of 5.1.2.2(a) is impracticable by reason of the function of those items, for example, to lampholders.*

*Wherever that exception is used, the opening shall be as small as is consistent with the requirements for proper functioning and for replacement of parts.*

### **5.1.2.3 Protection by obstacles**

a Obstacles shall prevent, as appropriate, the following:

- (i) Unintentional bodily approach to live parts, or
- (ii) Unintentional contact with live parts when operating equipment live in normal use

b Obstacles shall be so secured as to prevent unintentional removal but may be removable without using a key or tool.

#### Application of Protective Measure—Obstacles

*This measure is intended to prevent unintentional contact with live parts, but not intentional contact by deliberate circumvention of the obstacles. It shall be used only for protection against direct contact in areas accessible only to skilled persons, or instructed persons under direct supervision.*

### **5.1.2.4 Protection by placing out of reach**

a Bare or PVC covered overhead lines for distribution between buildings and structures shall be installed in accordance with good practice.

b Bare live parts shall not be within arm's reach.

c Where bare live parts other than overhead lines are out of arm's reach but nevertheless may be accessible, they shall not be within 2.5 m of any of the following:

- i Exposed conductive parts,
- ii Extraneous conductive parts, and
- iii Bare live parts of other circuits.

d If a normally occupied position is restricted in the horizontal plane by an obstacle (for example, handrail mesh screen) affording a degree of protection less than IP 2X, arm's reach shall extend from that obstacle. In the overhead direction, arm's reach is 2.5 m from the surface *S* not taking into account any intermediate obstacle providing a degree of protection less than IP 2X (*see* Fig. 1). Note—The values of arm's reach refer to bare hands without any assistance, for example, from tools or a ladder.

e In places where bulky or long conducting objects are normally handled, the distances required by (b) to (d) shall be increased accordingly.

#### Application of Protective Measure—Placing out of reach

*This measure is intended only to prevent unintentional contact with live parts and shall be applied only for protection against direct contact. The application of the provisions*

*5.1.2.4(b) to (d) shall be limited to locations accessible only to skilled persons, or instructed persons under direct supervision.*

### **5.1.3 Protection against Indirect Contact**

#### **5.1.3.0**

*General*—One or more of the following basic protective measures for protection against Indirect contact shall be used:

- a Earthed equipotential bonding and automatic disconnection of supply,
- b Use of Class II equipment or equivalent insulation,
- c Non-conducting location,
- d Earth free local equipotential bonding, and
- e Electrical separation.

#### **5.1.3.1**

*Protection by earthed equipotential bonding and automatic disconnection of supply*

##### a General

- i In each installation main equipotential bonding conductors complying with IS : 3043-1987\* shall connect extraneous conductive parts including the following to the main earthing terminal for that insulation:
  - 1 Main water pipes,
  - 2 Main gas pipes,
  - 3 Other service pipes and ducting,
  - 4 Risers of central heating and air-conditioning systems, and
  - 5 Exposed metallic parts of the building structure. Note 1—This bonding is intended to create a zone in which any voltages between exposed conductive parts and extraneous conductive parts are minimised. Note 2—Compliance with (a) (i) will normally satisfy the relevant requirements of the protective multiple earthing. Note 3—Additional equipotential bonding may be required [*see* 5.1.3.1(a) (v)].
- ii \*Code of practice for earthing (*first revision*).
- iii The characteristics of the protective devices for automatic disconnection, the earthing arrangements for the installation and the relevant impedances of the circuits concerned shall be coordinated so that during an earth fault the voltages between simultaneously accessible exposed and extraneous conductive parts occurring any where in the installation shall be of such magnitude and duration as not to cause danger. Note 1—For information on types of earthing arrangements, *see* IS 3043-1987\*. Note 2—For the conditions of connection of exposed conductive parts *see* 5.1.3.1(b) to (d) and as appropriate to the earthing arrangement concerned.
- iv The provisions of (ii) above are considered to be satisfied if the automatic disconnection provided for occurs within the duration not permitting the touch voltage to exceed the safe value.
- v Where protection is afforded by an overcurrent protective device, and the nominal voltage to earth ( $U_0$ ) is 240 V rms ac, the earth fault loop impedance ( $Z_B$ ), compliance with (iii) above, shall not exceed safe values.
- vi Where compliance with the disconnection times of (iii) above is afforded by a

residual current device in an installation, the product of the rated residual operating current in amperes and the earth fault loop impedance in ohms shall not exceed the values given in IS : 3043-1987\* for different types of system earthing.

- vii Within the zone formed by the main equipotential bonding, local supplementary bonding connections shall be made to metal parts, to maintain the equipotential zone, where those parts:
- 1 are extraneous conductive parts,
  - 2 are simultaneously accessible with exposed conductive parts or other extraneous conductive parts, and
  - 3 are not electrically connected to the main equipotential bonding by permanent and reliable metal-to-metal joints of negligible impedance. Note—Where local equipotential bonding is provided in accordance with (vi) above, metalwork which may be required to be bonded includes baths and exposed metal pipes, sinks, taps, tanks and radiators and, where practicable, accessible structural metalwork.

b Installations which are part of a TN system:

- i All exposed conductive parts of the installation shall be connected by protective conductors to the main earthing terminal of the installation and that terminal shall be connected to the earthed point of the supply source in accordance with IS : 3043-1987\*. \*code of practice for earthing.
- ii The protective devices shall be of one or more of the following type:
  - 1 Overcurrent protective devices, and
  - 2 Residual current devices. Provided that where the neutral and the protective functions are combined in one conductor (PEN conductor) a residual current device shall not be used.

c Installations which are part of a TT system:

- i Where protection is afforded by over-current protective devices or residual current devices, exposed conductive parts shall be connected by protective conductors individually, in groups or collectively to an earth electrode or electrodes.
- ii The protective devices shall be of one or more of the following types:
  - 1 Residual current devices, and
  - 2 Overcurrent protective devices.

d Installations which are part of an IT system:

- i No live conductor of the installation shall be directly connected to earth. Note—To reduce overvoltage or to damp voltage oscillations, it may be necessary to provide earthing through impedances or artificial neutral points and the characteristics of these should be appropriate to the requirements of the installation.
- ii Exposed conductive parts shall be earthed either individually, in groups or collectively. Simultaneously accessible exposed conductive parts and associated extraneous conductive parts shall be connected only to an earth electrode common to those parts.
- iii The protective devices shall be residual current devices.
- iv An insulation monitoring device shall be provided to indicate the occurrence of first fault from a live part to exposed conductive parts or to earth. The device shall automatically disconnect the supply, or initiate an audible and/or visual signal.

Note—First fault should be eliminated as quickly as practicable.

- v After the occurrence of first fault, conditions for disconnection of supply, as specified for TN and TT systems, shall apply.

Application of protective measure—Automatic disconnection of supply

- a *This measure is generally applicable, and is intended to prevent the occurrence of voltage of such magnitude and duration between simultaneously accessible conductive parts that danger could arise. It includes all methods involving the earthing of exposed conductive parts. The limiting values of earth fault loop impedance specified in 5.1.3.1 (a)(iv) shall be applied where the conditions are such that conventionally normal body resistance applies. In conditions where reduced or very low body resistance is to be expected, either the earth fault loop impedance values shall be appropriately redacts or another protective measure shall be used. Note—Conventionally normal body resistance relates to a contact involving one hand and both feet, the skin being dry or moist with perspiration (but not wet). Reduced body resistance may be expected in situations where the hands and/or feet are likely to be wet or where the shock current path may not be through the extremities, and very low body resistance (of the order of one quarter of the conventionally normal body resistance) is to be expected in locations where a person is immersed in a water or working in confined conductive locations.*
- b *The limiting values of earth fault loop impedance specified in 5.1.3.1 (a) (iv) are applicable only where the exposed conductive parts of the equipment concerned and any extraneous conductive parts are situated within the zone created by the main equipotential bonding [see 5.1.3.1(a) (i)]. Where a circuit originating in that zone is specifically intended to supply equipment to be used outside the zone, and that equipment may be touched by a person in contact directly with the general mass of earth, the following requirements apply:*
- i *For solidly grounded system it shall be sufficient to check whether the provisions of 5.1.3.1 are complied with in general;*
- ii *It shall be verified whether the main over-current protection device affords the degree of protection envisaged by 5.1.3.1(a) (iv) ;*
- iii *Where the overcurrent protective device did not afford the degree of protection in 5.1.3.1(a) (iv) and where the earthing is inadequate, a separate residual current device shall be installed, affording a protection in compliance with 5.1.3.1(a)(iv); and*
- iv *The automatic disconnecting device shall be so installed that proper discrimination between the circuits being protected is available.*
- c *Where the measure is used in a household or similar installation forming part of a TT system or where the earthing is not effective, every socket outlet circuit shall be protected by a residual current device having a rated residual operating current not exceeding 30 mA.*
- d *Automatic disconnection using residual current devices shall not be applied to circuits incorporating a PEN conductor. The measure is otherwise generally applicable, provided that the device is selected to have a residual operating current ensuring compliance with 5.1.3.1 (a)(ii) and (v). The use of such devices is preferred where the value of earth fault loop impedance prevents the use of overcurrent devices to obtain*

*compliance with the disconnection times specified in 5.1.3.1(a)(iii). Note—If a residual current device affording protection against indirect contact has a rated residual current equal to or less than 30 mA and an operating time of 40 ms or less at a residual current of 250 mA, it may also be used to reduce the risk associated with direct contact in case of failure of other protective measures. Such a device cannot be used as a sole means of protection against direct contact and does not obviate the need to apply one of the protective measure specified in 5.1.2.0.*

- e Automatic disconnection using fault voltage operated protective devices is recognised for use in TT and IT systems and is suitable where the impedance of the earth fault loop prevents compliance with 5.1.2.2(b) and (c) by the use of overcurrent protective devices.*

### 5.1.3.2

Protection by use of Class II equipment or by equivalent insulation

a Protection shall be provided by one or more of the following:

- i Electrical equipment of the following types, type tested and marked to the relevant standards:
  - 1 Electrical equipment having double or reinforced insulation (Class II equipment).
  - 2 Factory built assemblies of electrical equipment having total insulation.
- ii Supplementary insulation applied to electrical equipment having basic insulation only, as a process in the erection of an electrical installation, providing a degree of safety equivalent to that of electrical equipment according to (i)(1) above and complying with (b) to (j) below.
- iii Reinforced insulation applied to uninsulated live parts, as a process in the erection of an electrical installation, providing a degree of safety equivalent to electrical equipment according to (i)(1) above and complying with (b) to (j), such insulation being recognized only where constructional features prevent the application of double insulation.

b The installation of equipment described in item (a)(i) above (for example the fixing and connection of conductors) shall be effected in such a way as not to impair the protection afforded in compliance with the equipment specification, Class II equipment shall be so installed that basic insulation is not the only protection between live parts of the installation and exposed metalwork of that equipment.

c The electrical equipment being ready for operation, all conductive parts separated from live parts by basic insulation only shall be contained in an insulating enclosure affording at least the degree of protection IP 2X.

d The insulating enclosure shall be capable of resisting the mechanical, electrical and thermal stresses to which it is likely to be subjected. Note—Coatings of paint, varnish and similar products are generally considered not to comply with (d).

e If the insulating enclosure has not previously been tested, a suitable test shall be carried out (*see* Section 5).

- f The insulating enclosure shall not be pierced by conductive parts, other than circuit conductors, likely to transmit a potential. The insulating enclosure shall not contain any screws of insulating material, the replacement of which by metallic screws could impair the insulation provided by the enclosure. Note—Where the insulating enclosure must be pierced by mechanical joints or connections (for example, for operating handles of built-in equipment, and for fixing screws) these should be arranged in such a way that protection against indirect contact is not impaired.
- g Where lids or doors in the insulating enclosure can be opened without the use of a tool or key, all conductive parts which are accessible if the lid or door is open shall be behind an insulating barrier which prevent persons from coming into contact with those parts; this insulating barrier shall provide a degree of protection of at least IP 2X and be removable only by use of a tool.
- h Conductive parts enclosed in the insulating enclosure shall not be connected to a protective conductor. However, provision may be made for connecting protective conductors which necessarily run through the enclosure in order to serve other items of electrical equipment whose supply circuit also runs through the enclosure. Inside that enclosure, any such conductors and their terminals or joints shall be insulated as though they were live parts and their terminals shall be appropriately marked.
- i The enclosure provided for this measure shall not adversely affect the operation of the equipment protected.

Application of protective measure—Class II equipment or equivalent insulation

- a *This measure is intended to prevent the appearance of a dangerous voltage on the exposed metalwork of electrical equipment through fault in the basic insulation. It is generally applicable to items of equipment, either by the selection of equipment complying with an appropriate Indian Standard where that standard provides for the use of Class II construction or total insulation, or by the application of suitable supplementary insulation during erection.*
- b *Where a circuit supplies items of Class II equipment, a means of connection to the protective conductor of the circuit shall nevertheless be provided at every point for the supply of current-using equipment likely to be changed by the user, and at terminations for accessories similarly likely to be changed by the user. This requirement need not be observed where (c) below applies. Note—Exposed metal work of Class II equipment should preferably be mounted so that it is not in electrical contact with any part of the installation connected to a protective conductor. Such a contact may impair the Class II protection provided by the equipment specification.*
- c *Where this measure is to be used as a sole means of protection against indirect contact (that is, where a whole installation or circuit is intended to consist entirely of Class II equipment or the equivalent), it shall be verified that the installation or circuit concerned will be under effective supervision in normal use so that no change is made that would Impair the effectiveness of the Class II or equivalent insulation. The measure shall not therefore be so applied to any Circuit which includes socket outlets or where a user may change items of equipment without authorisation. Cables having*



*a non-metallic sheath or a non-metallic enclosure shall not be described as being of Class II construction. However, the use of such cables installed in accordance with relevant standard is considered to afford satisfactory protection against direct and indirect contact.*

### **5.1.3.3 Protection by non-conducting location**

- a Exposed conductive parts shall be arranged so that under ordinary circumstances a person will not come into simultaneous contact with:
- i two exposed conductive parts, or
  - ii an exposed conductive part and any extraneous conductive part, If these parts are liable to be at different potentials through failure of the basic insulation of live parts.
- b In a non-conducting location there shall be no protective conductors, and any socket outlets shall not incorporate an earthing contact.
- c The resistance of insulating floors and walls at every point of measurement under the conditions specified in 12.3 shall be not less than:
- i 50 k $\Omega$  where the supply voltage does not exceed 500 V, or
  - ii 100 k $\Omega$  where the supply voltage exceeds 500 v but does not exceed 1 000 V. If at any point the resistance is less than the specified value, the floors and walls are extraneous conductive parts for the purposes of protection against shock. Note—Steps may need to be taken so that humidity will not effect the resistance of floors and walls to such an extent that they do not comply with 5.1.3.3(c).
- d The arrangements made shall be permanent. They shall also afford protection where the use of mobile or portable equipment is envisaged. Note—Attention is drawn to the risk that where electrical installations are not under effective supervision, further conductive parts may be introduced at a later date (for example, mobile or portable Class I equipment or metallic water pipes), which may invalidate compliance with (d).
- e Precautions shall be taken so that a potential on extraneous conductive parts in the location cannot be transmitted outside that location. Requirement of 5.1.3.3(a) is fulfilled if the location has an insulating floor and walls and one or more of the following arrangements applies:
- i Relative spacing of exposed conductive parts and of extraneous conductive parts as well as spacing of exposed conductive parts: This spacing is sufficient if the distance between two parts is not less than 2 m; this distance may be reduced while out of the zone of arm's reach.
  - ii Interposition of effective obstacles between exposed conductive parts and extraneous conductive parts: Such obstacles are sufficiently effective if they extend the distances to be surmounted to the values stated in (1) above. They shall not be connected to earth or to exposed conductive parts; as far as possible they shall be of insulating materials.
  - iii Insulation or insulating arrangement of extraneous conductive parts: The insulation shall be of adequate electrical and mechanical strength.

**Application of Protective Measure—Non-conductive location**

*This measure is intended to prevent simultaneous contact with parts which may be at different potentials through failure of the basic insulation of live parts, it is not recognised in these clauses for general use, but may be applied in special situations under effective supervision, where specified by a suitably qualified electrical engineer.*

**5.1.3.4 Protection by earth free local equipotential bonding**

- a Equipotential bonding conductors shall connect together all simultaneously accessible exposed conductive parts and extraneous conductive parts.
- b The local equipotential bonding conductors shall not be in electrical contact with earth directly, or through exposed conductive parts or through extraneous conductive parts.  
Note—Where (b) cannot be observed, requirements for protection by automatic disconnection of supply are applicable [see 5.1.3.1 (a) to (d)].
- c Precautions shall be taken so that persons entering the equipotential location cannot be exposed to dangerous potential difference, in particular, where a conductive floor insulated from earth is connected to the earth free equipotential bonding conductors.

**Application of Protective Measure—Earth free local equipotential bonding**

*This measure is intended to prevent the appearance of a dangerous voltage between simultaneously accessible parts in the event of failure of the basic insulation. It shall be applied only in special situations which an earth free and under effective supervision and where specified by a suitably qualified electrical engineer.*

**5.1.3.5**

*Protection by electrical separation—The voltage of the electrically separated circuit shall not exceed 500 V:*

- a Protection by electrical separation shall be afforded by compliance with (b) and (c) below and with (d) below for a supply to one item of equipment, or (e) below for a supply to more than one item of equipment.
- b The source of supply to the circuit shall comply with the following requirements:
  - i It shall be either:
    - 1 a safety isolating transformer, the secondary winding being isolated from earth; or
    - 2 a source of current providing a degree of safety equivalent to that of the safety isolating transformer referred to above (for example, a motor generator with windings providing equivalent isolation).
  - ii Mobile sources of supply fed from a fixed installation shall be selected or installed in accordance with 5.1.3.2(a) to (j), or
  - iii Equipment used as a fixed source of supply, shall be either:
    - 1 selected and installed in accordance with 5.1.3.2(a) to (j), or
    - 2 such that the output is separated from the input and from the enclosure by an isolation satisfying the conditions of 5.1.3.2(a) to (j). If such a source supplies several items of equipment, exposed metalwork of that equipment shall not be connected to the metallic enclosure of the source.
- c The separated circuit shall comply with the following requirements:

- i Live parts of the separated circuit shall not be connected at any point to another circuit or to earth and to avoid the risk of a fault to earth, particular attention shall be given to the insulation of such parts from earth especially for flexible cables and cords.
  - ii Flexible cables and cords shall be visible throughout every part of their length liable to mechanical damage.
  - iii A separate wiring system shall preferably be used for the separated circuit. Alternatively, multicore cables without metallic sheath, or insulated conductors in insulating conduit shall be used, their rated Voltage being not less than the highest voltage likely to occur, and each circuit shall be protected against over-current.
  - iv Live parts of the separate circuit shall be electrically separated from other circuits. Arrangements shall ensure electrical separation not less than that between the input and output of a safety isolating transformer. Note—In particular, electrical separation is necessary between the live parts of electrical equipment such as relays, contactors, auxiliary switches and any part of another circuit.
- d For a circuit supplying a single item of equipment, no exposed metalwork of the separated circuit shall be connected intentionally either to the protective conductor or to exposed conductive parts of other circuits.
- e If precautions are taken to protect the separated circuit from damage and insulation failure, a source of supply complying with 5.1.3.5(b)(i) to (iii) may supply more than one item of equipment provided that all the following requirements are fulfilled:
- i The exposed metalwork of the separated circuit shall be connected together by insulated and non-earthed equipotential bonding conductors. Such conductors shall not be connected to the protective conductors or exposed conductive parts of other circuits or to any extraneous conductive parts.
  - ii All socket outlets shall be provided with protective contacts which shall be connected to equipotential bonding conductors provided in accordance with (i) above.
  - iii All flexible cables of equipment other than Class II equipment shall embody a protective conductor for use as an equipotential bonding conductor.
  - iv It shall be verified that, if two faults to exposed metalwork occur and these are fed by conductors of different polarity, an associated protective device will meet the requirements of 5.1.3.1(a)(ii).

#### Application of Protective Measure—Electrical separation

*This measure is intended, in the individual circuit, to prevent shock currents through contact with exposed conductive parts which might be energised by a fault in the basic insulation of that circuit. It may be applied to the supply of any individual item of equipment by means of a transformer the secondary of which is not earthed, or a source of equivalent safety. Its use to supply several items of equipment from a single separated source is recognised in these clauses only for special situations under effective supervision, where specified by a suitably qualified electrical engineer.*

### **5.1.4 *Special Provisions and Exemptions***

#### **5.1.4.1**

For areas to which only skilled persons, or instructed persons under direct supervision, have access it is sufficient to provide against unintentional contact with live parts by use of obstacles in accordance with 5.1.2.3, or by placing of live parts out of reach in accordance with 5.1.2.4, subject also to 5.1.4.2 to 5.1.4.4.

#### **5.1.4.2**

The dimensions of passage-ways and working platforms for open type switchboards and other equipment having exposed live parts shall comply with relevant standards, as appropriate to the nominal voltage of the live parts.

#### **5.1.4.3**

For areas which are accessible only to skilled persons by the use of a safety ward lock key or tools, the measures of protection against electric shock specified in this section may be totally dispensed with, where this is permitted by the appropriate authority.

#### **5.1.4.4**

Areas reserved for skilled or instructed persons shall be clearly and visibly indicated by suitable warning signs.

#### **5.1.4.5**

It is permissible to dispense with measures of protection against indirect contact in the following instances:

- a Overhead line insulator wall brackets and metal parts connected to them if such parts are not situated within arm's reach.
- b Steel reinforced concrete poles in which the steel reinforcement is not accessible.
- c Exposed conductive parts, which owing to their reduced dimensions or their disposition cannot be gripped or cannot be contacted by a major surface of the human body, provided that connection of these parts to a protective conductor cannot readily be made or cannot be reliably maintained. Note—This clause applies to small isolated metal parts such as bolts, rivets, nameplates and cable clips. For the purposes of (c) above a major surface of the human body is considered to be 50 mm × 50 mm.
- d Fixing screws for non-metallic accessories provided that there is no appreciable risk of the screws coming into contact with live Parts.
- e Short lengths of metal conduit for mechanical protection of cables having a non-metallic sheath, or other metal enclosures mechanically protecting equipment.

### **5.1.5 *Automatic Disconnection and Reduced System Voltages***

#### **5.1.5.1**

Where for functional reasons the use of extra-low voltage is impracticable and there is no requirement for the use of safety extra-low voltage, a reduced low voltage system may be used as specified in 5.1.5.2 to 5.1.5.7.

**5.1.5.2**

The nominal voltage of the reduced low voltage circuit shall not exceed 110 V rms ac between phases (three phase 65 V to earthed neutral, single phase 55 V to earthed midpoint).

**5.1.5.3**

The source of supply to reduced low voltage circuits shall be one of the following:

- a double wound isolating transformer;
- a motor generator having windings providing isolation equivalent to that provided by the windings of an isolating transformer; or
- a source independent of other supplies, for example a diesel generator.

**5.1.5.4**

The neutral (star) point of the secondary windings of three-phase transformers and generators, or the midpoint of the secondary windings of single-phase transformers and generators, shall be connected to earth.

**5.1.5.5**

Protection against direct contact shall be provided by insulation or by barriers or enclosures.

**5.1.5.6**

Protection against indirect contact by automatic disconnection shall be provided by means of an overcurrent protective device in each phase conductor or by a residual current device, and all exposed conductive parts of the reduced low voltage system shall be connected to earth. The earth fault loop impedance at every point of utilisation, including socket outlets, shall be such that the disconnection time does not exceed 5 seconds. Where a residual current device is used, the product of the rated residual operating current in amperes and the earth fault loop impedance in ohms shall not exceed 50.

**5.1.5.7**

Plugs, socket outlets and cable couplers of reduced low voltage systems shall have a protective conductor contact and shall not be inter-changeable with, plugs, socket outlets and cable couplers for use at other voltages in the same installation.

**5.1.6**

*Protective Measures for Particular Locations*—In certain, locations the susceptibility of persons, and livestock where present, to electric shock may be so high as to necessitate special combinations of protective measures and supplementary precautions as specified in the following clauses.

**5.1.6.1 Bathrooms and showers**

- a In a room containing a fixed bath or shower, there shall be no socket outlets and there shall be no provision for connecting portable equipment. Where shower cubicles are located in rooms other than bathrooms, any socket outlets shall be situated at least 2.5 m from the shower cubicle. These requirements do not apply to shaver supply units complying with (d) below.
- b In a room containing a fixed bath or shower, supplementary equipotential bonding shall be provided between simultaneously accessible exposed conductive parts and simultaneously accessible extraneous conductive parts, and between simultaneously accessible extraneous conductive parts.

- c For circuits supplying equipment in a room containing a fixed bath or shower, where the equipment is simultaneously accessible with exposed conductive parts of other equipment or with extraneous conductive parts, the characteristics of the protective devices and the earthing arrangements shall be such that in the event of an earth fault, disconnection occurs within 0.4 seconds.
- d In a room containing a fixed bath or shower, electric shavers shall be connected only by means of a shaver supply unit complying with the relevant Indian Standard. The earthing terminal of the shaver Supply unit shall be connected to the protective conductor of the final circuit from which the supply is derived.
- e In a room containing a fixed bath or shower cubicle, parts of a lampholder within a distance of 2.5 m from the bath or shower cubicle shall be constructed of or shrouded in insulating material. Bayonet type (B22) lampholder shall be fitted with a protective shield. As an alternative, totally enclosed luminaries may be used.
- f Every switch or other means of electrical control or adjustment shall be so situated as to be normally inaccessible to a person using a fixed bath or shower. This requirement does not apply to electric shaver supply units installed in accordance with (d) above or to insulating cords of cord-operated switches, or to controls incorporated in instantaneous water heaters. No stationary appliance having heating elements which can be touched shall be installed within reach of a person using the bath or shower. For the purpose of this standard the sheath of a silica glass sheathed element is regarded as part of the element.

#### **5.1.6.2 Agricultural installations**

- a In situations accessible to livestock in and around agricultural buildings, electrical equipment shall, so far as is practicable, be of Class II construction, or constructed of or protected by suitable insulation material. Where protection against indirect contact is provided by automatic disconnection in such situations, the limiting values of earth fault loop impedance prescribed in 5.1.3.1 (a)(iv) are not applicable and shall be reduced as appropriate to the type of livestock whose presence is envisaged. Note— The very low body resistance of horses and cattle, for example, makes them susceptible to electric shock at voltages lower than 25 V rms ac.
- b Where protection by the use of safety extra-low voltage is used in situations accessible to livestock in and around agricultural buildings, the upper limit of nominal voltage specified in 5.1.1.2 does not apply and shall be reduced as appropriate.

### **SECTION 3B PROTECTION AGAINST THERMAL EFFECTS**

#### **5.2 Requirements for Protection against Thermal Effects**

##### **5.2.1 General**

###### **5.2.1.1**

Protection against thermal effects caused by fixed electrical equipment shall be Provided by the appropriate measures specified in this section.

###### **5.2.1.2**

All switchgear shall be selected and erected in accordance with the requirements of Section 4 so as to prevent danger from overheating, arcing, or the scattering of hot particles during operation.

## 5.2.2 Protection Against Fire

### 5.2.2.1

Fixed equipment shall be selected, located and erected so that its Intended heat dissipation is not inhibited and it does not present a fire hazard to adjacent building materials.

### 5.2.2.2

Fixed equipment which in normal operation has a surface temperature exceeding 90°C shall be adequately ventilated and be mounted so that no material constituting a fire hazard is within 300 mm above or 150 mm laterally from or below the equipment (*see* Fig. 2), except that these distances may be reduced if a suitable fire-resistant shield or enclosure is installed between the equipment and any such material.

This does not apply to lamps, luminaires and appliances installed in accordance with the manufacturer's instructions and considered to comply with this requirement.

### 5.2.2.3

Where a distribution board is constructed without a back or without one or more of the other enclosing surfaces it shall be fitted only to surfaces of materials or to other equipment in such a way as to complete the enclosure.

### 5.2.2.4

All fixed luminaires and lamps shall be placed or guarded so as to prevent ignition of any material which in the conditions of use foreseen arc likely to be placed in proximity to the luminaires or lamps. Any shade or guard used for this purpose shall be suitable to withstand the heat from the luminaire or lamp.

Fixed luminaires mounted in accordance with the manufacturer's installation instructions comply with this requirement.

Application of Protective Measure—Under *consideration*

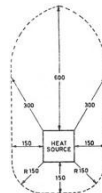


Fig. 2 Clearances from Equipment

## 5.2.3

**Protection Against Burns**—Where the temperature of any part of the enclosure of fixed equipment is liable to exceed 80°C, the enclosure shall be so located or guarded as to accidental contact therewith.

## SECTION 3C PROTECTION AGAINST OVERCURRENT

### 5.3 Requirements for Protection against Overcurrent

#### 5.3.1 General

##### 5.3.1.1

Live conductors shall be protected by one or more devices for automatic interruption of the supply in the event of overload (*see* 5.3.3) and short circuits (*see* 5.3.4) except in cases where the overcurrent is limited in accordance with 5.3.6.

Note 1—Live conductors protected against overload in accordance with 5.3.3 are considered to be protected also against faults likely to cause over currents of a magnitude similar to overload currents.

Note 2—Protection of conductors in accordance with this clause does not necessarily protect the equipment connected to the conductors or flexible cables connecting such equipment to fixed installations through plugs and socket outlets.

#### 5.3.1.2

The protection against overload and the protection against short circuits shall be coordinated in accordance with 5.3.5.

### 5.3.2 *Nature of Protective Devices*

#### 5.3.2.1

*General*—The protective devices shall be of the appropriate types indicated in

#### 5.3.2.2

*Protection against both overload and short-circuit currents*—Devices providing protection against both overload current and short-circuit current shall be capable of breaking (and, for circuit breakers, making) any overcurrent up to and including the prospective short-circuit current at the point where the device is installed. They shall satisfy the requirements of 5.3.3 and 5.3.4.3 (b) and (c). Such protective devices may be circuit breakers incorporating overload release, or fuses, or circuit breakers in conjunction with fuses.

Note—The use of a projective device having rated breaking capacity below the value of the prospective short circuit current at its place of installation subject to the requirements of 5.3.4.3. b).

#### 5.3.2.3

*Protection against overload current only*—Devices providing protection against overload currents shall satisfy the requirements of 5.3.3. Such devices may have a breaking capacity below the value of the prospective short-circuit current at the point where the device is installed.

#### 5.3.2.4

*Protection against short-circuit current only*—Devices providing protection against short-circuit currents shall satisfy the requirements of 5.3.4. Such devices shall be capable of breaking (and, for circuit breakers, making) short-circuit currents up to and including the prospective short-circuit current. Such devices may be circuit breakers with short-circuit release, or fuses.

### 5.3.3 *Protection against Overload Current*

#### 5.3.3.1

Protective devices shall be provided to break any overload current flowing in the circuit conductors before such a current could cause a temperature rise detrimental to insulation, joints, terminations, or surroundings of the conductors.

#### 5.3.3.2

*Coordination between conductors and protective devices*—The characteristics of a device protecting a circuit against overload shall satisfy the following conditions:



- a Its nominal current or current setting ( $I_n$ ) is not less than the design current ( $I_B$ ) of the circuit.
- b Its nominal current or current setting ( $I_n$ ) does not exceed the lowest of the current carrying capacities ( $I_z$ ) of any of the conductors of the circuit.
- c The current causing effective operation of the protective device ( $I_2$ ) does not exceed 1.45 times the lowest of the current carrying capacities ( $I_z$ ) of any of the conductors of the circuit.

Where the device is a fuse or a circuit breaker, compliance with condition (b) also results in compliance with condition (c).

Where the device is a semi-enclosed fuse, compliance with condition (c) is afforded if its nominal current ( $I_n$ ) does not exceed 0.725 times the current-carrying capacity of the lowest rated conductor in the circuit protected.

Note 1—The conditions of 5.3.3.2 may be stated as formulae as follow:

$$I_B \leq I_n < I_z$$

$$I_2 \leq 1.45 \times I_z$$

Note 2—It is expected that the, circuit is so designed that small overloads of long duration will not frequently occur (*see* 3.1.1).

### 5.3.3.3

*Protection of conductors in parallel*—When the same protective device protects conductors in parallel, the value of  $I_z$  is the sum of the current-carrying capacities of those conductors. This provision is applicable only if those conductors are of the same type, cross-sectional area, length and disposition, have no branch circuits throughout their length and are arranged so as to carry substantially equal currents. This does not apply to ring circuits.

Application of protective measure against overcurrent

#### a *Position of devices for overload protection*

- i *A device for protection against overload shall be placed at the point where a reduction occurs in the value of current-carrying capacity of the conductors of the installation. This requirement does not apply where the arrangements mentioned in (ii) below are adopted, and no overload protective device need be provided where (b) below applies. Note—A reduction in the value of current-carrying capacity may be caused by a change in cross-sectional area, method of installation, type of cable or conductor, or in environmental conditions.*
- ii *The device protecting conductors against overload may be placed along the run of those conductors, provided that the part of run between the point where the value of current-carrying capacity is reduced and the position of the protective device has no branch circuits or outlets for the connection of current-using equipment.*

#### b *Omission of devices for overload protection—Devices for protection against overload need not be provided for:*

- i *conductors situated on the load side of the point where a reduction occurs in the value of current-carrying capacity, where the conductors are effectively protected against overload by a protective device placed on the supply side of that point;*
- ii *conductors which because of the characteristics of the load, are not likely to carry overload current;*
- iii *circuits supplying equipment where unexpected opening of the circuit could cause a greater danger than an overload condition for example, supply circuits of*

- lifting magnets, exciter circuits of rotating machines; and*
- iv *secondary circuits of current transformers.* Note—The omission of overload protection is recommended for the circuits described in (iii) above, but in such cases the provision of an overload alarm should be considered.

c *Overload protective device in IT systems*

- i *The provisions of (a) (ii) and (b) are applicable to installations forming part of an IT system, only where the conductors concerned are protected by a residual current protective device, or all the equipment supplied by the circuit concerned (including the conductors) complies with the protective measure described in 5.1.3.2.*

5.3.4

*Protection Against Short-Circuit Current*—This clause deals only with the case of short circuits anticipated between conductors belonging to the same circuit.

5.3.4.1

*General*—Protective devices shall be provided to break any short-circuit current in the conductors of each circuit before such current could cause danger due to thermal and mechanical effects produced in conductors and connections. The nominal current of such a protective device may be greater than current-carrying capacity of the conductor being protected.

5.3.4.2

*Determination of prospective short-circuit current*—The prospective short-circuit current at every relevant point of the complete installation shall be determined. This may be done either by calculation or by measurement of the relevant impedances.

Note—If the prospective short-circuit current at the origin of so installation is less than the breaking capacity rating of the smallest rated protective device to be used in the installation, no further assessment of the prospective short-circuit current is necessary.

- a Each short-circuit protective device shall meet the requirements of (b) and (c) below;
- b The breaking capacity rating shall be not less than the prospective short-circuit current at the point at which the device is installed. A lower breaking capacity is permitted if another protective device having the necessary breaking capacity is installed on the supply side. In that case the characteristics of the devices shall be coordinated so that the energy let-through of these two devices does not exceed that which can be withstood without damage by the device on the load side and the conductors protected by these devices. Other characteristics may need to be taken into account, such as dynamic stresses and arcing energy, for the device on the load side. Note—Details of the characteristics needing coordination should be obtained from the manufacturers of the devices concerned. Coordination with regard to their operating times is of importance.
- c Where an overload protective device complying with 5.3.3 is to be used also for short circuit protection, and has a rated breaking capacity not less than the value of the prospective short-circuit current at its point of installation, it may generally be assumed that the requirements are satisfied as regards short-circuit protection of the conductor on the load side of that point. Note For certain types of circuit breakers, especially non-current-limiting types, this assumption may not be valid for the whole range of short-circuit currents; in case of doubt, its validity Should be checked in

Accordance with the requirements of (d) below.

- d Where (c) above does not apply, it shall be verified as follows that all currents caused by a short-circuit occurring at any point of the circuit shall be interrupted in a time not exceeding that which brings the cable conductors to the admissible limiting temperature. In addition it shall be verified for larger installations that the cable is unlikely to be damaged mechanically. For short-circuits of duration up to 5 seconds the time.  $t$  in which a given short-circuit current will raise the conductors from the highest permissible temperature in normal duty to the limit temperature, can as an approximation be calculated from the formula:  $t = \frac{k^2 S^2}{I^2}$  where

e	f =	g	duration in seconds;
h	i =	j	cross-sectional area in mm <sup>2</sup> ;
k	l =	m	effective short-circuit current in amperes expressed, for ac, as the rms value;
n	o =	p 1	q for copper conductors insulated with PVC;
r	s	t 1	u for copper conductors insulated with 60°C rubber, 85°C rubber;
v	w	x 1	y for copper conductors with 90°C thermosetting insulation;
z	aa	bb	cc for copper conductors insulated with impregnated paper;
dd	ee	ff 1	gg for mineral-insulated cables with copper conductors;
hh	ii	jj 7	kk for aluminium conductors insulated with PVC;
ll	mm	nn	oo for aluminium conductors insulated with 60°C rubber, 85°C rubber;
pp	qq	rr 9	ss for aluminium conductors with 90°C thermosetting insulation;
tt	uu	vv	ww for aluminium conductors insulated with impregnated paper;
xx	yy	zz 8	aaa for mineral-insulated cables with aluminium conductors;
bb	ccc	ddd	eee for tin-soldered joints in copper conductors, corresponding to a temperature of 160°C.

fff Note—For very short durations (less than 0.1 second) where a symmetry of the current is of importance and for current limiting devices, the value of  $k^2 S^2$  for the cable should be greater than the value of let-through energy ( $I^2 t$ ) of the device as quoted by the manufacturer.

#### 5.3.4.4

*Protection of conductors in parallel*—A single device may protect several conductors in parallel against short circuit provided that the operating characteristics of the

device and the method of installation of the parallel conductors are suitably coordinated.

Note—Account should be taken of the conditions that would occur in the event of a short circuit which does not affect all of the conductors.

#### Application of protective measure 5.3.4

##### a *Position of devices for short-circuit protection*

- i *A device for protection against short-circuit shall be placed at the point where a reduction occurs in the value of current-carrying capacity of the conductors of the installation. This requirement does not apply where the arrangements mentioned in (ii) or (iii) below are adopted, and no short-circuit protective device need be provided where (b) below applies. Note—A reduction in the value of current-carrying capacity may be caused by a change in cross-sectional area, method of installation, type of cable or conductor, or in environmental conditions.*
- ii *The short-circuit protective device may be placed at a point on the load side of that specified in (i) under the following conditions: between the point where the value of current-carrying capacity is reduced and the position of the protective device, the conductors shall:*
  - 1 *not exceed 3 m in length,*
  - 2 *be erected in such a manner as to reduce the risk of short circuit to a minimum, and*
  - 3 *be erected in such a manner as to reduce the risk of fire or danger to persons to a minimum. Note 1—The condition specified in (2) above may be fulfilled for example, by reinforcing the protection of the conductors against external influences. Note 2—the provisions of (ii) cannot be applied to any part of an installation in respect of which the short circuit protective device is intended also to afford protection against indirect contact.*
- iii *The short-circuit protective device may be placed at a point other than that specified in (i), where a protective device on the supply side of that point possesses an operating characteristic such that it protects against short circuit, in accordance with 5.3.4.3(d), the conductors on the load side of that point.*

##### b *Omission of devices for short-circuit protection*

- i *Devices for protection against short circuit need not be provided for:*
  - 1 *conductors connecting generators, transformers, rectifiers or batteries with their control panels, where short-circuit protective devices are placed on those panels,*
  - 2 *certain measuring circuits, and*
  - 3 *circuits where disconnection could cause danger in the operation the installation concerned. Provided that the conductors thus not protected against short circuit comply with. The conditions specified in (a)(ii)(2) and (3) above.*

#### 5.3.5

*Coordination of Overload and Short-Circuit Protection*—The characteristics of devices for overload protection and those for short-circuit protection shall be coordinated so that the energy let-through by the short-circuit protective device does not exceed that which can be withstood without damage by the overload protective device.

Note—For circuits incorporating motor starters, the advice of the manufacturer of the starter should be sought.

### 5.3.6

*Limitation of Overcurrent by Characteristics of Supply*—Conductors are considered to be protected against overload and short-circuit currents where they are supplied from a source incapable of supplying a current exceeding the current carrying capacity of the conductors.

### 5.3.7 Protection According to the Nature of Circuits and Distribution System

#### 5.3.7.1

*Phase conductors*—Means of detection of overcurrent shall be provided for each phase conductor, and shall cause the disconnection of the conductor in which the overcurrent is detected, but not necessarily the disconnection of other live conductors. Where the disconnection of one phase could cause danger, for example in the supply to three-phase motors, appropriate precautions shall be taken.

#### 5.3.7.2 Neutral conductor—TN or TT systems

- a In TN or TT systems, where the cross-sectional area of the neutral conductor is less than that of the phase conductors, overcurrent detection for the neutral conductor shall be provided unless both the following conditions are satisfied:
- i the neutral conductor is protected against short circuit by the protective device for the phase conductor of the circuit,
  - ii the load is shared as evenly as possible between the various phases of the circuit.
- b
- c Where either or both of the conditions specified in (b) above are not met, over-current detection shall be provided for the neutral conductor, appropriate to the cross-sectional area of that conductor, and the means of detection shall cause the disconnection of the phase conductors but not necessarily of the neutral conductor. Note—The cross-sectional area of the neutral conductor should in any event comply with Section 4.

#### 5.3.7.3 Neutral conductor—IT systems

- a In IT systems, the distribution of the neutral conductor shall be avoided wherever practicable. Where distribution of the neutral conductor is unavoidable, means of detection of overcurrent shall be provided for the neutral conductor of every circuit, which shall cause disconnection of all the live conductors of the circuit concerned including the neutral conductor. This requirement does not apply where the arrangements described in (b) below are adopted.
- b In IT systems where the neutral is distributed, means of detection of overcurrent for the neutral conductor need not be provided if either of the following conditions is satisfied:
- i the neutral conductor concerned is effectively protected against short circuit by a protective device placed on the supply side, for example at the origin of the installation, in accordance with the requirements of 5.3.4.3(b); and
  - ii the circuit concerned is protected by a residual current device having a rated residual operating current not exceeding 0.15 times the current-carrying capacity of the neutral conductor concerned and the device is arranged to disconnect all the live conductor of the circuit concerned including the neutral conductor.

## **SECTION 3D PROTECTION AGAINST OVERVOLTAGE**

### **5.4 Requirements for Protection Against Overvoltage**

Note—This clause is set aside to cover rules concerning protective measures against overvoltage which could be due to several reasons such as:

- a insulation fault between live parts of circuits supplied at different voltages, and
- b atmospheric phenomena or switching voltages.

## **SECTION 3E PROTECTION AGAINST UNDERVOLTAGE**

### **5.5 Requirements for Protection against Undervoltage**

#### **5.5.1 General Requirements**

##### **5.5.1.1**

Where a drop in voltage, or a loss and subsequent restoration of voltage could imply dangerous situations for persons or property, suitable precautions shall be taken. Also, precautions shall be taken where a part of the installation or current-using equipment may be damaged by a drop in voltage.

An undervoltage protective device is not required if damage to the installation or to current-using equipment is considered to be an acceptable risk, provided that no danger is caused to persons.

##### **5.5.1.2**

The operation of undervoltage protective devices may be delayed if the operation of the appliance protected allows without danger a brief interruption or loss of voltage.

##### **5.5.1.3**

If use is made of contractors, delay in their opening and reclosing shall not impede instantaneous disconnection by control or protective devices.

##### **5.5.1.4**

The characteristics of the undervoltage protective device shall be compatible with the requirements of the Indian Standards for starting and use of equipment.

##### **5.5.1.5**

Where the reclosure of a protective device is likely to create a dangerous situation, the reclosure shall not be automatic.

Application of protective measure **5.5**—*Under consideration*.

## **SECTION 3F ISOLATION AND SWITCHING**

### **5.6 Requirements for Isolation and Switching**

#### **5.6.0 General**

##### **5.6.0.1**

Means shall be provided for non-automatic isolation and switching to prevent or remove hazards associated with the electrical installation or electrically powered equipment and machines. These means shall comply with the appropriate requirements of this section.

### 5.6.0.2

In TN-C systems the PEN conductor shall not incorporate means of isolation or switching. In TN-S systems the protective conductor shall not incorporate a means of isolation or switching and provision need not be made for isolation of the neutral conductor except where this is specifically required.

Application of protective measure—Isolation and switching

*Every installation shall be provided with means of isolation. In addition, means of electrical switching off for mechanical maintenance, or means of emergency switching, or both shall be provided for any parts of the installation to which Section 4 applies.*

*Where more than one of these functions are to be performed by a common device, the arrangement and characteristics of the device shall satisfy all the requirements of these clauses for the various functions concerned. Devices for functional switching may serve also for isolation, switching off for mechanical maintenance or emergency switching where they satisfy the relevant requirements.*

Note—Clauses for selection and erection of devices for isolation and switching are contained in Section 4.

## 5.6.1 Isolation

### 5.6.1.1

Every circuit shall be provided with means of isolation from each of the live supply conductors, except as provided in 5.6.0.2. It is permissible to isolate a group of circuits by a common means, due consideration being given to service conditions.

### 5.6.1.2

Adequate provision shall be made so that precautions can be taken to prevent any equipment from being unintentionally energised.

### 5.6.1.3

Where an item of equipment or enclosure contains live parts that are not capable of being isolated by a single device, a warning notice shall be placed in such a position that any person gaining access to live parts will be warned of the need to use the appropriate isolating devices, unless an interlocking arrangement is provided so that all the circuits concerned are isolated.

### 5.6.1.4

Where necessary to prevent danger, adequate means shall be provided for the discharge of capacitive electrical energy.

### 5.6.1.5

All devices used for isolation shall be clearly identifiable for example, by marking, to indicate the circuit which they isolate.

Application for protective measure—Isolation

a *Means of isolation complying with 5.6.1 shall be provided at a point as near as*

*Practicable to the origin of every installation, without the intervention, of any other equipment on which work might need to be done.*

b *Where an isolator is to be used in conjunction with a circuit-breaker as a means of isolating main, switchgear for maintenance, it shall be interlocked with the circuit-breaker; alternatively, it shall be so placed and/or guarded that it can be operated*

- only by skilled persons.*
- c *Where isolating devices for particular circuits are placed remotely from the equipment to be isolated, provision shall be made that the means of isolating can be secured against inadvertent reclosure during the operation for which it is intended. Where this provision takes the form of a lock or removable handle, the key or handle shall be non-interchangeable with any other used for a similar purpose within the installation.*
  - d *Every motor circuit shall be provided with an isolating device or devices which shall disconnect the motor and all equipment, including any automatic circuit breaker, used therewith*
  - e *For electric discharge lighting installations using an open-circuit voltage exceeding low voltage, one or more of the following means shall be provided for the isolation of every self-contained luminaire, or alternatively of every circuit supplying luminaires at a voltage exceeding low voltage:*
    - i *an interlock on a self contained luminaire, so arranged that before access can be had to live parts the supply is automatically disconnected such means being additional to the switch normally used for controlling the circuit,*
    - ii *effective local means for the isolation of the circuit from the supply, such means being additional to the switch normally used controlling the circuit, and*
    - iii *a switch having a lock or removable handle, or a distribution board which can be locked, in either case complying with (c) above.*

## **5.6.2 Switching Off for Mechanical Maintenance**

### **5.6.2.1**

Means of switching off for mechanical maintenance shall be provided where mechanical maintenance may involve a risk of physical injury.

### **5.6.2.2**

Devices for switching off for mechanical maintenance shall be suitably placed, readily identifiable (for example by marking if necessary) and convenient for their intended use.

### **5.6.2.3**

Suitable means shall be provided so that precautions can be taken to prevent any equipment from being unintentionally or inadvertently reactivated.

Application of protective measure prescribed in 5.6.2

*A means of switching off for mechanical maintenance shall be provided for every circuit supplying an electric motor, or equipment having electrically heated surfaces which can be touched, or electromagnetic equipment for operations from which mechanical accidents could arise.*

*Where a switch mounted on an appliance or luminaire is intended to serve as a means of switching off for mechanical maintenance, the connections shall be so arranged that the appliance or luminaire can be dismantled to the extent necessary for mechanical maintenance without thereby exposing any parts which, remain live when the switch is open. Any conductors or cables which then remain live shall be as short as possible, and separated from any other live conductors or cables by screens or earthed metal or suitable barriers of insulating material.*



### 5.6.3 *Emergency Switching*

#### 5.6.3.1

For every part of an installation which it may be necessary to disconnect rapidly from the supply in order to prevent or remove a hazard, a means of emergency switching shall be provided.

#### 5.6.3.2

Means for emergency switching shall act as directly as possible on the appropriate supply conductors, and shall be such that a single initiative action will cut off the appropriate supply.

#### 5.6.3.3

The arrangement of emergency switching shall be such that its operation does not introduce a further hazard or interfere with the complete operation necessary to remove the hazard.

#### 5.6.3.4

Devices for emergency switching shall be readily accessible and suitably marked.

#### 5.6.3.5

Means of emergency stopping shall be provided where movements by electrical means may give rise to danger.

Application of protective measure—Emergency switching

- a *For every emergency switching device, account shall be taken of the intended use of the premises so that access to the device is not likely to be impeded in the conditions of emergency foreseen.*
- b *Where greater danger would arise from incorrect operation of emergency switching (as for example by inadvertent disconnection of safety services), the means of emergency switching may be arranged so as to be suitable for operation by skilled persons or instructed persons only.*
- c *Means of emergency switching shall be provided in every place where a machine driven by electric means may give rise to danger, and shall be readily accessible and easily operated by the person in charge of the machine. Where more than one means of manually stopping the machine is provided and danger might be caused by unexpected restarting, means shall be provided to prevent such restarting.*
- d *A fireman's emergency switch shall be provided for*
  - exterior discharge lighting installations operating at a voltages exceeding low voltage, and*
  - interior discharge lighting installations operating unattended at a voltage exceeding low voltage. For the Purpose of this requirement, an installation in a closed market or in an arcade is considered to be an exterior installation. A temporary installation in a permanent building used for exhibitions is considered not to be an exterior installation. This requirement does not apply to a portable discharge lighting luminaire or sign of rating not exceeding 100 W and fed from a readily accessible socket outlet.*
- e *Every fireman's emergency switch provided for compliance with (d) shall comply with all the relevant requirements of the following items:*
  - For exterior installations, the switch shall be outside the building and adjacent to the discharge lamp (s), or alternatively a notice indicating the position of the switch shall be placed adjacent to the discharge lamp(s) and a nameplate shall be fixed near the switch so as to render it clearly distinguishable.*

*For interior installations, the switch shall be in the main entrance to the building or in another position to be agreed with the local fire authority.*

*The switch shall be placed in a conspicuous position, reasonably accessible to firemen and except where otherwise agreed with the local fire authority, at not more than 2.75 m from the ground.*

*Where more than one switch is installed on any one building, each switch shall be clearly marked to indicate the installation or part of the installation which it controls, and the local fire authority shall be notified accordingly. Note— Wherever practicable, all exterior installations on any one building should be controlled by a single fireman's switch. Similarly all internal installations in any one building should be controlled by a single fireman's switch independent of the switch for any external installation.*

#### **5.6.4 Other Requirements for Switching for Safety**

##### **5.6.4.1**

In situations where the requirements of 5.6.3 for emergency switching are not-applicable, the requirements of 5.6.4.2 to 5.6.4.7 shall be satisfied, either;

—by means of isolation and/or the means of switching off for mechanical maintenance provided for compliance with 5.6.1 and 5.6.2. or

—by the arrangements for switching of equipment for its normal service (functional switching), or

—by the provision of suitable additional means of switching.

##### **5.6.4.2**

A main switch or circuit-breaker shall be provided for every installation which shall interrupt all live conductors of the installation, provided that for a 4-wire three-phase ac supply the linked switch or linked circuit-breaker may be arranged to disconnect the phase conductors only and a link may be inserted in the neutral conductor; such a link shall be arranged such that it is in contact before the linked switch can be closed, or shall be securely fixed by bolts or screws.

##### **5.6.4.3**

Every circuit and final circuit shall be provided with means of interrupting the supply on load and in any fault conditions foreseen. A group of circuits may be switched by a common device. Additionally, such means shall be provided for every circuit or other part of the installation which it may be necessary for safety reasons to switch independently of other circuits or other parts of the installation. This regulation does not apply to short connections between the origin of the installation and the consumer's main switchgear.

##### **5.6.4.4**

Every appliance or luminaire connected to the supply other than by means of a plug and socket outlet complying with Section 4, shall be provided with a means of interrupting the supply on load. The means of interruption shall be separate from the appliance and in a readily accessible position, subject to the provisions of 5.6.4.5 and 5.6.4.6 where applicable. For an appliance fitted with heating elements which can be touched, the means of interruption shall be a linked switch arranged to break all the circuit conductors including the neutral. For the purpose of this regulation the sheath of silica-glass sheathed element is regarded as part of the element. Where the means of interruption is also intended to serve as a means of switching off for mechanical maintenance, it shall comply with the requirements of Section 4.

**5.6.4.5**

The means of interrupting the supply required by 5.6.4.4 may be a device mounted on the appliance or luminaire, as in 5.6.2 where the device is intended to serve as a means of switching off for mechanical maintenance.

**5.6.4.6**

The means of interrupting the supply on load to comprehensive heating or lighting installations comprising more than one appliance or luminaire, may be installed in separate room.

**5.6.4.7**

Every fixed or stationary household cooking appliance shall be controlled by a switch separate from the appliance and placed within 2 m of the appliance. Where two stationary cooking appliances are installed in one room of household premises, one switch may be used to control both appliances provided that neither appliance is more than 2 m from the switch.