युनाइटेड इंडिया इंश्यूरेन्स कंपनी लिमिटेड
UNITED INDIA INSURANCE COMPANY LTD.
At United India, It's always U before I

Registered & Head Office:24, Whites Road, Chennai-600014
(A Government of India Undertaking)
Delhi Regional Office 1, 8th Floor Kanchenjunga Building, 18, Barakhamba Road,
New Delhi – 110001, Phone Nos. 23313055-59.

IRDA REGN. NO.545 GST No. 07AAACU5552C1ZL CIN.U93090TN1938GOI000108

# TENDER DOCUMENT
# FOR

**CLIENT:**
**M/S United India Insurance Co. Ltd.**
ESTATE DEPTT.
8TH FLOOR, KANGCHENJUNGA BUILDING,
BARAKHAMBA ROAD,
NEW DELHI-110001
Contact: - 011-2370-5997

**ARCHITECT:**
**M/s Mohan & Associates**
202 Padma Tower II
Rajendra Place,
NEW DELHI-110049
Contact- 7428190271

| | |
|---|---|
| **Date of Advertisement** | **20/01/2025** |
| **Date of Pre-Bid Meeting** | **27/01/2025 at 3:00PM** |
| **Last Date of Submission of Tender** | **10/02/2025 upto 3:00PM** |
| **Date of Opening of Part-I** | **10/02/2025 at 3:30PM** |
| **Date of Opening of Part-II** | **To be intimated to technically qualified bidders** |
| **Address for Submission of bids** | **The Deputy General Manager,<br>United India Insurance Co. Ltd.,<br>Delhi Regional Office No. 1<br>8th floor, Kanchenjunga Building,<br>Barakhamba Road – New Delhi - 110001.** |

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## CONTENTS OF TENDER DOCUMENT

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**TECHNICAL BID (SECTION I TO II)**

## SECTION I
## NOTICE FOR INVITING TENDER

United India Insurance Co. Ltd. intends to invite Tenders from Bonafide contractors for Proposed Civil Repairs & Other Related Works at **House No.** ***848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049***

The bidder is required to go through the tender document carefully which will form part of the contract. Tenders are invited in two bid system i.e. "Technical bid" and "Financial bid". The tender should be submitted in the following format and shall contain detailed documents as listed below:

**Part I** (Technical Bid)
**Part II** (Financial Bid)

The tenderers are advised to visit, carefully inspect the site. The bidder is expected to submit all the required documents mentioned in the "**Technical Bid**", quote item rates for various items given in "**Financial Bid**", furnish all the information asked for in the bid, sign all the pages and submit the Bid (Tender) in sealed envelope to **The Deputy General Manager, United India Insurance Co. Ltd., Delhi Regional Office No.1,** 8th floor, Kanchenjunga Building, Barakhamba Road – New Delhi - 110001.

***Mode of Submission of Tender****:*

The tender shall be submitted in Hardcopy in two cover system in accordance with the procedure detailed herein below. Specified documents shall be sealed in envelopes of appropriate size each of which shall be sealed.

1. First Envelope marked Cover 1 shall contain Earnest Money Deposit along with Covering Letter and Tender Document (i.e., **Technical Bid).**
2. Envelope marked Cover 2 shall be of adequate size and shall contain envelopes marked Covers 1 & Annexure- II (Price bid sealed envelope mark as Annexure-II) and shall be properly sealed & signed. This envelope shall be endorsed on the outside face as under:

***"*REPAIR AND RENOVATION WORK OF House No.** ***848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049"***

**The envelope marked Cover 2 containing the tender documents/ Undertaking as in Annexure- I as per instructions mentioned above shall be submitted in the office of Deputy Gen. Manager,** ***UIIC, 8TH FLOOR, KANGCHENJUNGA APARTMENT NEW DELHI 110001 ON OR BEFORE 10/02/2025 15:00 Hours***

**Envelope marked Cover 1 & Cover 2 containing Earnest Money Deposit along with Covering Letter and online receipt of the Processing Fee of Tender Document, tender document/ Undertaking as in Annexure- I will be opened if the Earnest Money Deposit, tender document/ Undertaking as in Annexure- I is not found as prescribed, the tender shall be rejected. In case of the lowest bid (being L-1) quoted is found more than 10%, below the Estimate, in the case, the contractor has to submit additional performance guarantee of the difference of Estimate and Bid quoted.**

In case the date of opening of tenders is declared as a holiday, the tenders will be opened on the next working day at the same time.

United India Insurance Co. Ltd. has the right to accept / reject any or all tenders without assigning any reasons.

## The scope of work includes:

Civil, Electrical, Plumbing & other related works at House No. *848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049* with completion period of **12 WEEKS**.

1. Entering into agreement with Company for the same including Supervision and Execution of work.

2. To comply with CVC guidelines and queries if any, connected with such project.

3. The work shall be executed as per specifications mentioned in the tender & supervision of our Architect M/S Mohan and Associates

4. **The last date for submission of Tender will be as per NIT. The Tender should consist Technical Bid along with Demand Draft towards EMD and Tender cost in favour of The United India Insurance Co. Ltd. payable at Delhi. drawn on any Nationalized Bank and Price Bid. The Tender must be submitted for participation in the tender process at the mentioned address.**

5. **Tenders submitted without EMD will be rejected.**

6. Refundable Earnest Money deposit: **Rs. 50,000/-** (Rupees Fifty Thousand only) to be paid by DD favoring The United India Insurance Co. Ltd.

7. **Original DD of EMD to be submitted along with the Technical Bid envelope of Tender to UIIC, Delhi Regional Office-1.** United India Insurance Co. Ltd / Consultant reserve right to accept any tender or to refuse any / all tenders without giving any reason for the same FOR & ON BEHALF OF **"THE UNITED INDIA INSURANCE CO. LTD."**

**The Deputy General Manager,**
**United India Insurance Co. Ltd.,**
**Delhi Regional Office No. 1**
8th floor, Kanchenjunga Building,
**Barakhamba Road – New Delhi - 110001.**
Date: - .

Seal & Signature of the contract

**SECTION II**
**APPENDIX SHOWING IMPORTANT SCHEDULES**

**NOTICE INVITING TENDER (NIT)**

## Tender ID: UIIC/DRO-1/EST/2024-25/3/ASIAD GUEST HOUSE

United India Insurance Co. Ltd. invites online Tenders from the Empanelled Contractors for the **Civil, Electrical, Plumbing & other related works at House No.** ***848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049***

Details of tenders are as under:

| | | | |
|---|---|---|---|
| 1 | Name of Work | : | **REPAIR AND RENOVATION WORK OF House No.** ***848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049*** |
| 2 | Time allowed for completion | : | ***12 weeks*** *from date of handing over of the site.* |
| 3 | Last date and time of receipt of Tenders | : | ***10/02/2025 15:00 hours*** |
| 4 | Address at which the Tenders are to be submitted | : | ***Technical Bid:*** ***Estate DEPTT.*** |
| | | | ***8TH FLOOR, KANGCHENJUNGA BUILDING, New Delhi- 110001. (Hard copy along with EMD)*** |
| | | | ***Price Bid:*** ***to be submitted offline.*** |
| | | | www.uiic.co.in |
| 5 | Date and time of opening of Tenders | : | ***10/02/2025 upto 3.30 p.m.*** |
| | | | ***Technical Bid:*** ***In hard copy.*** |
| | | | ***Price Bid:*** ***which will be opened after scrutiny of Technical Bid.*** |
| 6 | Place of opening Tenders | : | ***ESTATE DEPTT.*** |
| | | | ***8TH FLOOR, KANGCHENJUNGA BUILDING, New Delhi- 110001.*** |
| 7 | Name of Architect | : | ***M/s MOHAN AND ASSOCIATES. 201 PADMA TOWER-II, NEW DELHI-110008.*** |
| 8 | Defects Liability Period | : | *12 months from the date of handing over of the project to the satisfaction of UIIC.* |

| | | | |
|---|---|---|---|
| 9 | Validity of Offer | : | *Minimum 90 days from the date of obtaining all the clearance from NDMC, NGT, ASI & other related authorities.* |
| 10 | Penalty for damage to property (Liquidated Damages) | : | *At the rate of 1% of the Contract Value per week which subject to a maximum of 10% of the actual Contract Value.* |
| 11 | Note | : | *If the vendor is found to have delayed the running/in hand project beyond the prescribed time limit specified in related tender document, the vendor will not be issued the new tender until completion of the previous delayed work.* |
| 12 | Date of commencement of Work | : | **Immediately on issue of Work Order.** |
| 13 | Date of completion of Work | : | **12 weeks** from date of commencement. |
| 14 | EMD (Earnest Money Deposit) | : | Rs. 50,000/- (Rupees Fifty Thousand only) |
| 15 | ISD (Initial Security Deposit0 | : | **Rs.1,00,000/-** (Including EMD) (Rupees One Lakh only) |
| 16 | Refund of Security Deposit | : | On completion of work and issue of Work Completion Certificate by the Architect |
| 17 | Defect Liability period | : | 12 months after completion of work, |
| 18 | Retention | : | 10% of cost of works executed |
| 19 | Refund of Retention Money | : | To be refunded to the contractor thirty days after the end of Defect Liability Period |
| 20 | Penalty for delay in work (Liquidated Damages) | : | Rs. 1000/- per day subject to max. 10% of the work contract amount. |
| 21 | Minimum Value of work for Interim Bills | : | a) 25% Work Completion<br>b) Full & Final Bill Payment against 100% of work completed as certified by Project Architect. |
| 22 | Period for honoring Interim Certificate | : | Within 30 days of issue of Certificate from Architect. |
| 23 | Period of Final Measurement | : | 15 days after virtual completion of work. |
| 24 | .Period of honoring Final Certificate | : | 30 days from the date of issue of Certificate. |
| 25 | Income Tax deduction | : | At prevailing rate from each bill. |
| 26 | Tender validity period | : | 90days from the date of work order. |

Seal & Signature of the contractor

## SECTION III
## General Instructions for Bidders

**1.** Tender bid is to be submitted in a sealed envelope. The bid envelope should be super-scribed with the title of Project on the envelope. No bid would be accepted without the title.

**2.** The Tender bid should comprise of two separate envelopes viz. Technical Bid and Financial Bid. Both these envelopes should be properly sealed and super-scribed with the type of bid. These two envelopes should then be sealed inside the Main Envelope depicting the Title of Project, Name and Contact details of the Bidder.

**3.** A single company/contractor can submit only one bid for the Project.

**4.** Complete Tender Documents can be downloaded from the website of UIIC -www.uiic.co.in.

**5.** Interested Company / Partnership /Proprietorship can submit the tender documents complete in all respects along with a Refundable Earnest Money Deposit (EMD) of Rs.50.000/- (Rupees Fifty Thousand only)

**6.** UIIC reserves the right to amend or withdraw any of the terms and conditions contained in the Tender Document or to reject any or all tenders without giving any notice or assigning any reason. The decision of UIIC in this regard shall be final and binding.

**7.** A standard draft of Service Agreement as mentioned in the tender document is to be executed for any type of service to be provided with specific mention of the Service Contract on the agreement.

**8.** Average Annual financial turnover during the last 3 years, ending 31st March of the previous financial year should be at least Rupees One Crore.

**9.** Experience of having successfully completed similar works during last 7 years ending last day of month previous to the one in which applications are invited should be either of the following (PSU / Central Govt work Experience of similar will be preferred).

**(i)** Three similar completed works costing not less than the amount equal to 40% of the estimated cost.

**OR**

**(ii)** Two similar completed works costing not less than the amount equal to 50% of the estimated cost.

**OR**

**(iii)** One similar completed works costing not less than the amount equal to 80% of the estimated cost.

**10.** Bidder should be registered in Delhi –NCR region.
**11.** Bidder should be ESI & PF registered.
**12.** Bidder should be ISO Certified.

Seal & Signature of the contractor

## SECTION IV
## TERMS AND CONDITIONS

Bid shall be submitted on or before Up to on working days (except Saturday, Sunday and public holidays).

Bid shall be accompanied with the amount in the form of crossed demand draft/pay order towards interest free Earnest Money Deposit and Tender Cost.

1.1 United India Insurance Co. Ltd and Consultant will not be responsible for delay on any account in respect of Bid Documents. If any Bid is received after the specified date and time, even if the delay is due to postal or other transit delays or any other reason(s) whatsoever the same is liable to be rejected.

1.2 Telegraphic Bids will not be accepted under any circumstances.

1.3 The Bidder shall submit the Technical Bid & Financial Bid in Two separate envelops superscribed with the type of bid which should be closed in another single envelop, writing on the envelop Name of the Project on the top of the sealed envelope along with the name, address and contact details of the Bidder.

Bid with no indication on outside to indicate that it is a Bid and which might get opened before the due date and time is liable to be disqualified.

1.4 The Bids shall be opened by the Consultant/ United India Insurance Co. Ltd. and bidders will be communicated about outcome by Consultant/United India Insurance Co. Ltd. Bidder may be allowed to be present while opening the Bids.

1.5 All questions, clarifications, doubts etc. relating to this Bid shall be discussed with consultant during the Pre-Bid meeting and before filling and submitting the Bid.

1.6 All specifications and documents enclosed with this Bid are the UIICL's property and are to be used only for the purpose of Bidding for the said work.

1.7 Bidders shall quote strictly in accordance with the requirements of this invitation to Bid.

1.8 The UIICL and the Consultant do not bind themselves to accept the lowest or any bid and reserves the right to accept or reject any or all Bids or portion thereof.

1.9 All rebates, discounts, if any, offered by the Bidder shall be indicated in the Schedule of quantities and shall not be indicated in the forwarding letter.

1.10 The Bid shall be valid for a period of 90 days from the date of opening the Bid.

**Annexure-I**
**UNDERTAKING**

**(To be submitted along with the Technical Bid)**

**To**
**THE DEPUTY GENERAL MANAGER**
**UNITED INDIA INSURANCE CO. LTD.**
**ESTATE DEPTT.**
**8TH FLOOR,**
**KANGCHENJUNGA BUILDING**
**NEW DELHI 110001.**

**Dear Sir,**

**Reg.:- REPAIR AND RENOVATION WORK OF House No. *848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049***

1. I / We refer to the tender notice issued by you for Interior & Furnishing works and allied works in connection with the above.

2. **I undertake to submit in Hard copy the tender document along with all terms & Conditions, Specifications and subsequent annexure and Corrigendum's duly signed and stamped by authorized representative/ signatory on becoming L1. However, we accept all the terms and conditions along with the specifications, Drawings, Layouts etc. defined in the tender documents.**

3. I/ We hereby offer to perform, provide, execute, complete and maintain the works in conformity with the drawings, designs, conditions of contracts, specifications, schedule of quantities relating to the works.

4. I/ We have satisfied myself/ ourselves as to the site conditions, examined the drawings and all aspects of the tender conditions, subject to above, I/ We do hereby agree, should this tender be accepted in whole or in part, to:

a. Abide by and full fill all the terms and provisions of the said conditions annexed here to,

b. Complete the works within **12 WEEKS** as per the work order.

1. I / We have deposited an **earnest money of** Rs. 50,000/- (Rupees Fifty Thousand Only) in the form of Demand Draft / Banker's Cheque drawn in favour of UIIC payable at New Delhi and United India Insurance Co. Ltd. payable at New Delhi, respectively which, I / We note, will not bear any interest and is liable for forfeiture.
   I. If our offer is withdrawn within the validity period of acceptance by the Employer.

   Or

   I. If the contract agreement is not executed by us within 7 days from the date of receipt of the letter of acceptance.

   Or

   II. If we fail to pay the initial security deposit as stipulated.

   Or

   III. If the work is not commenced within 7 days after issue of work order.

1. I / We understand that you are not bound to accept the lowest or any tender you receive.

The names of **DIRECTORS** of our Firm are:

1. _____
2. _____
3. _____
4. _____

Yours faithfully,

Signature ……..

Designation ……..

Name of Partner / Director of the Firm, authorized to sign or name of person having power of attorney to sign the contract. (Certified true copy of power of attorney should be attached)

Signature and address of witnesses:

a. Signature ……
Name ……..
Address ……..

b. Signature……
Name ……..
Address ……..

**AGREEMENT**

This agreement made on the _____day of _____Two Thousand _____ BETWEEN United India Insurance Co. Ltd. having its Regional Office at New Delhi and many other places, (hereinafter called "the Employer") of the one part and M/s _____ through its _____ having its registered office at _____ (hereinafter called "the Contractor") of the other part.

WHEREAS the Employer is desirous of executing **Civil, Electrical, Plumbing & other related works at House No. *848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049*** to be carried out as per Schedule-I, to this agreement and has caused Drawings, Bills of Quantities and Specification describing the work to be done, prepared by **M/s Mohan & Associates, 202, Padma Tower II, Rajendra Place, New Delhi 110008 Ph. 91-7428190271**. (Hereinafter called "The Consultant / The Architect").

AND WHEREAS the said Drawings, the Bills of Quantities marked pages _____ to ____ (inclusive) and the Specifications as stated have been signed by or on behalf of the parties hereto:

AND WHEREAS the Contractor has agreed to execute the work upon the Conditions of Tender and the Conditions of Contract and further subject to the Special Conditions set forth in Schedule-II hereto attached (hereinafter collectively referred to as "the said Conditions") as per the said Drawings and as described in the said Specification and included in the said Bills of Quantities for the sum of Rupees _____

**NOW IT IS HEREBY AGREED AS FOLLOWS:**

1. In consideration of the sum of Rupees _____ to be paid at the time and in the manner set forth in the said Conditions, the Contractor shall upon and subject to the said Drawings and described in the said Specification and Bills of Quantities.
2. The Employer shall pay to the Contractor the said sum of Rs._____ _____ ___ or such other sum as shall become payable hereunder at the times and in the manner specified hereinafter.
3. The term "The Consultant / The Architect" in the said conditions shall mean **M/s Mohan & Associates 202 Padma Tower II Rajendra Place New Delhi 110008 Ph. 7428190271**. or in the event of their ceasing to be Consultants for the purposes of this Contract, such other persons as shall be nominated for that purpose by the Employer, not being a person to whom the contractor shall object for reasons considered to be sufficient by the Employer mentioned in the said Conditions. Provided always that no persons subsequently appointed to be Consultants under this Contract shall be entitled to disregard or overrule any decision or approval or direction given or expressed by the Consultants for the time being.
4. The said Conditions, Specifications and Priced Bills of Quantities shall be read and construed as forming part of this agreement, and the parties hereto shall respectively abide by and submit themselves to the conditions and stipulations and perform the agreement on their parts respectively in such Conditions, Specifications and Priced Bills of Quantities contained.

1. This agreement is subject to jurisdiction of courts in Delhi only.

2. **Deputy Gen. Manager, DRO1** shall exercise powers on behalf of the said Employer for the purpose of the Contract Agreement.

3. Whereas both the parties agree to sign the following annexure Annexed to this Agreement in token of their acceptance.

a) Agreement
ii) General Conditions of contract
iii) Special Condition of Contract.
iv) Safety Codes
v) Specifications.
vi) Material Testing & Their Frequency
vii) List of Approved Makes / Brands
viii) Priced Bill of Quantities.
ix) Drawings.

1. The UIIC shall pay the contractor such sum as shall become payable hereunder at the times and in the manner specified in the said Conditions mentioned in the General Conditions of Contract.
2. Whereas the Contractor hereby undertakes and agrees to carry out and complete the works within **12 Weeks** from the date of handing over site or 15 days from the date of issue of letter of acceptances, whichever is later. The Contractor agrees and has deposited the sum of Rs. _____ by way of Initial Security Deposit for due fulfillment of this Contract for the Works. It is agreed that the Security Deposit shall be deducted from each running bills and refunded to the contractor as per clause 2 of the General Conditions of the Contract Annexed herewith.
3. Whereas it is agreed that the earnest money amounting to Rs.50,000/- (Rupees Fifty Thousand Only) deposited by the Contractor in the form of Demand Draft along with the tender shall be forfeited in full in case the Contractor does not remit the Initial Security Deposit within the stipulated period of the start of the works by the stipulated date mentioned in the award letter.
4. Whereas Shri _____ is the accredited representative(s) of the Contractor who would be responsible for taking instructions from the Employer in relation to the Works. The Contractor agrees to pay Sales Tax or any other Tax on material or finished works like Works Contract Tax, Turnover Tax etc. including Income Tax in respect of this Contract of the Works and the Employer will not entertain any claim whatsoever in this report nor the Employer shall be responsible to pay any Tax as mentioned above. If due to non – payment of any of the aforesaid Tax or other Taxes connected with the Works, the Contractor suffers any loss or damages occurred to the Contractor and the Employer will be entitled to claim damages from the contractor for non-completion of the Work within **12 weeks** stipulated in Para 9, above.
5. Whereas the Contractor hereby declares the list of all the relative working with the Employer which is annexed herewith.

OR

Whereas the Contractor declares that none of his relative is working with the Employer.

OR

Whereas the Contractor declares that he has associated himself with the agencies of the appropriate classes of person for Sanitary and Water Supply Installation etc. or any other specialized job to complete the works.

The Plans, Drawings, Specifications, Contract Documents and the Documents above mentioned shall form basis of this Contract and the decision of **ESTATE DEPTT., 8TH FLOOR,KANGCHENJUNGA BUILDING, New Delhi- 110001** for the time being as mentioned in the Conditions of Contract in reference to all matters of dispute as to material, workmanship or account and as to the intended interpretation of the clauses of the Agreement or any of the document attached hereto shall be final and binding on both parties and may be made rule of the court.

The work comprises of the ***"*REPAIR AND RENOVATION WORK OF Asiad Guest House No. *848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049*"** as mentioned above and all subsidiary and other works connected therewith on the same site as may be ordered to be done from time to time by ***Deputy Gen. Manager*, DRO1 , 8TH FLOOR, KANGCHENJUNGA BUILDING, C.P. , New Delhi-110001** for the time being even though such works may not have been shown on the Plans or described in the said Specifications or Schedule of Quantities of various classes of Work to be done.

6. The Employer through the Deputy Gen. Manager**, DRO1, 8TH FLOOR, KANCHENJUNGA BUILDING, C.P., NEW DELHI-110001** reserves himself the right of altering the Plans, Drawings and nature of Work of adding to or omitting any items of work or having portions of the same carried out departmentally or otherwise and such alterations or variations shall be carried out without prejudice to this Contract.

7. All disputes arising out of or in any way connected with this agreement shall be deemed to have arisen in Delhi and only the courts of Delhi shall have jurisdiction to determine the same.

8. The several parts of this Contract have been read to us and fully understood by us.

In Witness whereof the parties above named have executed these presents today and year first hereinabove written.

Signed, Sealed and Delivered by:

**Authorized Representative of Employer** **Authorized Representative of Contractor**

1. **Definitions**

**1.1** The UIICL shall mean "UNITED INDIA INSURANCE COMPANY LIMITED", **8TH FLOOR, KANGCHENJUNGA BUILDING, C.P., NEW DELHI-110001**

2. **Earnest Money Deposit**

2.1 Bidder shall pay Earnest Money Deposit of Rs.50,000/- in the form of demand draft drawn in favor of UNITED INDIA INSURANCE COMPANY LIMITED. The EMD to be enclosed with Technical Bid.

2.2 Earnest Money deposit will be returned to the Bidder in case his bid is not accepted. The deposit amount shall be adjusted towards initial security deposit in case of successful bidder. No interest will be paid on Earnest Money deposit in any case.

2.3 The bid will be rejected if earnest money deposit is paid in any form other than Demand Draft.

**3. Retention and Security Deposit**

3.1 10% amount of every running account bill will be deducted as Retention money and the same will be released/returned to the contractor only after the expiry of defects liability period of 12 months from the date of virtual completion subject to condition that once the defects, if any are rectified by the contractor to the satisfaction of the Consultant/UIICL. Apart from this a security deposit of Rs. 1,00,000/- is to be submitted by the bidder in the form of EMD along with the Technical Bid which would be converted to Security Deposit which would be refunded on issue of virtual completion certificate by the consultant.

3.2 No interest on Security Deposit or retention money will be paid at any stage whatsoever.

**4. Defects Liability Period**

4.1 Defects liability period for repaired work shall be Twelve months from the date of Final Completion Certificate.

**5. Payment**

**Mode of Payment**

5.1. All such interim payments shall be regarded as payment by way of advance against final payment only and not as payment for work actually done and completed and shall not preclude the right of the UIICL and The Consultant from getting bad, unsound and imperfect or unskilled work to be removed and reconstructed by the contractor.

5.2. The UIICL shall deduct T.D.S. from the payment of each running bill as per the prevailing Income Tax Law. However, GST shall be paid to the contractor as per norms.

6. **Terms and Completion**

6.1. Time is the essence of contract and contractor shall complete entire work in 12 (Twelve) weeks from the date of issue of letter of intent.

6.2. **Penalty**: A penalty of Rs. 1% per week subject to maximum 10% of the total contract amount will be levied upon contractor for the duration of work beyond 12 weeks and agreed extension time.

7. **Item Rate Contract and Conditions**

7.1. UIIC's decision will be final and binding on the contractor regarding method/mode of measurement.

7.2. No escalation in rates will be permitted. Under no circumstance will the UIICL agree to escalation in the rates quoted and no claims on this account for whatsoever reason will be entertained at any stage.

7.3. Contractor shall appoint a qualified experienced supervisor at site who shall execute the work to the full satisfaction of the UIIC and the Consultant.

7.4. Contractor must ensure that fair wages are paid to the labour engaged by him in accordance with the current labour laws of the state. The contractor shall be responsible for compliance with all labour laws and keep the UIICL indemnified against any claim in this regard.

The rates of extra items, if any shall be derived on the basis of similar items in Schedule of Quantities. If any particulars item is not similar in nature the rate shall be derived by actual labour, material cost and 15% thereof to cover overhead and profits. Such cost to be certified by the Consultant in consultation with the UIIC.

UIIC Can charge 0.5% for electricity and 0.5% for water charges of contract value from the contractor.

**8. Conditions**

**8.1.** Contractor shall mobilize on site all machinery and equipment such as Grunting equipments, welding equipments or any other special process equipment at his own cost. If any special equipment is requested by the consultant, it will have to be provided by the Contractor at the site, at his own cost for all plastering work and concreting etc. The mixer machine shall be used to get the homogeneous material.

**8.2.** The quoted rates shall be inclusive and cover the cost of materials, freight, all types of taxes, duties, levies, royalties, erection, construction, testing of materials, samples brought for approval, tools and tackles, plant and equipment, labour, supervision, overhead and profit and any other expenditure incurred for completion of work as per drawing, specifications and to the full satisfaction of the UIICL/Consultant.

**8.3.** The steel/wooden props of any size and length, scaffolding etc. shall be provided wherever required before/during the execution of work.

**8.4.** The quoted rates shall include cost of lighting, security of contractor materials and equipment.

**8.5.** The work shall commence from the date of issue of letter of intent.

**8.6.** Contractor shall bear in mind that he will have to carry out the works during office hours. He shall take utmost care to see that:

**a.** Working area is kept clean.

**b.** Hessian cloth curtains are hanged over each window and over scaffolding.

**c.** Contractor has to organize the work and dump the material in such a way that movability and convenience inside and outside the premise is not disturbed during the execution of the work.

d. No inconvenience/nuisance is caused.

e. The contractor is responsible for arrangement of shelter for the laborers at his own cost.

**8.7.** The Contractor must visit the site of work regularly and see for himself conditions regarding all matters related to performance of his duties and the quality of work being performed.

**8.9**. The Consultant, his representative and the UIICL shall at all responsible times have free access to the works and/or to the workshops/factories or other places where materials are being prepared for the contractor and also to any place where the materials are laying or from which they are being obtained, the contractor shall give every necessary facility to consultant and the UIICL for inspection and examination and test of the materials and workmanship to the extent of discontinuing portions of the work temporarily or of uncovering or taking down portion of finished work, at contractor's cost.

**8.10.** The contractor shall be responsible for disposing the debris outside the UIICL premises on regular basis. He shall not dump the same on road/garbage's dumps in the area. He shall be responsible to attend the complaints that might arise from improper disposing the material. The contractor shall also ensure that after finishing every day's work, the place shall be kept clean free of debris especially inside the premise compound or in the corridors, open yards' staircase, such that members are not inconvenienced.

The saleable scrap of C.I. pipes and fittings etc. shall be the owners property and the contractor shall store the same at the location as directed by the owner/consultant. The contractor shall maintain a record of the said material along with the owner's representative.

8.11. The rates quoted shall be valid for working at all heights and depth. No extra payment shall be made for scaffolding, centering, ladder, for transportation of labour and material to higher/ lower levels, etc.

8.12. The item rate specifications are indicative and the contractor shall have to UIICL/ Consultant reserves the right to increase decrease quantity of item or to add/delete any item in totality. The contractor shall not claim any compensation in lieu of charges of quantities as stated above.

8.13. The contractor after receipts of written notice from Consultant and the UIICL requiring compliance, fails to comply with the same, then the UIICL/Consultant reserves the right to terminate contract without giving any compensation and/or employ and pay other agencies to execute any such work whatsoever as may be necessary to give effect thereto and all costs incurred in connection therewith shall be recoverable from the contractor by the UIICL on a certificate by Consultant. The Owner may deduct the said cost from any money due or to become due to the contractor.

8.14. The contractor shall provide everything necessary for the proper execution of the works according to the intent and meaning of drawings/ specification and Schedule of Quantities taken together whether the same may or may not be particularly shown or described therein provided that the same can reasonably be inferred there from and if the contractor finds any discrepancy therein shall immediately and in writing refer the same to the Consultant and the UIICL whose decision will be final and binding on the contractor.

8.15. In case any dispute or difference shall arise between the UIICL and Consultant on the one hand

and the contractor on the other hand concerning this contract or the construction, meaning, operation or effect thereof or of any clause herein contained of as to the rights, duties, liabilities of the parties hereto respectively or of the consultant under or by virtue of these presents or otherwise or touching the subject matter of these presents or arising out of or in relation thereto (except as to matters left to the sole discretion of The UIICL/Consultant) the same shall be referred to arbitration of a single arbitration in case the parties can agree one, otherwise to two arbitrators before entering upon the reference & in either case in accordance with & subject to the provisions of the Indian Arbitration Act, 1996 or any statutory, modification or re-enactment thereof for the time being in force.

8.16. Contractor shall replace all the broken glasses and any damages to property, broken or damaged during progress of work due to falling debris etc. Quoted rates shall be inclusive of such replacement cost and no separate payment shall be made for the same. It is advised to the contractor to cover the glass panels by cardboard or any other suitable material to avoid breakage.

8.17. Contractor will be allowed to carry out his activities only during 9.00 am to 6.00 P.M. He shall not be allowed to carry out work during extended hours.

8.18. Taking permission from all the competent authorities (i.e. Local Municipal authority, Water Department, Electricity deptt. etc.) will be taken by the contractor. Deposits if any will be paid by the UIICL separately.

8.19. Holes made in the walls or slabs to support access scaffolding shall be sealed with rich cement and brick bat/concrete to consultant satisfaction. Contractor shall erect double bamboo scaffolding or steel tubular scaffolding as per the directions of the Consultant. He will be allowed to take lateral support by fixing expansion anchor bolts in the structure or by other means with prior permission of the Consultant.

8.20. The contractor shall indemnify UIIC, against any liability, directly or third party, in case of an accident during the execution of work.

8.21. No idling charges shall be paid to the contractor for labour and equipment under any circumstances.

8.22. No labour is allowed to stay on the site.

8.23. Only one place in the premises shall be given for storage of cement, sand and other necessary material.

## 9. SAFETY ASPECTS

**Safety Provision**

The contractor shall take full responsibility for the adequate stability and safety of all site operations and methods of constructions, subject to provision of expected risk and special risk.

The contractor shall at his own expenses arrange for safety in his operation as required. General safety provision shall be as per latest safety manuals published by Indian Standard Institution, Statutory Rules, Regulations and Provisions of Contract conditions. In case the contractor fails to make such arrangements, the consultant or Owner's representative shall be entitled to cause them to be provided and to recover the cost thereof from the contractor.

**Breach of Safety Requisition**

Persistent breaches of the safety provisions by the contractor and his employees shall constitute a sufficient cause of action to be taken under clause regarding "Default by contractor.

## 10. INSURANCE

**Insurance of work**

The contractor shall insure in the joint name of the Owner and the contractor the following.

a) The work at the contract price together with the materials for incorporation in the works at their replacement value.

b) All plant and equipment and other things together brought to the site by the contractor at their replacement value.

c) The insurance shall be against all losses or damages from whatever causes, other than expected risk for which the contractor is responsible under the contract. The insurance cover shall be for entire period of contract and for any loss or damage occasioned by the contractor in course of any operations carried out for the purpose of complying with his obligations under mentioned clause. Such insurance shall be effected with an insurer and in terms approved by the owner, and the contractor shall, wherever required, produce the policy or policies and the receipts of payment covering the premises of the current premium.

**Third Party Insurance**

Before commencing the execution of the works, the contractor shall insure his liability of any material or physical damage, loss or injury which may occur to any property and person/s including any employee of the owner, resident of the building and consultant and their representative, by arising out of execution of works or in carrying out of contract. Such insurance shall be effected with an insurer and in terms approved by the Owner. The contractor shall whenever required produce to the owner the policy or policies of insurance of premises and the receipts for the payment of the current premiums.

**Insurance Against Accidents to Workmen**

The Owner shall not be liable for or in respect of any accident or injury to any workmen or the other persons in the employment of the contractor. The contractor shall insure against such liability with an insurer approved by the owner.

**Period of Policies**

All the Insurance covers mentioned above shall be kept alive during the complete period of the contract including defect liability period.

**General Safety conditions**

(i) Adequate H – type frame work (or double – scaffolding) shall be provided for workmen for all work that cannot be done from the ground, or from solid construction. When a ladder is used, an extra worker shall be engaged for holding the ladder, and if the ladder is used for carrying the materials as well, suitable footholds and handholds should be provided.

(ii) Scaffolding or staging more than 3 meters above ground or floor, swung or suspended from an overhead support or erected with stationary support, shall have a guard rail (1 meter high) properly attached bolted, braced.

(iii) Working platforms, gangways and stairways shall be so constructed that they do not sag unduly or unequally and be suitably, fenced as described above.

(iv) Every opening in the floor of building or in working platform shall be endorsed with suitable means to prevent fail of person or materials by providing suitable fencing or railing with minimum height of 1 meter.

(v) Safety means of access shall be provided to all working platforms and other working places and every ladder shall be securely fixed.

(vi) Adequate precautions shall be taken to prevent danger from electrical equipment and any other equipment.

(vii) No materials on any of the sites shall be so stacked or so placed as to cause danger or inconvenience to any person or the public endanger to life and property.

(viii) The contractor shall provide all necessary fencing and lights to protect public from accidents. He shall be bound to bear expenses of defiance of every suit action or other proceedings at law that may be brought by any person for injury sustained arising out of accidental or negligence by contractor and/or their property and to pay any damages and cost which may be awarded in any such suit, action or proceeding to any such, person or persons which may with the consent of the contractor be paid to person/s arising out of compromise between two such parties.

(ix) **Before any demolition work commences and also during the process of the work: -**

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

b. No electric cable or apparatus which is liable to be the source of danger, shall remain electrically charged.

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

(x) All necessary personal safety equipment as considered adequate by Owner/Consultant and their representative shall be available for use of persons employed on site.

(xi) **Electrical Safety**

a. These shall be of good mechanical construction, sound material and adequate strength and free from latent defects and shall be kept in good working order.

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

(xii) Use of hoisting machines and tackle including their attachments, anchorage and supports shall confirm to following.

a. These shall be of good mechanical construction, sound materials and adequate strength and free from latent defects and shall be kept in good working order.

b. Every rope used in hoisting or lowering materials or as a means of suspension shall be of durable

quality and adequate strength and from latent defects.
(xiii) All scaffolds, ladders and other safety services mentioned or described shall be maintained in safe condition and no scaffold ladder or equipment shall be altered of removed while it is in use.
(xiv) To ensure effective enforcement of the rules and regulations relating to safety precautions, arrangements made by the contractor shall be open to inspection to Owner/Consultant and their representatives.
(xv) Notwithstanding the above conditions (i) to (xiv) the contractor is not exempted from the operations of any other Act or Rule in force at the time of signing this agreement and during its execution.
**11.** The Contractor whose tender is accepted shall enter into a regular Contract Agreement with the Owner embodying these conditions in addition to the tender documents with Schedule of Rates and probable quantities and specifications.
**12.** The Contractor must obtain for himself on his own responsibility for taking all relevant permissions from competent authorities (i.e. Local Municipal authority, Water Department, Electricity deptt. etc.) , Heritage Committee, Fire Brigade or any other STATUTORY AUTHORITY at his own expenses. Also all the information which may be necessary for the purpose of completing a tender and for entering into a contract and must examine the drawings and must consider and inspect the site of work and acquaint himself with all local condition means of access to the work nature of the work and all matters appertaining thereto. No allowance shall be made to him for lack of full knowledge of the conditions.
**Please also note that no extra allowance shall be made to the contractor for lack of full knowledge of the conditions. Only official receipt payments will be made by The United India Insurance Co. Ltd. Also written permissions are required before commencement of the work**
**13.** AR. MOHAN & ASSOCIATES is the Architect for this entire project. The Contractor has to take approval of sample & make of material from him and complete the entire civil repair work to the satisfaction of Consultant/Architect.
**14.** The Award of Contract or the Rejection of contract will be made during the Tender validity period stated in the tender document.
**15.** After all contract formalities are satisfied and the work order is issued, the successful tenderer shall execute the contract agreement within a period of 7 days of issue of work order. The contract agreement shall be executed in the form stipulated by the owner.
**16.** If the Tenderer receiving the Notice of Award fails or refuses the Contract Agreement within the stated time limit or fails or refuses to furnish bond as required herein, the Owner may cancel his award and the Tender security deposit will be forfeited.
**17.** A council, partnership or other consortium acting as the Tenderer and receiving the Award shall furnish the evidence of its existence and evidence that the office signing the contract agreement and bonds for the Council partnership or other consortium acting as Tenderer is duly authorized to do so. No extra shall be paid for any minor alterations made in specification while the work is in progress.
**18.** Contractor will be charged 0.5% for electricity and 0.5% for water charges of contract value. The contractor has to make his own arrangement for taking it up to using place at his own expenses.

19. The contractor shall make his own arrangement for supply of water for civil repair works by erection of Sintex Tank. Water connections for repair works from water department or tanker water with Malaria Dept. permission shall be arranged by the contractor at his own cost. Sample test to be carried out at contractor's cost.

**20.** The contractor is responsible for all the materials on site (finished or unfinished). Any loss or damage cause to the materials incidental or otherwise shall be borne by the contractor.
**21.** The contractor shall make adequate arrangement of watchman to protect the materials brought by the contractor at site and ensure the safety, breakage and theft of materials fixed or unfixed by him.
**22.** In case of non-completion or delay in completion of the work or removal of defects in time. The owner shall be free to appoint another agency to get the job done at the contractor's risk & cost.
**23.** The contractor shall give proper instructions and understanding to their workmen to behave properly with other labourers/staffs working in the premises in order to seek their co-operation without disturbing each other while carrying out the work.
**24.** The contractor shall use bamboo/metal scaffolding for the said work and jute or plastic sheets for covering purposes.
**25.** Any concealed work will be required to be inspected by Architect / Engineer or his representative before it is to be covered and contractor shall give sufficient notice to inspect such works. However, if contractor or his man cover up the work before inspection of Architect / Engineer or his representative, the

same will be needed to be exposed by the contractor at his own risk if so demanded by Architect / Engineer or his representative.

**26.** Any of the skilled or unskilled workers at site found not up to the standard or undesirable will be required to be forthwith removed by the contractor.

**27.** If for any reasons the contractor suspends the work for a period more than two weeks, then the Owner and Architect can terminate the contract unconditionally. The responsibility in such case for the loss, damage, liquidated damages etc. to the Company will be solely on the shoulders of the contractors i.e. The Company will carry out the remaining works at the risk and cost of the contractor.

**28.** All bills shall be submitted in triplicate along with detailed measurement sheets duly checked by site engineer/clerk of works. Bills shall be typed in English with double spacing. Incomplete, illegible, adhoc or irrelevant bills shall not be accepted / rejected by the Architects.

**29.** Extra items: The rates for varied/deviated or extra items to be worked out on the rates quoted in the tender for the similar items. Wherever it is not possible to base the rates for varied / deviated or extra items on the tender quoted rates then the rate analysis based on CPWD/PWD rates is to be submitted by the Contractors as under and get the same approved before execution of the work.

At Actual per unit :

cost of materials : : Rs .....

Add for Labour charges : Rs .....

Add for Taxes, Transportation, if any, : Rs .....

Add for Miscellaneous expenses, if any, : Rs .....

Sub Total : Rs .....

Add for towards Contractor's overheads and profit

@ 15% of sub total above. : Rs .....

Total : Rs .....

Final rates arrived by rounding of the Total : Rs ...../unit

30. Contractors are requested to note that no extra items or deviated item of work to be executed without taking prior permission from UIIC in writing. If the extra items or deviated items of work is executed without taking prior permission, Employer/Architects shall not be held responsible for the payment of such works executed. Contractors will have to submit all the particulars including purchase bills/price list for the materials along with the rates analysis for verification of item rates.

**31.** The contractors shall at his cost erect temporary barriers between the area of work and that in use by the owners / occupants as and when directed by the architects. These barriers shall be such as to prevent dust and debris to cross over to the area in use as well as to provide protection to people.

**32.** **Protection Screen :**

The contractors shall at his cost erect all necessary protection scaffolds, nets, screens as approved by the architects particularly on the exterior face of the building / work to adequately protect the lower floors and people / property on the ground during the progress of work.

**33.** In the event of rain/storm or other weather conditions arising, the Contractor shall always have in readiness on the site required quantity of protective material/s such as tarpaulins for the protection of the works if required. Due to above-mentioned circumstances should any work be damaged the contractor shall make good the same at his cost as directed by the Architects.

**34.** Trees and Shrubs designated by the Architect shall be protected from damage during the course of the work and the earth level shall not be changed within three feet of such tree. Where necessary such trees and shrubs shall be protected by means of temporary fencing.

1.0 **Scope of Work**

The scope of work is to carry out "**Civil, Electrical, Plumbing & other related works at Asiad Guest House House No. *848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049*".**

**Address of Site**

**House No. *848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049***

**Dimension and Levels**

All dimensions and levels shown on the drawing shall be verified by the contractor on the site and he will be held responsible for the accuracy and maintenance of the entire dimension and the levels. Figured dimensions are in all cases to be accepted and no dimension shall be scaled. Large-scale details shall take precedence over small – scale drawing. In case of discrepancy the contractor shall ask for clarification from the Consultant before proceeding with the work.

1.0 **Notice of Operation**

The contractor shall not carry out any important operation without the consent in writing from the Consultant.

2.0 **Construction Records**

The contractor shall keep and provide to the Consultant full and accurate records of the dimension and positions of all new work and any other information necessary to prepare complete drawings recording details of the work as constructed.

3.0 **Safety of adjacent Structures and Trees**

The contractor shall provide and erect to the approval of the Consultant such supports as may be required to protect effectively all structures and protective guards to trees which may be endangered by the execution of the works or otherwise take such permanent measures as may be required by the Consultant to protect the trees and structures.

4.0 **Temporary Works**

Before any temporary works are commenced, the contractor shall submit at least 7 days in advance to the consultant for approval complete drawings of all temporary works he may require for the execution of the works. The contractor shall carry out the modifications relating to strength, if required by the Consultant may require in accordance with the conditions of contract at his own cost. The contractor shall be solely responsible for the stability and safety of all temporary works an unfinished works and for the quality of the permanent works resulting from the arrangement eventually adopted for their execution.

5.0 **Temporary Roads**

The contractor shall provide access roads to the site from the nearest main road at no extra cost and as directed by the Consultant. The contractor shall also responsible for proper maintenance of this access road and would take all care to see those existing services, if any, are maintained in working order at his own cost. The laying and maintaining the temporary roads within the site area shall be the contractor's responsibility and the contractor shall take such measures that are necessary and as directed by the Consultant.

6.0 **Water, Power and Other Facilities**

The rate quoted by the contractor shall include all expenses that are required for providing all the water required for the work and the contractor shall make his own arrangements for the supply of good quality water suitable for the construction and good quality drinking water for their workers. If necessary, the contractor has to sink a tube well / open well and bring water by means of tankers at his own cost for the purpose. The UIIC will not be liable to pay any charges in connection with the above.

The rate quoted in the tender shall include the expenses for obtaining and maintaining power connections and shall pay for the consumption charges @0.5% of contract value for water and 0.5% of contract value for power respectively.

The contractors for other trades directly appointed by the UIIC shall be entitled to take power and water connections from the temporary water and power supply obtained by the contractor. However, the concerned contractor shall make their own arrangements to draw the supply and pay directly the actual consumption charges at mutually agreed rates between them. All municipal charges for drainage and water connection for construction purposes shall be borne by the contractor and charges payable for permanent connections, if any, shall be initially paid by the contractor and the UIIC will reimburse the amount on production of receipts.

a) The UIIC as well as the Consultant shall give all possible assistance to the contractors to obtain the requisite.

b) Permission from the various authorities, but the responsibility for obtaining the same in time shall be of the contractor.

1.0 **Office Accommodation**

a) The contractor shall provide and maintain all necessary offices, workshops, stores, shelters, sanitary facilities, canteens and other temporary structures for themselves in connection with the work at the site own cost after getting the approval from the consultant.

**a)** All temporary buildings and facilities as mentioned above shall be removed on completion of the work or at any other earlier date as directed by the consultant.

All the expenses for obtaining statutory approvals and maintenance of the above facilities as well as running expense shall be borne by the contractor at no extra cost. It is also the responsibility of the contractor to obtain statuary approvals for providing the above facilities.

1.0 **Facilities for Contractors' Employees**

The contractor shall make his own arrangement for the housing and welfare of his staff and workmen including adequate drinking water facilities. The contractor shall also make his arrangements at his own cost for transport where necessary for his staff and workmen to and from site of work at his own cost.

2.0 **Lighting of Works**

The contractor shall at all times provide adequate and approved lighting as required for the proper execution and supervision and inspection of works. During the work at night hours, proper lighting shall be provided and Electrician should be placed at site in-case required.

3.0 **Fire Fighting Arrangements**

i) The contractor shall at all times provide suitable arrangements for the fighting at his own cost. For this purpose, he shall provide requisite number of fire extinguishers and adequate number of buckets, some of which are of be always kept filed with sand and some with water. These equipment's shall be provided at suitable prominent and easily accessible places and shall be properly maintained.

ii) Any deficiency in the fire safety or unsafe conditions shall be corrected by the contractor at his own cost and to the approval of the relevant authorities. The contractor shall make the following arrangements at his own cost but not limited to the following :

**a)** Proper handling, storage and disposal of combustible materials and waste.

**a)** Worked operations which can create fire hazards.

**b)** Access for the firefighting equipment's.

**c)** Types, number and location of containers for the removal of surplus materials and rubbish.

**d)** Type size, number and location of fire extinguishers or other firefighting equipment.

**e)** General housekeeping.

1.0 **Site Order Book.**

A site order book shall be maintained at site for the purpose of quick communication between the Consultant. Any communication relating to the works may be conveyed through Records in the site order book. Such a communication from one party to the other shall be deemed to have been adequately served in terms of contract. Each site order book shall have machine numbered pages in triplicate and shall carefully maintained and preserved by the contractor and shall be made available to the Consultant as and when demanded. Any instruction which the Consultant may like to issue to the contractor or the contractor may like to bring the Consultant may like to issue to the Contractor or the Contractor may like to bring to the Consultant two copies of such instructions shall be taken from the site order book and one copy will be handed over to the party against proper acknowledgement and the second copy will be retained for their record.

2.0 **Site Meetings**

Site meetings will be held to review the progress and quality evaluation. The contractors shall depute a senior representative along with the site representative staff of approved sub-contractors and suppliers as required to the site meetings and ensure all follow up actions. Any additional review meetings shall be held if required by the Consultant.

3.0 **Disposal of Refuse**

The contractor shall cart away all debris, refuse etc. arising from the work from the site and deposit the same as directed by the Consultant at his own cost. It is the responsibility of the contractor to obtain from the locate authorities concerned to the effect that all rubbish arising out of contractor's activities at the construction site or any other off-site activities borrow pits has been properly disposed off.

4.0 **Contractor to Verify Site Measurement**

The contractor shall check and verify all site measurements whenever requested by other specialists' contractors of other sub-contractors to enable them to prepare their own shop drawings and pass on the information with sufficient promptness as will not in any way delay the works.

5.0 **Displaying the Name of the Work**

The contractor shall put up a name board of suitable size as directed by the Consultant indicating therein the name of the project and other details as given by the Consultant at his own cost remove the same on completion of work.

6.0 **Bar Bending Schedule**

The contractor shall prepare a detailed bar bending schedule for all reinforced concrete works and got them approved by the Consultant well in advance.

7.0 **As Built Drawings**

i) For the drawing issued to the contractor by the Consultant. The Consultant will issue two sets of drawings to the contractor for the item for which some changes have been made. From the approved drawings as instructed by the UIIC/ Consultant. The Contractor will make the changes made on these copies and return these copies to the Consultant for their approval. In case any revision is required or the corrections are not properly marked the Consultant will point out the discrepancies to the contractor. The contractor will have to incorporate these corrections and /or attend to discrepancies either on the copies as directed by the Consultant and resubmit to him for approval. The Consultant will return one copy duly approved by him.

**i)** For the drawings prepared by the Contractor, the Contractor will modify the drawing prepared by him wherever the changes are made by the UIIC Consultant. And submit two copies of such modified drawings to the Consultant for approval. The Consultant will return one copy of the approved drawing to the Contractor.

8.0 **Approved Make**

The Contractor shall provide all materials form the list of approved makes at his own cost. The Consultant may approve any make / agency within the approved list as given in the tender after inspection of the sample / mock up.

9.0 **Procurement of Materials**

The Contractor shall make his own arrangements to procure all the required materials for the work. All wastage's and losses in weight shall be to the contractors account.

10.0 **Excise Duty, Taxes, Levies etc.**

The contractors shall pay and be responsible for payment of all taxes except GST, duties, levies, royalties, fees cess, or charges in respect of the works including but not limited to sales tax, tax on works contract excise duty, and octroi, payable in respect of materials, equipment's plant and other things required for the contact. All of the aforesaid taxes except GST, duties, levies, fees and charges shall be to the contractors account and the UIIC shall not be required to pay any additional or extra amount on this account. Variation of taxes, duty fees, levies etc if any, till completion of work shall be deemed to be included in the quoted in the quoted rates and no extra amount on this account. Variation of taxes, duties, fees, levies, etc if any till completion of work shall be deemed to be included in the quoted rates and no extra claim on this account will in any case be entertained. If a new tax or duty or levy or cess or royalty or octroi is imposed under as statue or law during the currency of contract the same shall be borne by the contractor.

11.0 **Acceptance of Tender**

The UIIC shall have the right to reject any or all tenders without assigning any reason. They are not to bound to accept the lowest or any tender and the tenderer shall have no right to question the acts of the UIIC. However, the adequate transparency would be maintained by the UIIC.

12.0 **Additional conditions**

a. Contractor shall Make all necessary safety arrangement at site comprising of horizontal safety net (for falling debris in case), vertical safety net along with green net (HDPE Construction net), while quoting the contractor shall keep this in mind as no extra cost will be paid by the UIIC.

b. The rates quoted shall be valid for a period of 90 days from the date of obtaining necessary sanction from the Local Government Authority as ASI, NDMC, and Municipal Governing body.

c. The Contractor has to obtain all the necessary / mandatory sanctions applicable for the work, and no cost toward the fees/charges will be reimbursed by the UIIC.

d. The work has to be completed within a time period of 12 weeks from the date of work order and the contractor has to keep in mind while bidding as no PVA clause is applicable in the project.

e. Due to space constraint, contractor has to make arrangements for daily disposal of debris from the site i.e. dumping it to the nearest municipal waste ground on daily basis at his own cost as no extra cost will be paid for the same by the UIIC.

f. All the applicable/necessary test as per the relevant IS code with fore said frequency has to be done by the contractor without any cost to the UIIC.

g. COVID-19 Protocol laid down by the Govt./Authorities are to be complied/ adhered during the period of project.

h. Contractor has to comply/ submit a copy of necessary/applicable insurance for the entire project duration.

i. Stacking of material upto removal has to be done at designated location only covered with **Green construction net at site.**

j. Caution/ Warning boards and signages has to be placed as per the direction of consultant/UIIC Engineers.

k. Proper lighting arrangements (along with an Electrician at site, in case required) has to be made prior start for any activity during late evening/night hours.

l. Contractor has to arrange for proper support and strutting of RCC structure using props or MS sections to prevent any harm to the existing structure during the dismantling work, no extra cost will be paid and the contractor has to keep this in mind while quoting.

m. All the clearance to arrange from NDMC/ NGT/ASI/FIRE etc. with the help of Architect.

n. Running Payment shall be made as per clause **3.1**, stated on Page No. **14**

O. Contractor shall make necessary arrangements for screening the site periphery using MS Sheet (Profile Sheet) and same has to be installed whenever required to present falling of debris/malba out of property limit safe guarding the road /walking. Contractor shall keep this is mind while quoting, a no extra cost will be paid for the same.

P. Considering municipal norms, contractor shall comply/adhere to prevent breeding of mosquitoes at site viz dengue/malaria/etc, failure to which may invite penal/legal actions.

## LIST OF APPROVED BRANDS / MAKES FOR INTERIOR WORKS

One of the following make of the material shall be used. The contractor will have to get the sample approved from the Architect/ UIIC's Engineer whose decision shall be binding on the contractor. The condition is also applicable for any material, not mentioned in the specification or schedule of work. No deviations are allowed in these even during/ after Tender. Priority of Material will be the first make of every items.

| | | |
|---|---|---|
| 1 | Vitrified Tiles | Kajaria/ Somany/ H.R.Johnson |
| 2 | Ceramic wall Tiles | Kajaria/Somany/ H.R.JohnsoN |
| 3 | Ceramic floor Tiles (antiskid) | Kajaria/Somany/ H.R.Johnson |
| 4 | False Flooring | Unifloor/ Flexi Access Floor/ Armstrong |
| 5 | Wooden Laminated Flooring | Vista /Pergo/ Tiles/ Xylos/ Armstrong/ |
| 6 | Aluminum Fittings | Hindalco /Jindal / MAAN/Indal |
| 7 | Aluminum Extrusion Sections | Hindalco /Jindal/ / MAAN/Indal |
| 8 | Commercial Plywood | Century/ Green/Archid |
| 9 | Laminates (1.00mm thk.) | Greenlam / Century/ Aica/ Archid |
| 10 | Veneer | Century / Durian/ Sonear/ Archid/ Green |
| 11 | Drawer Sliding/ Patch Fittings | Godrej/ Hettich/ Dorma |
| 12 | Floor Spring / Door Closer | Godrej / Hardwyn / Dorma/ Haffele |
| 13 | Triple Computer Monitor Mount/ Stand Arm | Vivo/ Dell/ HP |
| 14 | Flush Door | Century/ Archid/ Sonear |
| 15 | Texture Interior Paint | Sandtex Matt/ Dulux/ Berger/ Okios/ Asian |
| 16 | Readymade Computer Drawer | Hettich/ Blum/ Heffle |
| 17 | Paints | Asian/ Nerolac/ Dulux |
| a) | Cement paint | Snowcem/ Surfacem/ Durocem |
| b) | Synthetic Enamel Paint | Asian/ Nerolac/ Dulux |
| c) | Acrylic Emulsion Paint (Interior and Exterior) | Asian/ Nerolac/ Dulux |
| 18 | Glazing | Modi Tuff Glass/ Triveni Glass Ltd./ Indo Asahi Glass Co. Ltd./ Saint Gobain |

| | | |
|---|---|---|
| 19 | Cement | Grade 43/53 of L&T/ A.C.C./ Ambuja/ Ultratech |
| 20 | Mineral Fibre False Ceiling | Armstrong/ Indian Gypsum Board/ Gypro |
| 21 | ACP Panels/ Sheets | ALU Decor/ Alstrong/ Alstone |
| 22 | Acrylic Sheets | Sanmati Acrylics/Acrylic Sheet India/ Acry Plus |
| 23 | Vertical/Roller blinds | Vista/ MAC/ DACK |
| 24 | Corian | Corian/ LG/ Samsung |
| 25 | PU Paint | Asian/ ICI/ equivalent |
| 26 | Wall Paper | Elemento/ Marshel |
| 27 | Solid Surface material | CORIAN or equivalent |
| 28 | Tile Adhesive | CICO, Pidilight, Unitile |
| 29 | Insulation | Lioyed Insulation, UP Twiga or equivalent |
| 30 | Rubber/ Poliurethene Foam | MM Foam, U Foam or equivalent |
| 31 | Sanitary fittings | Hindware or equivalent |

## LIST OF MATERIALS OF APPROVED BRANDS FOR ELECTRICAL WORKS

| | | |
|---|---|---|
| 1 | PVC/MS CONDUIT PIPE (ISI) MARKED | BEC / PRECISION / AKG / SETIA / CAP |
| | | |
| 2 | WIRES 1100V GRADE FRLS MULTI STRANDED ONLY-ISI | FINOLEX/ POLYCAB / KEI / HAVELLS/ PHILLIPS |
| | | |
| 3 | CABLES 1100V PVC INSULATED FRLS XLPE | FINOLEX/ POLYCAB / KEI / HAVELLS/ PHILLIPS |
| | | |
| 4 | DISTRIBUTION BOARDS (DOUBLE DOOR TYPE) MCBS, MCCBS & ELCBS | LEGRAND/ L&T-HAGER/ ABB/ CROMPTON |
| | | |
| 5 | MOULAR SWITCH, SOCKET, PLATES, BOXES & OTHER ACCESSORIES (MDEL MENTIONED) | LEGRAND- Linc/ **Mosiac**/ CRABTREE-**Athena**/ PHILIPS-**Elite** / MK - **Wraparound**/ North West- **Stylus** only /Anchor – **Woods/Viola/ Simon-Vivid-38/ Great White-Myraha** |
| | | |
| 6 | FLUORESCENT LUMINAIRES | PHILIPS / CROMPTON/ BAJAJ/ HAVELLS / WIPRO / EVEREADY / HPL |
| | | |
| 7 | METAL CLAD SOCKET OUTLETS | ABB/ L&T/ LEGRAND/ NORTH WEST/ C &S |
| | | |
| 8 | TELEPHONE CABLE | DELTON/AMP/D-LINK / FINOLEX |
| | | |
| 9 | BAKELITE SHEET | HYLAM / FORMICA |
| | | |
| 10 | SOLDERLESS LUGS / FERRULES | DOWELL |
| | | |

| | | |
|---|---|---|
| 11 | CABLE GLANDS | COMET /GRIPWEL/ DOWEL |
| | | |
| 12 | TAG BLOCK (TELE) | KRONE |
| | | |
| 13 | DISTRIBUTION BOARDS (DOUBLE DOOR TYPE) | INDOASIAN/SCHNIDER/ LEGRAND/ L&T-HAGER/ ABB/ C&S/ |
| | | |
| 14 | FIRE ALARM SYSTEM / CCTV/ DOOR ACCESS | VINTAGE / CROMPTON |
| | | |
| 15 | JOINTING KITS/ CONNECTORS | SCREWLESS WAGO & CONTROLS (I) LTD |
| | | |
| 16 | METERING EQUIPMENTS | RISHAB/ AE/ CONZERV / L&T / SECURE |
| | | |
| 17 | ASS/VSS | KAYACEE/ L&T |
| | | |
| 18 | FANS | CG/BAJAJ/USHA/ BAJA/ HAVELLS / ORIENT |
| | | |
| 19 | LAN & VOICE | AMP/ D-LINK |
| | | |
| 20 | VOLTAGE STABILIZER & AC TIMER | RITLINES/ BLUE BIRD/ LOGICSTATE/ INLINE/V-GAURD/SERVOKON/SERVEL/RUPTRONICS |

**:TECHNICAL SPECIFICATIONS FOR ELECTRICAL WORK:**

**1. SWITCHES:**

a) The switches shall be heavy duty type and shall be suitable for heavy duty / motor duty.
b) The switches shall be 3 pole and neutral units / triple pole as required.
c) Shrouds shall be provided for the incoming live terminals.
d) The terminals shall have spring washers.
e) ON - OFF mechanical indicators / switch position marking shall be provided.
f) Locking facility shall be provided.
g) The switches shall be operable from front.

**2. FUSES:**

a) The fuse links shall be per relevant ISI standards.
b) Two nos. fuse pullers shall be supplied at each panel location and suitably mounted on wall.

**3. LIGHTING DISTRIBUTION BOARD:**

3.1 SCOPE:

The specification covers design, manufacture, testing and commissioning of lighting distribution boards.

3.2 STANDARDS:

IS - 2675 : Specification for enclosed distribution fuse boards and cut-outs for voltage not exceeding 1000 V.
IS - 4237 : General requirements for switch-gear and control gear for voltages not exceeding 1000 V.
IS - 375 : Specification for marking and general arrangement for switch-gear busbars, main connection and auxiliary wiring.
IS - 2147 : Degree of protection provided by enclosure for low voltage switch-gear.
IS - 4064 : Heavy duty fuse switch units
IS - 8828 : Miniature Circuit Breakers
IS - 9224 : High Rupturing Capacity fuse links.

(BS - 3871 - pl) : Specification for Miniature Circuit Breakers

3.3 CONSTRUCTION:

a) Lighting distribution board shall be cubical type suitable for wall mounting or recessed mounting. It shall be totally enclosed, completely dust-proof and vermin proof.
b) Sheet steel work shall be of high quality and shall be free from burrs.
c) Sheet steel used for the body and door shall be at least 2 mm. thick, while the base angle / sheet shall be at least 3mm. thick.
d) Lighting distribution board shall have one hinged door which will cover the entire front portion. The door shall be provided with gasket, to make the equipment dust, tight and also with insulated quick turn screws.
e) Design shall be dead front type. No live components shall be mounted on the door.
f) Adequate space shall be provided for termination of aluminium / copper cables and wires.

3.4 BUSBARS :

a) Phase and neutral copper busbars shall be provided at the top, for the entire length of the lighting distribution board.

3.5 WIRING & TERMINAL:

a) The Lighting distribution board shall be factory wired.
b) Flexible copper wires shall be used for internal wiring.
c) El mex type terminal blocks shall be provided for all the outgoing phase wires.
d) For neutral terminals brass neutral terminal block shall be provided. It should have spare capacity of at least 10%

3.6 CABLE ENTRY

a) Cable entry for in-comer shall be from bottom / top but entry for outgoing circuits shall be from top.
b) Removable sheet steel plated shall be provided for conduit entry / cable entry.
c) Compression type plated brass cable gland shall be provided for the incoming / outgoing cables.

3.7 MINIATURE CIRCUIT BREAKERS :

a) Bakelite shrouds shall be provided for all the live terminals and only dollies shall project outside for operation.
b) The dollies shall be made of phemolic material. The dollies made of nylon material shall not be accepted.
c) The MCB housing shall be made of melamine powder.

3.8 EARTHING :
Two non-earthling terminals shall be provided, on either side of the lighting distribution board.

3.9 INSPECTION AND TESTING
a) Inspection:
The Inspection shall consist of following, but not limited to the same:
i) Appearance and construction
ii) Dimension, mounting details etc.
iii) In-comer and outgoing circuits details
iv) Door alignment, gasket etc.

**4. CABLING:**

4.1 SCOPE:
This specification covers supply, testing, erection and commissioning of cables as detailed under Bill of Materials.
4.2 CABLING:
a) Power Cables:
The L. T. Power Cables shall conform to I.S. 1554. The conductor shall be of copper / aluminum PVC insulated, PVC sheathed steel armoured. The cables shall be suitable for grounded neutral system and shall be of 1100 volts' grade. The conductor size and no. of cores shall be as specified.
b) Control Cables:
The control Cables shall conform to I.S. 1554. The conductor shall be of copper, PVC insulted, PVC sheathed 1100 volts grade, the conductor size shall not be less than 2.5 sq mm. unless otherwise specified. The number of cores shall be as specified.
4.3 CABLE ACCESSORIES:
a) The cable glands shall be compression type plated brass. They shall be complete with neoprene rubber rings, two nos. galvanished M.S. washers, lock nuts etc.
b) Cable Terminator : Cable lugs shall be used for stranded conductors, cable lugs shall be fitted by Crimping method only. The oxide inhibiting compound shall be used for removal of oxide film on the conductor. Tinned copper lugs shall be used for cables upto 35 mm2 and aluminum lugs shall be used for higher sizes.
c) 25mm x 3 mm G.I. / Aluminum strips, galvanized nuts, bolts and flat washers shall be used for cable clamping.
d) G.I. / Aluminum cable tag markers shall be used for identification of the cables. The cable nos. shall be punched on the tag markets. 16 SWG G.I. wires shall be used for fixing the cables tag markers.
4.4 ERECTION
a) Before cable erection, phase to phase, phase to neutral and phase to earth insulation and continuity of the conductor shall be ascertained.
b) Sharp bends shall be avoided. The bending radius shall not be less than 12 X diameter of the cables for L.T. cables.
c) The cables shall be clamped at every 600mm.
d) The cable tag markers shall be fixed at every 10m. and at strategic locations, as directed by the Engineer in charge.
e) Holes of appropriate sizes shall be drilled on cable glands plates of the D.B. for cable / conduct entry and exit. The paint around the holes shall be scraped before fixing the cable glands. The armouring strands shall be cut, bent and clamped between G.I. washers, after glanding the cable shall not slip.
f) Solid conductor shall be tinned before terminations.
g) The workmanship in end termination and glanding shall be excellent.
h) Cables shall be laid in the routes marked in the drawings. Where the route is not marked, the contractor shall mark it out on the drawings and also on the site and obtain the approval of the Architect / Consultants before laying the cable. Procurement of cables shall be on the basis of actual site measurements.

## 6. LIGHTING INSTALLATION :

6.1 SCOPE :

The specification covers supply, erection, testing and commissioning of lighting fixture plug point etc. as detailed under bill of materials.

6.2 STANDARDS & CODES :

The design, manufacture, erection, testing and commissioning shall comply with, but not limited to the latest issue of the following:

IS - 1937 (Part - III) : Specification for rigid PVC conduit for Electrical wiring.
IS - 694 (Part - I) : PVC insulated cables with copper conductors for voltages upto 1100 V.
IS - 732 : Code of Practice for wiring installation (voltage not exceeding 650V
IS - 1646 : General code of practice for fire safety of building - electrical installation.
IS - 3043 : Code of Practice for Earthing, Indian Electricity rules and Fire Insurance Regulations.

6.3 WIRE AND FLEXIBLE :

a) Single core PVC insulated 630 volts grade copper wire shall be used for wiring. Size of the conductor shall be as specified in the drawings but in no case it shall be less than 15 mm2 for lighting circuit and 2.5mm2 for power circuit. Three core PVC insulated and PVC sheathed flexible shall be used from junction box to lighting fittings / fan. The minimum size of flexible wire shall be 16/0.20mm. copper conductor. Black color insulated wire shall be used for neutral conductors. Coloured insulated wires of respective colours shall be used for phase conductor.

b) The wiring shall be done in looping system. The phase conductor shall be loped at the switch-box for sub-circuit. The neutral conductor for sub-circuit can be looped either from switch box or from the light / fan / socket point. Twisted joints for looping are not acceptable.

c) Straight through joints shall not be permitted on single core wires and flexible.

d) Colored insulated wires of respective color shall be used for phase conductors and black colours insulated wires shall be used for neutral conductors.

6.4 FITTINGS & ACCESSORIES :

a) Lighting Fixture - The lighting fixtures shall be as per the specifications enclosed. The lighting fixtures shall be of the type specified in the specifications. The mounting height and location shall be as specified by the consultant. The mounting height and location shall be as specified by the consultant. Unless otherwise specified, the mounting height shall not be less than 2.5mm. The lighting fixtures shall be either supported vertically of mounted on bracket or suspended by a hook, as required.

b) Plug Points - (10 amp/20 amp metal clad type) only three pin socket outlets as per the specification enclosed shall be used. Every socked shall be controlled by a switch which shall be located adjacent to it at operable height and wiring for socket outlet on switch box shall also be included. The switch controlling the socket outlet shall be on the live side. The mounting and location shall be as specified by the consultant. Unless and otherwise specified, the mounting height shall not be more than 1.5 m. above floor level.

c) Switches - The switches shall be 5 amps. rating for lighting sub-circuit. The switches shall be single pole, plate type.

d) Switch Boxes - The switch boxes shall be totally enclosed made of sheet steel concealed type.

e) Attachment of fitting and Accessories - All the necessary materials for the mounting and operation of lighting fixtures, sockets, outlets etc. such as M.S. painted down rods brackets, ball and socket of approved make, M.S. painted down rods brackets ball and socket of approved make, M.S. painted junction boxes, terminals strips etc. shall be used.

6.5 EARTHING :

The earth shall conform to IS 3043 - 14 SWG copper wire shall be used for earthing and the conduit. The earthing wire shall be run continuously along the conduit. All the earthing wires shall be connected to the earth bus provided near the distribution board.

## ***SPECIAL CONDITIONS OF CONTRACT FOR ELECTRICAL WORK***

1. **SCOPE OF WORK: -**

The scope of work to be carried out under this contract comprises of the supply, installation, testing and commissioning of Electrical work complete as listed out in Schedule of Quantities. The general character and scope of work to be carried out under this contract is presented in drawings and specifications. The contractor shall carry out and complete the said work under this contract in every respect in conformity with the contract documents and with direction of and to the satisfaction of the UIIC engineer/ Consultant/ Consultant. The contractor shall furnish labour, materials, equipment, transportation and incidentals necessary for the completion of work as described in the Tender Documents.

2. **FEES AND PERMITS**: -

The Contractor shall obtain all permits/licenses and pay for any and all fees required for the installation, inspection and the commissioning of the work.

3. **DRAWINGS**: -

**The Drawings prepared by the consultants are indicative only of the general arrangement of the installation work. The Contractor shall follow these drawings and specifications & preparing his shop drawings and subsequent installation. He shall check the drawings of other trades to verify space for his installation.**

**1.** Shop drawings shall be provided of the Main and Sub-Main Switchboards, Distribution Boards, Cable Trays, Reactive Power Compensation Panel, and any other switchboards and panels, wherever applicable and approval shall be obtained from the Consultant / Developer before commencing fabrication or procurement.

**2.**Any equipment or switchboard manufactured without the written consent of the Consultant / Developer prior to the approval drawings shall be liable for rejection.

Drawings show general run of cables, approximate locations of outlets and equipment, utility symbols and schematic diagrams of no dimensional significance. Refer to the Consultant Ural drawings for locations and also obtain approval from the Consultant / Developer wherever dimensions are not shown, or locations cannot be determined from the drawings. Do not scale drawings to obtain locations

4. **MEASUREMENTS OF WORK** :-

Payment for Conduiting, cables, earth strips and wires etc. will be made on linear measurements and will be measured upto and including the bends.

5. **TESTING** :-

On completion of the installation the testing will be done in conformity with the stipulated performance specifications. Any shortcoming detected in the system/materials/ workmanship shall be rectified by the contractor to the entire satisfaction of the consultant without any extra cost to the owner. The installation shall be tested again after removal of the defects and shall be commissioned only after approval by the competent inspecting authority and the Consultant/Owner.

3. The Contractor shall notify the Consultant at least 7 working days before testing of each system. The Consultant reserves the right to be present when such tests are being made.

4. If the Electrical Inspectorate requires manufacturer's test reports for any equipment used in the project, the Contractor shall obtain such approvals at no extra cost to the client. Such approved reports shall be handed over to the Consultant / client.

Calibration certificates shall be obtained from the Meter and Relay Testing Department of the Electricity Board for all relays and meters used in the project at no extra cost to the client

6. **COMPLETION CERTIFICATE:**-

On completion of the installation a certificate in an approved form shall be furnished by the contractor. The contractor shall be responsible for getting the entire installation duly approved by the Electrical Inspector or other concerned authorities, if any, and shall bear all expenses in connection with the same.

**7. SCOPE OF WORK**

The scope of work to be carried out under this contract briefly comprises of:

a) **INTERNAL ELECTRICAL WORK**: Supply, Installation, connecting, testing and commissioning of the following:

a) i) Conduiting and wiring for all light points, exhaust fans, Light & power socket outlets, three phase outlets and equipment wiring.

ii) Complete earthing system

iii) Conduiting for Telephone system.

iv) Conduiting for Computer system.

v) All Cables, Mains & Sub-Mains

vi) All Final Distribution Boards.

vii) All Light fixtures.

Viii) Fire detection system

b) The contractor shall carry out and complete the work under this contract in every respect in confirming with the current rules and regulations of the local Electricity Authority, stipulations of the Indian Standard Institution, and with the directions of and to the satisfaction of the owner. The contractor shall furnish all labour, material, appliances, equipment, transportation and incidentals necessary for providing, installing, testing and commissioning of the whole electrical installation as specified herein and shown as drawings.

This also includes any materials, appliances, equipment and incidential work not specifically mentioned herein or noted on the drawings/documents as being furnished or installed but which are customary to make the installation in working order. The work shall include all incidentals and jobs connected with Electrical installation such as earthing work and cutting chases/holes and making good the same and grouting and equipment.

All Civil works in connection with the Electrical Installation including supply, laying and fixing of necessary inserts, hooks, brackets and sleeves etc

On completion of the work and before issuing of virtual completion certificate the contractor shall submit to owner “As installed drawings” showing all the details of work done by him.

The contractor shall have a valid contracting licence before starting the work and till the completion of work.

**TECHNICAL SPECIFICATION**

**1 SPECIFICATIONS FOR INTERNAL WIRING**

**1.1. SYSTEM OF WIRING:**

The system of wiring shall consist of single/multi core FRLS PVC insulated stranded copper conductor wires in non-metallic FRLS PVC conduits/ metallic M.S. conduits as called for in the BOQ. All conduits shall be on the surface,(supported from the Ceiling), in the False Ceiling and concealed in other areas where RCC slab is provided unless otherwise called for in the drawings. All Down conduits shall be concealed unless otherwise called for.

**1.2. GENERAL**

Prior to laying of conduits, the Contractor shall get approved the conduit layout indicating the route of conduit, number and size of conduits, location of junction/ inspection/pull boxes, size and location of switch boxes, point outlet boxes and other details. These conduit layouts shall be got approved by the Consultant and then only conduit layout should be started. Any modification or suggestions shall be approved by the Consultant before the laying of conduits.

**1.3. MATERIALS:**

M.S. conduits shall conform to Indian Standards IS: 1653 - 1964 -Specification for Rigid Steel conduits for Electrical wiring with the latest amendments.

**M.S. CONDUITS:**

M.S. conduits shall be solid drawn or lap welded conduits. Stove enameled inside and outside with minimum wall thickness of 1.6 mm for conduits upto 45 mm diameter and 2.0 mm wall thickness for conduits 32 mm diameter and above.

FRLS PVC conduits to be used for concealed work for all systems except Fire Alarm & Computer system where M.S. conduits shall be used. FRLS PVC conduits shall conform to Indian Standards IS : 9537(Part-3)-1983 -Specification for conduits for Electrical Installation (Part-I) General Requirements.

**FRLS PVC CONDUITS:**

FRLS PVC conduits shall be rigid, unplasticized, heavy gauge having 1.8 mm wall thickness upto 20 mm diameter and 2.0 mm wall thickness for all sizes above 20 mm diameter. Minimum size of conduit shall be 20 mm dia. Minimum size of conduit for Power point wiring shall be 45 mm dia. The conduits shall be delivered to the site of construction in original bundles and each length of conduit shall bear the label of the manufacturer. The number of insulated copper wires that may be drawn into the conduits of various sizes are given below and the fill shall not exceed 40% the maximum permissible number of 650/1100 volts grade single/multi core PVC insulated copper conductor wires of different sizes, that may be drawn into rigid metallic or non-metallic conduits.

| SIZE OF WIRE | SIZE OF CONDUITS (MM) | | | | |
|---|---|---|---|---|---|
| Nominal cross-Sectional area of wires in sq. mm | 20 | 45 | 32 | 40 | 50 nominal dia in mm |
| | ( Maximum number of wires ) | | | | |
| 1.5 | 5 | 6 | 18 | - | - |
| 2.5 | 3 | 4 | 10 | - | - |
| 4.0 | 2 | 3 | 5 | 10 | - |
| 6.0 | - | 4 | 6 | 8 | - |
| 10.0 | - | - | 3 | 4 | - |
| 16.0 | - | - | - | 3 | 5 |
| 45.0 | - | - | - | 2 | 3 |

**1.4 FRLS PVC CONDUIT ACCESSORIES & CONNECTIONS**:

The accessories used for FRLS PVC conduits shall conform to Indian Standards IS : 3419-1988-(Specification for fittings for non-metallic conduits).PVC conduits shall be joined by means of screwed or plain couplers. Where there are long runs of straight conduits, inspection boxes shall be provided at intervals as approved by the consultant. The threads of the pipe and sockets shall be free from grease and oil. It shall be thoroughly cleaned before making the screwed/plain joints. Proper jointing materials as recommended by manufacturers shall be used for jointing of FRLS PVC pipes. Use PVC couplers and connectors for FRLS PVC pipe connections and terminations in boxes. All the joints shall be fully water tight. Junction boxes and running joints shall be provided at suitable places to allow for subsequent extensions if any, without undue dismantling of conduit system. As far as possible diagonal run of conduits shall be avoided. Junction between conduit and adapter boxes, back outlet boxes, switch boxes and the like must be provided with entry spouts and smooth PVC bushes. Joints between conduit and iron clad Distribution Boards or control gear shall be effected by means of conduit couplers into each of which will be coupled smooth PVC bush from the inside of box or case. Conduit system shall be erect and straight as far as possible. All jointing methods shall be subject to the approval of the consultant.

**BENDS IN CONDUITS:**

Where necessary bends or diversions may be achieved by means of bends and or circular inspection boxes with adequate and suitable inlet and outlet screwed joints. In case of recessed system each junction box shall be provided with a cover properly secured and flush with the finished wall surface, so that the conductors inside the conduits are easily accessible. No bend shall have a radius of less than 2.5 times the outside diameter of the conduit. Conduits shall be cold bend by means of a Bending spring available with the manufacturers. In case it is not available then Heat may be used to soften the PVC conduits, by filling sand in the pipe. Use of PVC conduit in places where ambient temperature is 60 degrees or above is prohibited. PVC Solvent shall be used for joints between conduits, conduits & Junction box etc. PVC checkouts and bushes shall be used for joining conduit with outlet boxes. PVC Closures shall be provided on unused mouths of Junction boxes.

Separate conduits shall be provided for the following system.

i) Lights, Exhaust fans & 5A Light sockets.
ii) Power sockets
iii) Telephone System
iv) Television, Computer & Music system
v) Emergency System.
vi) Public Address System
vii) Fire Alarm System.

Separate switchboards/outlets shall be provided for the following system.

i) Lights, Exhaust fans & 5A Light sockets.
ii) Power sockets & A/C outlets
iii) Telephone System
iv) Television, Computer & Music system
v) Emergency System.
vi) Public Address System
vii) Fire Alarm system .

**1.5 FIXING CONDUITS:**

Conduits and junction boxes shall be kept in position and proper holdfasts shall be provided. Conduits shall be so arranged as to facilitate easy drawing of wires through them. Adequate junction boxes of approved shape and size shall be provided. All conduits shall be installed so as to avoid steam and hot water pipes. After the conduits, junction boxes, outlet boxes & switch boxes are installed in position their outlets shall be properly plugged so that water, mortar, insects or any other foreign matter does not enter into the conduit system. Exposed conduits shall be fixed by means of spacer bar/ saddles at intervals of not more than 600 mm in normal run and 500 mm from both sides of fitting or accessories. The saddles shall be of 3 mm x 19 mm mild steel flat, properly treated with primer and painted, securely fixed to support by means of nuts and bolts/rawl bolts and MS screws as required.

Conduits shall be laid in a neat and organised manner as directed and approved by the Consultant. Conduit runs shall be planned so as not to conflict with any other service pipe lines/ducts.

Where exposed conduits are suspended from the structure they shall be clamped firmly and rigidly to hangers of design to be approved by the Consultant. Where hangers are to be anchored to reinforced concrete appropriate inserts and necessary devices for their fixing shall be provided at the time of fixing. Making holes or openings in the concrete will generally not be allowed. In case it is unavoidable prior permission of the Consultant shall be obtained. Conduits shall be fixed in the chase by means of staples not more than 600 mm apart and the chase filled with cement mortar 1 : 4 . Cutting of horizontal chases in walls is prohibited.

**1.6. PROTECTION**

To minimize condensation or sweating inside the conduit pipes all outlets of conduit system shall be adequately ventilated as directed and approved by the Consultant. All screwed and socketed connections shall be adequately made fully water tight by the use of proper jointing materials i.e. Tropolin for PVC conduits & white lead for metal conduits.

**1.7. SWITCH-OUTLET BOXES AND JUNCTION BOXES**

All boxes shall conform to Indian Standards IS : 5133(Part-1)-1969 (Specification for boxes for enclosure of Electrical accessories) with the latest amendments. All outlet boxes for switches, sockets & other receptacles shall be fabricated from 1.6mm thick mild steel sheets duly painted with rust proof paint (zinc passivated) as called for, having smooth external & internal surfaces to true finish. Junction boxes and outlet boxes in contact with earth or installed in areas exposed to the weather shall be of 2mm thick mild steel and painted. Where called for, outlet boxes for receiving switches, telephone outlets T.V. outlets, power plugs etc. shall be fabricated to proved shape and size to suit the cover plates of approved make for different utilities. The cover plates shall be of best quality Hylam sheets or ISI grade Urea Formaldehyde Thermosetting insulating material which shall be both mechanically strong and fire retardant, as approved by the Consultant. Proper supports shall be provided in the outlet boxes to fix the cover plates of switches as required. Separate screwed earth terminal shall be provided inside the box for earthing purpose. All boxes shall have adequate number of knockout holes of required diameter

for conduit entry. Where called for outlet boxes for receiving switches and fan regulators in one box, shall be fabricated to approved shape and size to accommodate fan regulators and switches to be fixed on grid plates. These boxes shall be covered with Hylam sheets or ISI grade Urea Formaldehyde Thermosetting insulating material which shall be both mechanically strong and fire retardant. All junction boxes, pull boxes and outlet boxes shall be provided with sheet cover Urea Formaldehyde Thermosetting insulating material. The box cover shall be secured to the box with adequate number of round head brass screws of approved make. Outlets exposed to the weather shall be fully weather tight, complete with rubber gasketed covers, glass where used shall be fully heat resistant for the duty. The outlet boxes shall be painted with two coats of bitumasticpaint before they are fixed in position. All Outlet boxes fixed in concrete/recessed in wall shall be of a minimum depth of 55mm.

**1.8. INSPECTION BOXES**

Rust proof (Zinc passivated) inspection boxes of 1.6mm thick mild steel sheet and of required size, having smooth external and internal finish shall be provided to permit periodical inspection and to facilitate removal and replacement of wires when required. Inspection boxes shall be mounted flush with ceiling/walls finished surface and shall be provided with screwed covers of Urea Formaldehyde Thermosetting insulating material sheet cover secured to the box with brass screws. Adequate holes shall be provided for ventilation in the inspection box covers.

**1.9. CONDUCTORS**

FRLS PVC insulated multistrand copper conductor wires of 1100 Volts grade shall be used for three phase distribution and FRLS PVC insulated multistrand copper conductor wires of 1100 V grade shall also be used for Single phase distribution and shall conform to IS: 694 -1964 with the latest amendments and shall be ISI marked.

**1.10. BUNCHING OF WIRES**

Wires carrying current shall be so bunched in the conduit that the outgoing and return wires are drawn into the same conduit. Wires originating from two different phases shall not be run in the same conduit.

**1.11. DRAWING OF CONDUCTORS**

The drawing and jointing of copper conductor wires shall be executed with due regard to the following precautions, while drawing insulated wires into the conduits. Care shall be taken to avoid scratches and kinks which cause breakage of conductors. There shall be no sharp bends.

Insulation shall be shaved off for a length of 15mm at the end of wire like sharpening of a pencil and it shall not be removed by cutting it square or ringing.

FRLS PVC insulated copper conductor wire ends before connection shall be properly soldered (at least 15mm length) with special Cu solder for copper conductor or shall be properly crimped with copper lugs/sockets as the case may be. Strands of wires shall not be out for connecting to the terminals. All strands of wires shall be soldered at the end before connection. The connecting brass-screws shall have flat ends. All looped joints shall be soldered and connected through terminal block/connectors. The pressure applied to tighten terminal screws shall be just adequate, neither too much nor too less. Conductors having nominal cross sectional area exceeding 6 Sq mm shall always be provided with cable sockets.

At all bolted terminals, brass flat washer of large area and approved steel spring washers shall be used. Brass nuts and bolts shall be used for all connections.

Only certified wiremen and cable jointers shall be employed to do jointing work. All wire shall bear the manufacturer's label and the voltage grade at one meter intervals for the full length of coil, and shall be brought to site in new and original packages.

The sub-circuit wiring for points shall be carried out in looping system and no joint shall be allowed in the length of the conductors. No wire shall be drawn into any conduit, until all work of any nature, that may cause injury to wire is completed. Care shall be taken in pulling the wires so that no damage occurs to the insulation of the wire. Before the wires are drawn into the conduits the conduits shall be thoroughly cleared of moisture, dust, and dirt or any other obstruction by Drawing dry cloth through the conduits. The minimum size of FRLS PVC insulated stranded copper conductor wire for all sub circuit wiring for lights, exhaust fans, ceiling fan and 5A Light sockets points shall be 1.5 Sqmm. In case of power circuit not more than two 15 Amp power outlets shall be grouped in one circuit, wiring for the first power outlet shall be carried out with FRLS PVC insulated 6.0 sqmm copper conductor wires. Wiring for the second power outlet shall be carried with FRLS PVC insulated 4.0 sqmm copper conductor wires. All power outlets shall be connected with 4.0 sqmm FRLS PVC insulated copper conductor wires to the earth terminal of outlet. Separate circuit shall run with FRLS PVC insulated 4.0 sqmm copper conductor wires for

water heaters, kitchen equipment, window Air conditioners and similar outlets at locations as shown on drawings.

The minimum size of wire from final distribution board to first tapping point in the circuit shall be 2.5 Sq mm FRLS PVC insulated stranded copper conductor wires. Circuit shall not have more than a total of 8 points of fans, 5A Light sockets and Light points and its load shall not exceed 800 watts. Not more than two power circuits shall be drawn through the same conduit. Separate earth wire shall run for each circuit. In case two circuits of the same phase are running in the same conduit then a common earth wire is permissible. The size of earth wire for all the light points, ceiling fans, exhaust fans, light sockets, outlet boxes etc. shall be 1.5 sq mm FRLS PVC insulated copper conductor wires.

**1.12. JOINTS**

All joints shall be made at main switches, distribution boards, socket outlets, lighting outlets and switch boxes only. No joints shall be made inside conduits and junction boxes. Conductors shall be continuous from outlet to outlet. Joints where unavoidable, due to any specified reasons, prior permission in writing shall be obtained from the Consultant before making such connections.

**1.13. MAINS AND SUB-MAINS**

Mains and sub-mains wires where called for shall be of the rated capacity and approved make. Every main and sub-main shall be drawn into an independent adequate size conduit. Adequate size draw boxes shall be provided at convenient locations to facilitate easy drawing of the mains and sub-mains. An independent earth wire of proper rating shall be provided. The earth wires shall run along the entire length of the mains and sub-mains. The earth wires shall be fixed to conduits by means of suitable copper clips at not more than 1000mm distance. Where mains and sub-main cables are connected to switch gears, sufficient extra length of sub-main and main cable shall be provided to facilitate easy connections and maintenance.

**1.14. LOAD BALANCING**

Balancing of circuits in three phase installation shall be planned before the commencement of wiring, shall be got approved by the Consultant and shall be strictly adhered to.

**1.15. COLOUR CODE OF CONDUCTORS**

Colour code shall be maintained for the entire wiring installation; red, yellow, blue for three phases and “off” circuit black for neutral and green for earth (or bare earth wire)

Telephone Multicore cables shall be of approved make and shall conform to following specifications.

i) Type of conductor ….. Electrolytic Annealed Tinned Cu conductor. (ATC)

ii) Diameter of Conductor ... 0.61 mm diauniform (minimum size)

iii) Weight of conductor .... 2.52 Kg/Km minimum. iv) Resistance of conductor at 20 degree... 60 Ohms/Km, v) Radial Thickness of PVC insulation...0.3mm $\pm$ 0.05mm uniform

vi) Radious Thickness of PVC sheathing ... 1.2mm uniform $\pm$ 0.2mm

vii) Overall diameter of insulated conductor.. 1.2mm uniform

vii) High voltage Test. Able to withstand upto 500 volts D.C. up to 12 hours immersion in water.

1.16 **M.S.CONDUIT ACCESSORIES & CONNECTIONS**:

The accessories used for M.S. conduits shall conform to Indian Standards IS : 3837-1966-(Specification for fittings for Rigid steel conduits with the latest amendments. M.S. conduits shall be joined by means of screwed or plain couplers. Where there are long runs of straight conduits, inspection boxes shall be provided at intervals as approved by the Consultant. The threads of the pipe and sockets shall be free from grease and oil. It shall be thoroughly cleaned before making the screwed/plain joints.

Proper jointing and Cleaning materials as recommended by manufacturers shall be used for jointing and cleaning of M.S. pipes. Use M.S. couplers and connectors for M.S.pipe connections and terminations in boxes. All the joints shall be fully water tight. Junction boxes and running joints shall be provided at suitable places to allow for subsequent extensions if any, without undue dismantling of conduit system. As far as possible diagonal run of conduits shall be avoided. Junction between conduit and adapter boxes, back outlet boxes, switch boxes and the like must be provided with entry spouts and smooth M.S. bushes and M.S. Checknuts. Joints between conduit and iron clad Distribution Boards or control gear shall be effected by means of conduit

couplers into each of which will be coupled smooth M.S. bush from the inside of box or case. Conduit system shall be erect and straight as far as possible. All jointing methods shall be subject to the approval of the Consultant.

**M.S. CONDUIT CONNECTIONS:**

Conduit connections for MS conduits shall be screwed metal to metal and be painted with one coat of self etching zinc chromate primer and two coats of enamel paint. The threads and sockets shall be free from grease and oil. Connections between screwed conduit and sheet metal boxes shall be by means of a brass hexagon smooth bore bush, fixed inside the box. Checknuts to be provided on inside and outside of box and connected through a coupler to the conduit or as directed by the Consultant. The joints in the conduits shall be free of burrs to avoid damage to insulation of conductors while pulling them through the conduits. Connections between PVC and MS conduits shall be through a junction box. Direct connection between PVC and MS conduits is not allowed.

## 2 CABLES

### 2.1. GENERAL

MV Cables shall be supplied, laid tested and commissioned in accordance with drawing specifications, relevant Indian Standards specification, Indian Electricity Act and manufacturers instructions. The cable shall be delivered at site in original drums with manufacturers name clearly written on the drums.

### 2.2. MATERIAL

MV CABLES : MV Cables shall be FR XLPE PVC insulated aluminium conductor armoured and unarmoured cables conforming to IS: 1554 (part I&II)-1976 & IS : 694-1977 (PVC Insulated cables for working voltages upto and including 1100 volts (second revision) with latest amendments. MV cables shall be suitable for under ground use and laid in trenches, ducts, cable trays, under roads and paved areas. MV Cables shall be termite resistant and shall be of approved make.

### 2.3. JOINTS IN CABLES

The contractor shall take care to see that all the cables are apportioned to various locations in such a manner as to ensure no straight joints in the cable run. If the straight joint in cable is unavoidable due to any specified reasons, prior permission in writing shall be obtained from the Consultant before the use of such straight joints in cable.

### 2.4. JOINTING BOXES FOR CABLES

Cable jointing boxes shall be of appropriate size, suitable for PVC insulated cables of particular voltage ratings, and shall be manufactured by approved manufacturers.

### 2.5. JOINTING OF CABLES

All cable joints shall be made in suitable approved cable joint boxes. Jointing of cables in the joint boxes and the filling in of compound shall be done in accordance with the best practice in trade, in accordance with manufacturer's instructions and in an approved manner. All straight Joints shall be done in epoxy mould boxes with TROPOLIC/ M-Seal resin or approved equal. All terminal ends of conductors shall be heavily soldered upto at least 50mm length.

All cables shall be jointed colour to colour and tested for insulation resistance and continuity before jointing commences. The seals of cables must not be removed until preparations for jointing are completed. Joints shall be finished on the same day as commenced and sufficient protection from the weather shall be arranged.

### 2.6. FILLING OF EPOXY COMPOUND

Equal quantities of resin and hardner shall be taken and mixed thoroughly by hand until the mixture is free from white patches and has uniform colour. No water, oil or any other liquid shall be added to the mixture to make it soft as this will effect the properties of the compound. The mixture shall be used within 30-40 minutes of mixing. The surface on which epoxy compound is to be used shall be free from dust, rust, oil, grease and shall be dry. No disturbance or movement of joint shall be made till the epoxy compound has completely hardened. A smooth surface can be made by rubbing a damp cloth smoothly on the compound before it sets. The joints shall be painted after it has completely hardened.

### 2.7. CABLES TERMINATION

Cable termination shall be done in terminal cable box using cable glands and the cable ends sealed with sealing compound.

## 2.8. BONDING OF CABLES

Where a cable enters any piece of apparatus, it shall be connected to the casing by means of an approved type of armoured clamps and gland. The clamps must grip the armouring firmly to the gland or casing, so that in the event of ground movement no undue stress is passed on to the cable conductors. The glands shall be either to the lead sheath by means of 'Plumbing Joint' as on a cone of approved materials, capable of being compressed into lead sheath. The gland or cone shall be capable of effecting a good electrical bond between both the armouring and lead of the cable and the casing.

## 2.9. LAYING OF CABLES

Cables shall be laid by skilled and experienced workmen using adequate rollers to minimize stretching of the cable. The cable drums shall be placed on jacks before unwinding the cable. Great care shall be exercised in laying cable to avoid forming kinks. The drums shall be unrolled and cables run over wooden rollers in trenches at intervals not exceeding 2 meters. Cables shall be laid at depth of 750mm depth below ground level in the case of MV Cables. A cushion of sand, not less than 75mm shall be provided both above and below the cable, joint boxes and other accessories. HV and MV cables shall not be laid in the same trench and/or along side of water main. The cable shall be laid in excavated trench 80mm layer of sand shall be spread over the cable. The cable then shall be lifted and placed over the sand bed. The second layer of 80mm sand then be spread over the cable. The relative position of the cables laid in the same trench shall be preserved and the cables shall not cross each other as far as possible. At all changes in direction in horizontal and vertical planes, the cable shall be bent smooth with a radius of bend not less than 12 times the diameter of cable. Minimum 3 M long loop shall be provided at both sides of every straight joint and 5 Meters at each end of the cable. Distinguishing marks shall be made on the cable ends for identification. Insulation tapes of appropriate voltage and in red, yellow and blue colours shall be wrapped just below the sockets for phase identification. Aluminium Labels etched with the size of cable shall be provided around the two ends of each cable.

## 2.10. PROTECTION OF CABLES

The cable shall be protected by placing burnt bricks over the cables 600mm wide on the top layer of sand for the full length of underground cable. Where more than one cable is running in the same trench, the bricks shall cover all the cables and shall project a minimum of 80mm on either side of the cable.

Cable under road crossings and any surfaces subjected to heavy traffic, shall be protected by running them through Hume pipes of suitable size and Heavy grade quality.

Cables under paved areas (which form part of the building) shall be protected by running them through Stoneware/Hume pipes of 150 mm dia(minimum size) one meter below road level.

## 2.11. CABLES INSIDE BUILDINGS

Cables inside buildings shall be laid either in masonry trenches or carried on through trays or brackets. Where cables run in ducts inside the buildings the cables shall be adequately clamped to angle iron brackets, secured to the wall, as directed and approved by the Consultant. Where cables are suspended from ceilings they shall be carried over troughs or trays as directed and approved by the Consultant. The supports shall be placed not more than 1.0 meter apart. All cables passing through walls below paved area, and concrete shall run through stone ware pipes or Hume pipes of adequate diameter recessed or exposed as directed. Cables running along walls shall be supported and clamped to saddles, or hanger rigidly anchored at close intervals. Clear space between parallel cables shall be equal to the diameter of the cable but not less than 50mm. Where called for cable trenches shall be filled with fine sand. The contractor shall ensure that hangers, brackets and other supporting arrangements for cables are placed in proper position at the time of building the walls, concreting slabs, etc. cutting holes or opening in concrete may be carried out only with prior permission of the Consultant.

All excavations and back fill including timbering, shoring and pumping required for the installation of the cables shall be carried out as per the drawings and requirements laid down elsewhere. Trenches shall be dug true to line and grades. Back fill for trenches shall be filled in layers not exceeding 150mm. Each layer shall be properly rammed and consolidated before laying the next layer. The Contractor shall restore all surfaces roadways, side walks, curbs, walls or other works cut by excavation of their original condition, to the satisfaction of Consultant.

**2.12. MARKERS AND WARNING PLATES**

Approved CI cables markers shall be provided along the route of the cables at every 30 meter distance and at both ends of road crossing, indicating HV cables and MV cables as applicable. Special CI markers shall be provided at all buried cable joints indicating “Electrical Cable Joints. GI plates engraving the size of cable and the place it serves shall be tied to the cable at regular intervals of 2 meters for easily identification of the cables.

**2.13. TESTING OF CABLES**

Prior to burying of the cables, following tests shall be carried out:

a. Insulation test between phases and phase to earth for each length of cable before and after jointing.

On completion of cable laying work and jointing the following tests shall be conducted in the presence of the Consultants.

a. Insulation Resistance test (Sectional and Overall)
b. Continuity Resistance Test.
c. Sheath continuity Test.
d. Earth Test.
e. Physical Dimensions Test.

All tests shall be carried out in accordance with relevant Indian Standard Codes of practice and Indian Electricity Rules. The contractor shall provide necessary instruments, equipment and labour for conducting the above test and shall bear all expenses in connection with such tests. All tests shall be carried out in the presence of the Consultant / Consultant.

**3.0 EARTHING**

**3.1 EARTHING**

All the non-current metal parts of electrical installation shall be earthed properly. All metal conduits, trunking, cable sheaths, switchgear, outlet boxes, distribution boards, light fittings, fans and all other parts made of metal or conductive material shall be bonded together and connected by means of specified earthing system. All earthing will be in conformity with the relevant provision of Rules 33 and 61 of the Indian Electricity Rules 1956 and Indian Standard Specifications IS:3043-1987 with latest amendments.

**3.2. EARTHING CONDUCTORS**

All earthing conductors shall be of high conductivity electrolytic copper of 99 % purity and shall be protected against mechanical injury or corrosion.

**3.3. SIZING OF EARTHING CONDUCTORS**

The cross sectional area of copper earthing conductor shall be same as the active conductor for sizes of active copper conductor upto 4.0 sqmm and shall be half the size for 16 sq mm active copper conductor and above. All fixtures, fans, outlet boxes and junction boxes shall be earthed with 1.5 sqmm PVC Insulated copper conductor wires. All power sockets and single phase A/C units shall be earthed with 4.0 PVC Insulated copper conductor wires. All Three phase Final Distribution Boards shall be earthed with 2 nos 4 mm dia bare copper conductor wires. The sizes of the earth continuity conductors should not be less than half of the largest current carrying conductors.

The Sub-Distribution Board shall be earthed to 2 nos 600mm x 600mm x 3mm copper plate earthing stations through 45m x 3 mm copper strips.

**3.4. CONNECTION OF EARTHING CONDUCTORS**

Main earthing conductors shall be taken from the earth connections at the main switchboards to an earth electrode with which the connection is to be made. Submain earthing conductors shall run from the main switchboard to the sub-distribution boards. Final distribution boards earthing conductors shall run from sub-distribution boards.

**3.5. PROHIBITED CONNECTIONS**

Neutral conductor, sprinkler pipes, or pipes conveying gas, water, or inflammable liquid, structural steel work, metallic enclosures or cables and conductors, metallic conduits and lightning protection system conductors shall not be used as a means of earthing an installation or even as a link in an earthing system. The electrical resistance of metallic enclosures for cables and conductors measured between earth connections at the main switchboard and any other point on the completed installation shall be low enough to permit the passage of current necessary to operate fuse or circuit breakers and shall not exceed 1 ohm.

**3.6. PROTECTION FROM CORROSION**

Connections between copper and galvanised equipment shall be made on vertical face and protected with paint and grease. Galvanised fixing clamps shall not be used for fixing earth conductors. Only copper fixing clamps shall be used for fixing earth conductors. When there is evidence that the soil is aggressive to copper, buried earthing conductors shall be protected by suitable serving and sheathing.

**3.7. EARTHING STATION**

**Plate Electrode Earthing** :Earthing electrode shall consist of a tinned copper plate not less than 300mm x 300mm x 3mm thick as called for in the Schedule. The plate electrode shall be buried as far as practicable below permanent moisture level but in any case not less than 4.2 meters below ground level. Wherever possible earth electrodes shall be located as near the water tap, water drain or a down take pipe as possible. Earth electrodes shall not be installed in proximity to a metal fence. It shall be kept clear of the buildings foundations and in no case shall it be nearer than 2 meters from the outer face of the wall. The earth plate shall be set vertically and surrounded with 150mm thick layer of charcoal, dust and salt mixture. 20mm GI pipe shall run from the top edge of the plate to the ground level. The top of the pipe shall be provided with a funnel and a mesh for watering the earth through a pipe. The funnel over the GI Pipe shall be housed in a masonry chamber, approximately 300mm x 300mm x 300mm deep. The masonry chamber shall be provided with a cast iron cover resting over a GI frame embedded in masonry. Refer Sketch for additional details.

**Pipe Electrode Earthing**: Earthing electrode shall consist of a GI Pipe (class 'A') Indian Tube Company make or approved equal not less than 40mm dia and 4.5 meters long. GI Pipe electrode shall be cut tapered at the bottom and provided with holes of 12mm dia drilled at 75mm interval upto 2.5 meters length from bottom. The electrode shall be buried vertically in the ground as far as practicable below permanent moisture level with its top not less than 1.45 M below ground level. The electrode shall be in one piece and no joints shall be allowed in the electrode. Wherever possible earth electrodes shall be located as near water tap, water drain or a down take pipe. Earth electrodes shall not be located in proximity to a metal fence. It shall be kept clear of the building foundations and in no case shall be nearer than 2 meters from the outer face of the wall. Refer Sketch for additional details.

The pipe earth electrode shall be kept vertically and surrounded with 150mm thick layer of charcoal dust and salt mixture upto a height of 2.5 meters from the bottom. At the top of the electrode a funnel with a mesh shall be provided for watering the earth. The main earth conductors shall be connected to the electrode just below the funnel, with proper terminal lugs and check nuts. The funnel over the GI pipe and earth connection housed in a masonry chamber, approximately 350mm deep. The masonry chamber shall be provided with a cast iron cover resting over a CI frame embedded in masonry.

**3.8. EARTH CONNECTION**

All metal clad switches and other equipment carrying single phase current, shall be connected to earth by a single connection. All metal clad switches carrying medium voltage and high voltage shall be connected with earth by two separate and distinct connections. The earthing conductors inside the building wherever exposed shall be properly protected from mechanical injury by running the same in GI Pipe of adequate size.

Earthing conductors outside the building shall be laid 600mm below the finished ground level. The over lapping in copper strips at joints where required, shall be minimum 75mm. The joints shall be riveted and brazed with copper rivets and greased in approved manner. Sweated lugs of adequate capacity and size shall be used for all termination of wires above 1 Sqmm size and bare copper wire above 2.0mm dia. Lugs shall be bolted to the equipment body after the metal body is cleaned of paint and other oily substance and properly tinned. The earth wires entering the Final Distribution Boards shall be terminated with copper sockets crimped to its ends and tightened to the terminal with the help of flat end brass screws.

**3.9. EARTH RESISTANCE**

The earth resistivity of the soil where the earthing stations are located shall be submitted to the Consultant before the earthing work starts and get the approval of the Consultant/Owner. If the earth resistance is too high and multiple electrode earthing does/not give adequate low resistance to earth, than the soil resistivity immediately surrounding the earth electrodes shall be reduced by adding sodium chloride, calcium chloride, sodium carbonate, copper sulphate, salt and soft coke or charcoal in suitable proportions as directed by the consultants.

**3.10. RESISTANCE TO EARTH**

The resistance of each earth system shall not exceed 1.0 ohm in the case of Medium Voltage system and 0.5 ohm in the case of High Voltage system.

**4 TESTING**

4.1. **GENERAL**

On completion of the work the entire installation shall be subject to following tests:

a) Wiring Continuity Test
b) Insulation Resistance Test
c) Earth Continuity Test
d) Earth Resistively Test

Besides the above any other test specified by the local Authority shall also be carried out.

All tested and calibrated instruments for testing, labour, materials and incidentals necessary to conduct the above tests shall be provided by the Contractor at his own cost.

4.2. **TESTING OF WIRING**

All wiring systems shall be tested for continuity of circuits, short circuits and earthing after wiring is complete and before energising. The Test Certificates for the complete wiring shall be submitted in the Format and the Total Electrical Installation shall be got approved by the Electrical Inspector.

**4.3. INSULATION RESISTANCE TEST**

The insulation resistance shall be measured by applying between earth and the whole system of conductors, or any section thereof with all fuses in place and all switches closed (except in concentric wiring) all lamps in position of both poles of the installation, otherwise electrically connected together, a direct current pressure of not less than twice the working pressure (provided that it does not exceed 660 volts for medium voltage circuits) be applied. Where the supply is derived from A.C. three phase system, the neutral pole of which is connected to earth, either direct or through added resistance, pressure shall be deemed to be that which is maintained between the phase conductor and the neutral. The insulation resistance measured as above shall not be less than 50 divided by the number of points on the circuit provided that the whole installation shall not be required to have an insulation resistance greater than one mega ohm. The insulation resistance shall not be measured between all conductors connected to one phase conductor of the supply and all the conductors connected to the middle wire or to the neutral or to the other phase conductors of the supply. Such a test shall be carried out after removing all metallic connections between the two poles of the installation and in these circumstances the insulation resistance between conductors of installation shall not be less than that specified above.

The insulation resistance between the case of frame work of housing and power appliances, and all live parts of each appliance shall not be less than that specified in the relevant Indian Standard Specifications or where there is no such specification shall not be less than half a mega ohm.

4.4. **TESTING OF POLARITY OF NON-LINKED SINGLE POLE SWITCHES**

In a two wire installation a test shall be made to verify that all non-linked single pole switches have been fitted in the same conductor throughout, and such conductor shall be labeled or marked for connection to an outer or phase conductor or to the non-earthed conductor of the supply. In the three or four wire installation a test shall be made to verify that every non-linked single Pole switch is fitted in a conductor to one of the outer or phase conductor of the supply. The entire electrical installation shall be subject to the final acceptance of the Consultant as well as the local authorities.

**4.5. EARTH RESISTIVITY TEST**

Earth resistivity test shall be carried out in accordance with Indian Standard code of practice for earthing IS: 3043:1987. All tests shall be carried out in the presence of the Consultant/Owner.

**4.6 TEST CERTIFICATES**

The Electrical Installation shall be tested as per relevant Indian Standards and Test Certificate to this effect shall be submitted to the Owner. The Contractor has to get the Total Electrical Installation approved by the Electrical Inspector and the permission to energize the same shall be submitted to the Owner.

## 5 SAFETY REQUIREMENTS

### 5.1 SCOPE

This section covers the requirements of items to be provided in the sub-station for compliance with statutory regulations, safety and operational needs.

### 5.2 REQUIREMENTS

Safety provisions shall be generally in conformity with the relevant Indian Standards and I.E. Rules and Regulations. In particular the following items shall be provided.

(a) Insulation Mats

Insulation Mats conforming to IS: 5424-1969 shall be provided in front of main switch boards and other control equipment as specified.

(b) First Aid Charts and First Aid Box

Charts (one in English, one in Hindi, one in Regional language), displaying methods of giving artificial respiration to a recipient of electrical shock shall be prominently provided at appropriate place. Standard First Aid Boxes containing materials as prescribed by St. John Ambulance brigade or Indian Red Cross should be provided in each sub-station.

(c) Danger Plate

Danger plates shall be provided on HV and MV equipment's. MV danger notice plate shall be 200mm x 150mm made of mild steel at least 2mm thick vitreous enameled white on both sides and with inscriptions in signal red color on front side as required.

(d) Fire Extinguishers

Portable CO2 conforming to IS : 2878-1976 dry chemical conforming to IS 2171-1976 extinguishers shall be installed in the sub-station at suitable places as specified.

(e) Fire Buckets

Fire buckets conforming to IS: 4546-1974 shall be installed with the suitable stand for storage of water and sand.

(f) Tool Box

A standard tool box containing necessary tools required for operation and maintenance shall be provided in sub-station.

(g) Caution Board

Necessary number of caution boards as "Man on Line" "Don't switch on' etc. shall be available in the sub-station.

(h) Key Board

A key board of required size shall be provided at a proper place containing castel key, and all other keys of sub-station and allied areas.

## 6.0 M V PANELS, SUB-DISTRIBUTION BOARDS & FINAL DISTRIBUTION BOARDS

The PANELSs shall be suitable for operation on 3 phase, 4 wire, 415 Volts, 50 cycles, neutral grounded at transformer and short circuit level not less than 31 MVA at 415 volts.

The PANELS shall comply with the latest edition of relevant Indian Standards and Indian Electricity Rules and Regulations. All PANELSs shall be fabricated by the contractor by using specified components as per the specifications given below:

### 6.1. CONSTRUCTION FEATURES

The PANELSs shall be metal enclosed sheet steel cubical, indoor, dead front, floor mounting type. The distribution boards shall be totally enclosed, completely dust and vermin proof. Gaskets between all adjacent units and beneath all covers shall be provided to render the joints dust proof. PANELSs shall be preferably arranged in multitier formation. All doors and covers shall be fully gasketed with foam rubber and/or rubber strips and shall be lockable. All MS sheet steel used in the construction of PANELSs shall be 2mm thick and shall be cut to different sizes and bolted as necessary to provide a rigid support for all components. Joints of any kind in sheet metal shall be bolted type and not welded type.

All covers shall be properly fitted and square with the frame, and holes in the PANELS correctly positioned. Fixing screws shall enter into holes tapped into an adequate thickness of metal or provided with hank nuts. Self-threading screws shall not be used in the construction of PANELSs. A base channel of 75mm x 40mm x 5mm thick shall be provided at the bottom. A minimum of 200 mm between the floor of MV PANELS & Distribution board and lower most unit shall be provided. The PANELS shall be of adequate size with a provision of 20% spare space to accommodate possible future additional switchgear in addition to spare feeders.

Knockout holes of appropriate size and number shall be provided in the PANELSs in conformity with the location of incoming and outgoing cables.
PANELSs shall be provided with removable aluminum plates at top and bottom to drill holes for cable entry at site.
The PANELSs shall be suitable for IP 42 protection.

**6.2. CIRCUIT COMPARTMENTS**

Each circuit breaker, MCCB and switch fuse units shall be housed in separate compartments and shall be enclosed on all sides. Sheet steel hinged lockable door shall be duly interlocked with the ACB/MCCB/switch fuse unit in 'on' and 'off' position. Safety interlocks shall be provided for air circuit breakers to prevent the breaker from being drawn out when the breaker is in 'on' position. The door shall not form an integral part of the draw out position of the ACB. All instruments and indicating lamps shall not be mounted on the ACB compartment door. Sheet steel barriers shall be provided between the tiers in a vertical section. The Knobs for holding the cubicle door in closed position shall be spring operating rotating type and not screwed type.

**6.3. INSTRUMENT ACCOMMODATION**

Separate and adequate compartments shall be provided for accommodating instruments, indicating lamps, control contractors and control fuses etc. These shall be accessible for testing and maintenance without any danger of accidental contact with live parts of the circuit breaker, bus bar and connections.

**6.4. BUS BARS & BUS BAR CONNECTION**

The bus bar and interconnections shall be of electrolytic Copper of 99.9 % purity of rectangular cross sections suitable for full load current for phase bus bars and full rated current for neutral bus bar and shall be extendible on either side. Minimum 200 Amps capacity bus bars shall be provided in the distribution boards. The bus bars and interconnections shall be insulated with PVC heat shrinking sleeves and colour coded. The bus bars shall be supported on unbreakable, nonhygroscopic insulated SMC supports at regular intervals to withstand the forces arising from short circuit in the system. All bus bars shall be provided in a separate chamber and properly ventilated. The current density of copper shall not be more than 1.6 Amps per sq.mm cross sectional area of Bus bar. If Aluminum bus bars are provided the current density of aluminum shall not be more than 0.8 Amps per sq. mm cross section of Aluminum bus bar. Maximum allowable temperature for the Bus bar to be restricted to $85^0$ C.
All bus bar connections in PANELS shall be done by drilling holes in bus bars and connecting by cadmium plated M.S. bolts and nuts. 20% Additional cross section of bus bars shall be provided in all distribution boards to cover up the holes drilled in the bus bars. Spring and flat washers shall be used for tightening the bolts.
Automatically operated safety shutters to screen the live cluster when the breaker is withdrawn from cubicle is to be provided.
All connections between bus bars and switches and between switches and cable alley terminals shall be through solid copper strips of proper size to carry full rated current and insulated with PVC heat shrinking sleeves . All the PANELSs shall be completely factory wired, ready for connection. All the terminals shall have adequate current rating and size to suit individual feeder requirements. Each feeder shall be clearly numbered from left to right to correspond with wiring diagram. All the switches and feeders shall be distinctly marked with a small description of the service installed. Minimum width of busbar Alley shall be 300 mm and that of cable alley shall be 450 mm.

**6.5. TERMINALS**

The outgoing terminals and neutral link shall be brought out to a cable alley suitably located and accessible from the PANELS front. The current transformer for instruments metering shall be mounted on the terminal blocks. Cable compartments shall be provided for incoming and outgoing cables with suitable bus bar extension and supports.

**6.6. WIREWAYS**

A horizontal wire way with screwed covers shall be provided at the top to take interconnecting control wiring between different vertical sections.

**6.7. CABLE COMPARTMENTS**

Cable compartment of adequate size shall be provided in the PANELSs for easy termination of all incoming and outgoing cables entering from bottom or top. Adequate proper supports shall be provided in cable compartments to support cables. All incoming and outgoing switch/MCCB's terminals shall be brought out to terminal blocks in the cable compartment. The switch board shall have in each PANELS thermostatically controlled space heaters/ ventilation fans.

**6.8. METERS**

All meters shall be housed in a separate compartment and accessible from front only. Lockable doors shall be provided for the metering compartment. The details of other meters and indicating lamps are as described in each switch board and neutral selector switch of appropriate range and scale. Wiring for meters shall be color coded and labeled with approved plastic ferrules for easy identification. All meters shall be digital.

**6.9. CURRENT TRANSFORMERS**

Where ammeters are called for CT's shall be provided for current measuring more than 60 Amps. Each phase shall be provided with separate current transformer of accuracy class I and suitable V.A. Burden for operation of associated metering and Relays. Current transformers shall be in accordance with IS: 2705-1964 as amended upto date and Cast Resin Type. Tape wound CTS are not acceptable. The name plate of CT's. Shall be fixed in such a way it can be easily readable without dismantling.

**6.10. INDICATING PANELS AND METERING EQUIPMENT**

All meters and indicating instruments shall be accordance with relevant Indian Standards. The meters shall be flush mounted and draw out type. Indicating lamps shall be neon type and of low burden. Indicating lamps shall be backed up with fuses of 5 Amps and toggle switch.

**6.11. EARTHING**

Copper earth bars of 45mm x 3mm shall be provided for all PANELS for the full length and connected to the frame work of the PANELS.

Provision shall be made for connection from this earth bar to the main earthing bar on both sides of the PANELS.

**6.12. PAINTING**

All sheet steel work shall undergo a process of degreasing pickling in acid, cold rinsing, phosphating, passivating and then sprayed with a high corrosion resistant primer. The primer shall be baked in an oven. The finishing paint treatment shall be by powder coating.

**6.13. LABELS**

Engraved anodized aluminum labels shall be provided on all incoming and outgoing feeder switches. Circuit diagram showing the control wiring shall be pasted on inside of the PANELS door and covered with transparent laminated plastic sheet. The Label shall indicate the name of the feeder, the specific area it is feeding, ampere rating and the cable size it is receiving. The Labels shall be provided on the backside of the PANELS in case of back access.

All the PANELSs shall be subject to tests specified in relevant Indian Standards and test certificate shall be furnished.

**6.14. SHOP DRAWING**

Before fabricating the PANELSs the contractor has to submit shop drawing showing the general arrangements, bill of materials and the wiring diagram for all the PANELSs to the Consultant and get approval from the Consultant.

**6.15. INSPECTION**

At all reasonable times during production and prior to shipment of equipment the contractor shall provide and secure for Consultant/ Owners representative every reasonable access and facility at their plant for inspection.

**6.16. TEST CERTIFICATES**

Testing of PANELSs shall be carried out at factory and at site as specified in Indian Standards. The test certificates for the tests carried out at factory shall be submitted in duplicate.

## 6.17 MINIATURE CIRCUIT BREAKER (MCB)

Miniature circuit breaker shall be quick make and break type and confirm with Indian Standards IS: 8828 – 1978 (Specifications for Miniature Air Break Circuit breakers for voltage not exceeding 1000V) the housing of MCB's shall be heat resistant and having a high impact strength. The fault current of MCB's shall not be less than 9000 Amps at 230 volts. The MCB's shall be flush mounted and shall be provided with trip free manual operating mechanism "ON" and "OFF" indications.

The MCB contacts shall be silver nickel and silver graphite alloy coated with silver. Proper arc chutes shall be provided to quench the arc immediately. MCB's shall be provided with magnetic fluid plunger release for over current and short circuit protection. The over load or short circuit devices shall have a common trip bar in the case of DP and TPN Miniature circuit breakers. The MCB shall be tested and certified as per Indian Standards prior to installation.

## 6.18 LV MCCB (Moulded Case Circuit Breakers)

### 6.18.1 General

5. Moulded case circuit breakers shall be incorporated in the switch board wherever specified. MCCB shall conform to the latest IEC 60947-Part 1&2 & IS 13947:1993 in all respects.

1. They shall be of Category A with a rated service breaking capacity (Ics) rating.
1. MCCBs shall be available in fixed or plug-in/withdrawable versions as well as in 3-pole and 4-pole versions. For plug-in/withdrawable versions, a safety trip shall provide advanced opening to prevent connection and disconnection of a closed circuit breaker.
2. MCCBs shall be designed for both vertical and horizontal mounting, without any adverse effect on electrical performance. It shall be possible to supply power either from the upstream or downstream side
3. MCCBs shall provide class II insulation (according to IEC 60664-1 standard) between the front and internal power circuits.
4. Rated insulation voltage shall be 750V AC (50/60 Hz).
5. The circuit breaker shall comply with the isolation function requirement of IEC 60947-2 section 7.1.2 to marked as suitable for isolation/disconnection to facilitate safety of operating personnel while the breaker is in use.
6. All MCCBs required as per BOQ shall have Ics – rating not Icu rating.

### 6.18.3 Construction

- For maximum safety, the power contacts shall be insulated in an enclosure made of a thermosetting material from other functions such as the operating mechanism, the case, the trip unit and auxiliaries.
- The operating mechanism of MCCBs shall be of the quick-make, quick-break type with fault tripping overriding manual operation. All poles shall operate simultaneously for circuit breaker opening, closing and tripping
- MCCBs shall be actuated by a toggle or handle that clearly indicates the three positions: ON, OFF and TRIPPED in order to ensure suitability for isolation complying with IEC 60947-2
- The operating mechanism shall be designed such that the toggle or handle can only be in OFF position if the power contacts are all actually separated, in OFF position, the toggle or handle shall indicate the isolation position. Isolation shall be provided by a double break on the main circuit
- MCCB shall be equipped with a "push to trip" button in front to test operation and the opening of poles.

6. 6.18.4 Current Limiting, Discrimination & Endurance

- MCCBs shall comprise a device, designed to trip the circuit-breaker in the event of high-value short-circuit currents. This device shall be independent of trip unit.
- The electrical endurance of MCCBs, as defined by IEC 60947-2 standard, shall be at least equal to 3 times the minimum required by the standard
- The MCCB shall employ maintenance free double break contact system to minimize the let-through energies and capable of achieving discrimination up to the full short circuit capacity of the downstream MCCB.The manufacturer shall provide both the discrimination tables (with test certificates) and let-through energy curves.

7. 6.18.5 Accessories

8. MCCB shall be provided with the following accessories, as specified in schedule of quantities.

9. i) Under voltage trip
ii) Shunt trip
iii) Alarm switch
iv) Auxiliary switches

10.

11. All the accessories shall be rated for continuous operation. These Auxiliaries shall be common for the similar type and range of MCCBs.

12.

13. It should be possible to fit MCCBs with a motor mechanism for electrically controlled operation.

14.

15. 6.18.6 Interlocking

16.

17. Moulded, case circuit breakers shall be provided with the following interlocking devices.

18.

19. a) Extended door handle.

20. b) Handle interlock to prevent unnecessary manipulations of the breaker.

21. c) Door interlock to prevent the door being opened when the breaker is in ON position.
d) Defeat-interlocking device to open the door even if the breaker is in ON position.

22.

The MCCB shall be current limiting type and comprise of quick make – Break switching mechanism. MCCBs shall be capable of defined variable overload adjustment. All MCCBs shall have adjustable short circuit pick-up.

23.

The trip command shall override all other commands.

**Protection Functions Wherever Specified**

24.

- All the MCCBs shall be with microprocessor based trip units with adjustable Overload & Short circuit protection. Earth fault/Earth leakage protection shall be provided in the MCCB.
- Trip units shall be fully interchangeable type and it should be possible to upgrade the trip unit anytime without any modifications in the installation.
- In case of overload, Pre alarm indication shall be provided on the MCCB.

- Trip units shall be adjustable and it shall be possible to fit lead seals to prevent unauthorised access to the settings.
- Trip units shall comply with appendix F of IEC 60947-2 standard (measurement of rms current values, electromagnetic compatibility, etc.)

25.

- Protection settings shall apply to all circuit breaker poles.

26.

- Trip units shall be equipped with Thermal memory feature to reduce the stress on the installation in case of repetitive overloads.
- All electronic components shall withstand temperatures up to 145 °C.

27. b) Original test certificate of the MCCB as per IEC 60947-1 &2 or IS13947 shall be furnished.

b) Pre-commissioning tests on the switch board PANELS incorporating the MCCB shall be done as per standard specifications.

## 7 *FIRE DETECTION AND ALARM SYSTEM:-*

### 7.1 SCOPE

The scope of this section covers design, manufacturers, supply, installation, connecting, testing and commissioning of conventional type fire detection and alarm system.
The work include supply, installation, testing and commissioning of:

a. M S conduit work with all accessories.
a. Complete wiring in existing concealed/surface conduits
b. Photoelectric type smoke detectors.
c. Rate of rise cum fixed temperature heat detectors.
d. Manual alarm stations.
e. Response indicators.
f. Main control and indicating panel/zonal panel.

A high degree of operational safety, high quality and well-designed detectors, signal panels and auxiliary equipment shall be accepted. Supplier shall confirm that the electronic components used in alarm and indicating panels are of standard manufacturers and are approved type, also the name of the manufacturer shall be indicated.

The Contractor shall obtain clearance and approval form the Local Fire Authorities, the insurance company insuring the building or any other agencies whom approval is required.

### 7.2 STANDARDS

| | | | |
|---|---|---|---|
| **For Spacing of detectors** | **BS** | **:** | **Code of Practice** CP 1019, Section 2.7 |
| For sensitivity of smoke detector | BS | : | 5446 - 1977 |
| For control and indicating panel | IS | : | 2189 – 1988 |
| For smoke Detector | IS | : | 11360 - 1985 |
| For Heat Detector | IS | : | 2175 – 1988 |

### 7.3 OPERATING VOLTAGE

220 volts AC + 10% 50 cycles (single phase) and 24 volts DC +- 10%

### 7.4 DETECTORS IN GENERAL

#### 7.4.1 COMPATIBILITY

All automatic fire detectors shall be inter changeable without requiring different mounting bases nor alternations in the signal panel.

#### 7.4.2 RESPONSE SPECTRUM

Combustion gas detectors shall respond to both visible and invisible aerosols, size and color of the aerosols shall not have a decisive influence on the response of the detector.

#### 7.4.3 SENSITIVITY

On average, 30 mgr of burned material per cu.m (as measured in a 1 cu.m chamber) shall release an alarm.

**POWER CONSUMPTION**

Each detector shall use the minimum of power, for economic circuits, so that it shall be possible to connect at least 20 detectors per zone. Distance up to 1000 meters from detector to signal panel shall not influence the number of detectors per zone.

**BUILT-IN-RESPONSE INDICATOR**

Each detector shall incorporate indicator “LED” at the base of the detector which shall light up on actuation of the detector to locate the detector which is operated. The detector shall not be affected by failure of the response indicator lamp.

**RESPONSE INDICATORS**

It shall be possible to provide a secondary response indicator for the detector outside the closed room.

**MAINTEANCE**

All detectors shall be fitted either with plug-in system or bayonet type connections only, from the maintenance and compatibility point of view.

**CONSTRUCTION**

The detector shall be vibration and shock proof. When disassembling for cleaning purpose, its components must not be damaged by static over voltage.

**ATMOSPHERIC AND THERMAL DISTURBANCES**

The detector shall also be designed as to be practically immune to environmental criteria such as air currents, humidity, temperature fluctuations, pressure and shall not release false alarm.

**CONTINUOUS OPERATION**

An alarm release shall not effect a detector’s good functioning. After resetting the alarm the detector shall resume operation without re-adjustment of any kind.

**DAPTABILITY TO AMBIENT CONDITIONS**

Detectors shall be designed for adaptability to humid and explosion endangered locations.

18 **PHOTOELECTRIC SMOKE DETECTORS**

Smoke detectors shall connect with two wires to one of the Fire Alarm Panel Loops. The detectors shall use the photoelectric (light-scattering) principal to measure smoke density and shall, on command from the control panel, send data to the panel representing the analog value for smoke density. The detectors shall be ceiling mounted type and shall include a twist-lock base.

The detectors shall provide dual alarm and power LEDs. Both LEDs shall flash under normal conditions, indicating that the detector is operational and in regular communication with the control panel. Both LEDs may be placed into steady illumination by the control panel; indicating that an alarm condition has been detected. An output connection shall also be provided in the base to connect an external remote alarm LED.

The area covered by each smoke detector shall be as per IS-2189.
Detectors shall be suitable for an operating temperature 0 degree C to 55 degree C and Relative humidity of 0% to 95%.
Detectors shall be suitable for a supply voltage of 17 to 28 V DC without affecting the sensitivity.
The detector shall have the approval of UL/FM/VDS/LPC only.

**19. THERMAL DETECTORS**

Thermal detectors shall connect with two wires to one of the Fire Alarm Panel loops. The detectors shall use an electronic detector to measure thermal conditions caused by a fire and shall, on command from the control panel, send data to the panel representing the level of such thermal measurements. The detectors shall be ceiling-mounted type and shall include a twist-lock base.

The detectors shall provide dual alarm and power LEDs. Both LEDs shall flash under normal conditions. Both LEDs may be placed into steady illumination by the control panel, indicating that an alarm condition has been detected.

Detectors shall be suitable for an operating temperature 0 degree C to 22 degree C and relative humidity of 0% to 95%.

Detectors shall be suitable for a supply voltage of 17 to 28 V DC without affecting the sensitivity.

The detector shall have the approval of UL/FM/VDS/LPC only.

## 7.6 MANUAL CALL STATIONS

Manual Call stations shall be provided to connect to the Fire Alarm Panel loops.

Manual stations shall be constructed of high impact LEXAN sheet with clearly visible operating instructions provided on the cover. The word FIRE shall appear on the front of the stations in raised letters. Press/back stations with reset table capacity shall be acceptable.

Stations shall be suitable for surface mounting as shown on the plans, or semi-flush mounting, and shall be installed not less than 42 inches, nor more than 48 inches above the finished floor unless otherwise specified by applicable building codes.

## 7.7 RESPONSE INDICATOR

Response indicator shall be LED (light emitting diode) type, and shall indicate when a detector senses the fire.

## 7.8 REPEATER PANEL

Repeater panels are to be provided at remote location for monitoring the health of FAS. It should have 2 line 40 inches character display along with CEO status indicator. Battery backup shall be provided as an in-built feature and all information will be presented in clear English language. It shall be suitable for operation from 0 degree C to 49 degree C and shall be flush mounted.

## 7.9ELECTRONIC HOOTERS

All Hooters should be able to provide at least a minimum of 3 different tones, which should be user configurable. The minimum decibel level of each hooter should be 90db at 1 mtr. All hooters should be UL/FM listed.

The Electronic Hooters shall be housed in MS enclosure of 1.5 mm sheet metal.

The Hooters shall be with built on oscillator & amplifier.

The Hooters shall give wailing sound whenever it received 24 V supply from panel on receipt of Fire signal.

The MS box shall be painted with Fire Red (Power Coated)

## 7.10 MAIN FIRE ALARM CONTROL PANEL

**Control Panel**

The control cabinet shall be dust proof and shall be provided with a glass door with lock and key to prevent tempering by unauthorized persons.

The control circuit shall consists of glass epoxy (PCB) printed circuit board, silver plated and treated with protective layer of special lacquer for protection against corrosion.

The alarm circuitry shall be 100% solid state without the use of any relays anywhere in zone card.

The zone cards shall be modular and interchangeable.

Every zone shall have individual control for test acknowledge and any zone shall be isolated without effecting the working of the other zones in the panel.

Sounder silencing control shall be provided which shall remain in visual indication at the same time making the panel from to receive alarm from any other zone without the need for resetting the entire panel.

Silencing switches/push buttons – the system shall be so designed that once an alarm has been given it shall continue till the alarm sounder is switched off. The silencing switches/push buttons in their 'OFF' position shall give an indication of this fact on the main control panel or transfer the alarm signal to supervisory sounders under the supervision of the responsible person so that they may put use of the smallest number of call points. *Operation of silencing switch* shall not prevent sounding of alarm from any other zone simultaneously.

Central control and indicating panel shll be suitable for conventional Fire Detection and Alarm System and shall comply with IS: 2189-1988.

Control panel shall support the following Fire-Detection components.

Smoke Detectors
Detectors (Both fixed & rate of temperature rise type)
Manual Call Stations

System shall be completely backed up against Mains failure for atleast 8 hours and shall be suitable for the following types of batteries.

Lead acid Maintenance free.
Lead acid non-maintenance free
Lead acid semi-maintenance free
Nickel Cadmium.

System shall be self-diagnostic and shall cover the following:
Components/Modules of the fire panel.
Faulty detectors
Missing detectors
Open circuit short circuit conditions of the detector cable.
Suitable indication shall be given on the panel.

Zone wise annunciation of alarm by using:
Buzzer Sounders

## 7.11. BATTERY

Suitable rating ampere Hours 24 Volts DC sealed maintenance free batteries shall be provided for Fire Detection and Alarm System. The battery rating is indicative only. It shall be sized by bidder to cater to all momentary and short time loads in addition to supplying the continuously rated loads for a duration of 8 hours. However minimum size shall be 65 AH.

*Battery Charger*

Bidder shall furnish the battery charging system complete with all necessary accessories such as transformer, rectifier, switches, fuses, starters, contactors, ammeter, voltmeter, protections and other, devices for trouble free operation.

Construction features

Housing of battery charger shall be 2 mm thick CRCA steel sheet cabinet for indoor installation and shall be floor mounted type. The cabinet shall be folded and braced as necessary to provide a rigid support for all components. Louvers shall be provided in the cabinet for ventilation. PVC sheets of 3 mm thick shall be provided on the selves on which the batteries are to be placed.

Input

240 volts AC 50 cycles, single phase with tappings of 0-200-220-240-260 volts on the primary side of the transformer.

Output

DC output shall be 24 volts. DC bridge rectifier shall be of silicon type, having full wave rectification. Suitable contactor, relay, reset shall be provided as required.

**7.12 CABLES**

All PVC insulated FRLS copper conductor stranded cables shall be 650 volts grade and shall generally conform to IS-1554-1988 and meet the signal cabling requirement of the system manufacturer.

Strands of cables shall not be cut to accommodate & connect to the terminals. Terminals shall have sufficient cross-sectional area to take all the strands.

Cables shall be laid by skilled and experienced workmen using adequate rollers to minimize stretching of the cable. The cable drums shall be placed on jacks before unwinding the cable. Great care shall be exercised in laying cables to avoid forming kinks. At all changes in direction in horizontal and vertical planes, the cable shall be bent smooth with a radius as recommended by the manufacturers. All cables shall be laid with minimum one diameter gap and shall be clamped at every meter and shall be tagged for identification with aluminum tag and clamped properly. Tags shall be provided at both ends and all changes in directions both sides of wall and floor crossings. All cable shall be identified by embossing on the tag the size of the cable, place of origin and termination.

These shall be measured on linear basis including the fittings required like, end termination junction box.

**8.3 PUBLIC ADDRESS DEVICES**

**8.3.1 Speakers:**

All speakers shall operate on 45 VRMS or with field selectable output taps from 0.5 to 2.0 Watts.

Speaker in corridors and public spaces shall produce a nominal sound output of 84 dBA at 3 meter.

Frequency response shall be a minimum of 400 HZ to 4000 HZ.

The back of each speaker shall be sealed to protect the speaker cone from damage and dust.

**8.3.2 Fixed Emergency Telephone Handset**

The telephone cabinet shall be painted red and clearly labeled as “Emergency Telephone”. The cabinets shall be located where shown on drawings.

The handset cradle shall have a switch connection so that lifting the handset off of the cradle shall send a signal to the fire command center which shall audibly and visually indicate its on-line (off-hook) condition.

On activating the remote phone, the phone earpiece shall sound a telephone ring signal until the master handset is lifted.

The two-way emergency telephone system shall support a minimum of seven (7) handsets on line without degradation of the signal.

**POINT WIRING**

The rates for all point wiring items shall include:

1. Conduits, Conduit specials, bushes and other fittings concealed or exposed as called for.

2. Embedding conduit and allied fittings including the outlet boxes in walls, floors etc., during construction and/or in chases including cutting chases and making good with cement mortar as necessary in the case of concealed conduit work.

3. Providing and fixing approved fixing devices, saddles and grouting the same as required for exposed conduits.

4. Fabrication and Supply of G.I .boxes for switches, ceiling fan hooks, Exhaust fans outlet and lighting fixtures with 1.6 mm thick sheet steel.
5. Providing and fixing junction boxes with 3mm Hylam or 3mm/5mm thick Perspex sheet cover duly painted from inside to match the colour of the walls. All Junction boxes shall be MS only.
6. All fixing accessories such as clips, brass screws/brass washersrawl plugs etc.

7. All work & material necessary (including circuit wiring from DB to first tapping point of each circuit with 2.5 sq. mm wires) in complete wiring of a switch circuit of any length from the distribution board to the following via the switch:
   a) Ceiling rose b) Connector c) Back plate d) Socket outlet e) Lamps Holder f) Any other terminal outlet boxes g) Ceiling fan and Exhaust fan

8. Switch, socket outlet as called for.
9. Cable/wire as required upto lamp holder.
10. All metal boxes and boards concealed or surface mounted including those required for housing fan regulators.
11. All accessories necessary to complete wiring as specified.
12. FRLS PVC Insulated Stranded Copper conductor earth wire for fixtures, switch outlet boxes and third pin of 5/15 Amps. Socket to common earth.

13. Painting all exposed M.S. conduits, outlet boxes and junction boxes.
14. M.S. conduit for concealed and exposed wiring.
15. 2 mm dia G.I. pull wires in conduit work, wherever necessary.
16. The switch plate shall be made of I.S.I. grade Urea Formaldehyde Moulding powder. The base of the switches shall be made from high heat resistant phenol formaldehyde powder. The cost of switches shall include the cost of cover plates, cadmium fixing screws etc.
    The switches/sockets shall be rocker operated.
17. Separate Earth wire shall run along with each circuit both for power and light circuits.
18. Cutting of floor and making good for carrying conduits also.
19. Numbering of Circuits with ferrules for all circuits at both ends.
20. Providing 15 Amps capacity Bakelite terminal Blocks for terminating the phase, neutral and earth wire at each fixture location.

20. PVC insulated copper conductor wire ends before connection shall be properly soldered (at least 15 mm length) with special Cu solder for copper conductor or shall be properly crimped with copper lugs/sockets as the case may be. Strands of wires shall not be out for connecting to the terminals. All stands of wires shall be soldered at the end before connection. The connecting brass-screws shall have flat ends. All looped joints shall be soldered and connected through terminal block/connectors.
21. Provide embossing on the sockets engraving “UPS” and “RAW”

**CONDUITING FOR TELEPHONE & COMPUTER SYSTEM**

The rates for conduit work shall include:

1. All necessary specials and fittings.

2. M. S. inspection, junction and outlet boxes as required.

3. 3/5 mm thick Perspex sheet covers for inspection & junction boxes.

4. All fixing accessories such as clips, nails, brass screws/brass washers, etc.

5. 2 mm dia G.I. pull wires in conduit work, wherever necessary.

6. Providing and fixing approved saddle, hooks and grouting the same as required in the case of all exposed conduit work.

7. Embedding conduit and allied fittings including the outlet boxes in walls, floors etc., during construction and/or in chases including cutting chases and making good with cement mortar as necessary in the case of concealed conduit work.

8. Painting all inspection, junction and outlet boxes.

9. FRLS PVC conduit for concealed conduit wiring.

10. Painting of Hylam/perspex sheet cover from inside to suit the color of the surrounding wall with two coats of paint.

11. Supply and fabrication of MS Zinc passivated outlet boxes.

12. The outlet cover plate for Telephone outlets shall be made of I.S.I. grade Urea Formaldehyde Moulding powder. The cost of outlets shall include the cost of cover plates, cadmium fixing screws etc. also.

13. Numbering of wires on both ends of the wires for easy identification with PVC ferrules.

**EARTHING**

The rates for earthing items include:

1. All fixing accessories such as brass saddles, brass screws, raw plugs etc.

2. Jointing by riveting in case of copper earth strips (2 per joint) and by welding in case of GI strips.

3. Cutting chase, making holes and making good the same wherever required.

4. All masonry work including earth work for earthing stations, earthing tapes and wires.

5. Effecting adequate and proper interconnections.

6. Use of copper thimbles for all wire terminations in the Distribution Boards, switches and sockets.

**CABLES, MAINS AND SUB-MAINS**

The rates for all items of work shall include:

1. Embedding conduits and allied fittings in walls, floors, etc., during construction and/or in chases including cutting chases and making good as necessary in the case of concealed conduit work.

2. Providing and fixing approved saddles, hangers, trays etc., and grouting the same as required for exposed conduits where called for. Providing dash fasteners for the threaded MS down rods (primer coated) used for hanging the cable \trays.

3. Providing and fixing junction boxes with 5 mm thick 'Hylam' sheet covers.

4. Effecting adequate and proper connections at terminations.

5. Ensuring that provision is left in various buildings components and trenches as the work proceeds, for incorporation of cable supports at a later date.

6. Providing all fixing accessories such as clamping devices, nuts and bolts, screws etc.

7. clamping to supports where laid in trenches.

8. Excavation of trenches and bringing the trenches to exact level as required.

9. Providing sealing compound, thimble, solder etc., at joints and terminations as called for.

10. Providing proper supports for cable terminal boxes as called for.

11. Wherever cables pass through walls, ceiling, paved area or below roads provide sleeves/ hume pipes and making good as necessary.

**DISTRIBUTION BOARDS**

The rates for the following items of work generally include:

1. The supporting rigid steel frame work.

2. 1.6 mm thick MS boxes complete with dust proof and vermin proof covers and locking arrangements, mounted flush with surfaces.

3. All fixing accessories such as dash fasteners, bolts, nuts, screws, etc. as required.

4. Building into masonry/concrete work including all necessary cutting and grouting with cement mortar 1:2.

5. Effecting adequate and proper connections.

6. Effecting proper bonding to earth.

7. Painting/lettering on switches and distribution boards the location they serve and providing on each board its circuit diagram.

8. Touching up all damaged paint over exposed work with one coat of red oxide primer and two finishing coats of approved synthetic enamel paint.

9. Main Distribution Board and Final Distribution Boards shall be fabricated by Contractor with the specified equipment.

10. Provide 6 Amps. SP MCB for Light Points Circuits, 20 Amps. SP MCB for Power Circuits and 32 Amps. SP MCB for 1.5 Ton AC Unit.

**SUPPLY & FIXING OF LIGHTING FIXTURES**

The rate for fixing of lighting fixtures and fans shall include:

1. Receiving the fixtures from the Owner's stores and assemble the same at site and testing the fixture before fixing.

2. All components that may be required to make the installation complete in all respects such as:

   a. Suitable length of down rod, hanger and connecting wires, where called for.

   b. Wires for connecting the fixtures to the point through connector blocks.

   c. All wood and metal blocks to serve as base of fixtures.

   d. Bonding with common earth wires.

3. Drilling holes in supports where required.

4. Fixing clamps, GI bolts and nuts, clips, brass screws, dash fasteners and other fixing accessories as required, including leaving necessary provision for fixing at time of concreting.

5. Approved enamel painting for hanger rods, clamps and other components and fixing accessories as called for.

6. Testing and commissioning of all fixtures and fans after installation.

7. The lighting fixtures shall be suitable for 230 Volts, single phase 50 cycles A.C. supply system.

8. Incandescent lamps shall be 100 Watts (maximum) and fluorescent lamps shall be 18 watts and 36 watts.

9. Use G.I. suspenders and clamping to the slab with dash fasteners (4 per fitting), including turn buckle arrangements for adjustable heights for hanging. They should be the same suspenders as used for hanging the False Ceiling grid ceiling.

8. The contractor to mark the size of light fittings, speaker and fire alarm components on the false ceiling for the interior contractor to cut holes.

## SECTION VI
## TECHNICAL SPECIFICATIONS

**Note:**

**a) Rate should be inclusive of Scaffolding & carting away the debris from the site totally. Also all relevant permissions from local authorities (i.e. Local Municipal authority, Water Department, Electricity deptt. etc.), Heritage Committee, Fire Brigade or any other STATUTORY AUTHORITY. This please be noted.**

b) Contractor to refer Technical Specifications thoroughly & visit the site before quoting all the following tender items in Bill of quantities. Contractor is requested to take photographs of existing premises before demolition & after completion of the work

c) Only official Receipts payments will be made by the UIICL. Any loss or damage to the Company's property during the progress of work shall be borne by the Contractor.

d) Existing electrical, water connection shall not be disconnected till the handing over the site without any extra charges.

**1) Demolition:** Removing existing compound wall, wall plaster, loose concrete, electrical wiring, & fixtures and also all other items which are to be removed as well as not to be reused again to be taken away from the site as per instructions (Salvage to be paid separately, kindly quote in the summary) and carting away the debris.

**2) Polymer plaster to structural members:**

a) Chipping off loose cover of the concrete in damaged areas or honeycombed areas and exposing the reinforcement.

b) Applying two coats of Alkaline rust converting primer, Fevert on the reinforcement bars, including cleaning the reinforcement, wire brushing to remove loose rust spalls with time intervals of one hour between the coat.

c) Providing additional steel in distress areas including drilling & fixing it in desired position.

d) Applying IPNET-RB to the Reinforcement in two coats with time interval of minimum 4 hours between each coat. 1st coat to be applied after 10 minutes of application of dry quartz sand over second coat of IPNET-RB when freshly applied.

f) Applying epoxy latex based bonding agent EL Monobond on concrete as well as reinforcement before application of mortar.

g) Applying polymer modified mortar in CM (1:3) with river sand with addition of 15% Monobond by weight of cement per bag in layers not more than 15mm in one application of mortar including curing etc. complete.

h) Applying polymer modified plaster with addition of 10% polymer in creating smooth surfaces.

i) Erecting scaffolding / Props to carry out the above Polymer Plaster work.

**3) Plastic Emulsion Paint:**

Applying 2 coats of plastic emulsion paint of Asian / Nerolac make to walls & ceiling over a coat of primer with necessary surface preparation with pop / Birla, putty etc. complete in workmanship like manner.

**4) Synthetic Enamel painting:**

Providing & applying 2 coats of enamel paint over a coat of red oxide/ anti rust primer to M.S. gate, Grills T.W. doors, Rolling shutter etc.

**5) Plastering :** Providing & applying rough cast cement plaster externally in two coats to concrete, brick or stone masonary surfaces in all positions with base coat of 12 to 15mm thick in C.M.1:4 and rough cast treatment 12mm thick in proportion 1:1 ½: :3 including scaffolding and curing etc. complete.

**6) Brick masonary :** Providing & constructing brick masonary of various thickness / pillars with first class burnt brick in cement morter (1:6) including raking the joints, scaffolding ,curing etc. complete.

**7) Excavation :** Excavation foundation of Brick wall including clearing the vegetation ,pumping out water refilling with selected earth from excavation in layers not exceeding 30 cm, watered, rammed and consolidated, carting away surplus excavated earth out of the compound area immediately.

**8) PCC in foundation:** Providing, mixing, placing, consolidating & curing plain cement concrete (PCC) in foundation for brick work/below the paver block (in parking area) including all ordinary formwork wherever required in 1:3:6 proportion.

**9) PCC Coping:** Providing, mixing, placing, consolidating & curing plain cement concrete (PCC) coping (with slope on either end) above the brick work in 1:3:6 proportion including all ordinary formwork supports, scaffolding and finishing the exposed surface with sand face plaster.

**10) Vitrified tile cladding to match existing:** Providing & fixing Johnson, Asian/Nitco make 600mm x 600mm vitrified tile on wall (Basic rate is Rs.50/- Sft. including GST) of approved shade & colour in required position and pattern as directed by Architect Tiles are to fitted after removing the existing wall tiles in required position and pattern as directed by Architect and to be fitted minimum 20 mm cement plaster 1:4 including neat cement paste, pointing, filling the joints with white cement with approved coloured pigments, curing and filling complete upto the satisfaction of the Architect. Rate should be inclusive of single coat plaster of 1:4.

**SECTION VII**
**PRE-BID QUALIFICATION**

Format to be filled up and signed by the **Authorized Signatory of the Bidder**

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The intending contractors should submit the following details in the technical bid duly containing the following:

1. Name of the organization:

2. Address of the Office with Tel / Email / Fax :

3. Year of establishment :

4. Status of firm (whether company / firm/ Proprietary) :

5. Copy of Permanent Account No (PAN):
And copy of balance sheet for the last 3 yrs including IT Return verification form duly signed with e-Filing Acknowledgement Number.

6. Copy of Registration with GST No.:
Copies to be attached along with latest Paid challans since April 2023 (Copy to be enclosed)

7. Average Annual Financial Turn over.
Balance sheet duly certified by the Chartered Accountant shall be submitted for the last Three Financial years ending 31st March of the previous year. The turn over should be at least Rupees 1 Crore and the entity should be a profit making organization.

8. Name & address of Bankers:
9. Workshop address with its shop & establishment certificate on owner's name

10) **Successful Completion Certificate**
At least 3 Work Completion Certificates of similar works from the client shall be submitted. Contractor should have carried out similar type of works for Nationalized Banks /Financial Institution / PSU/State or Central Government Institutions.

**a.** Three similar completed works costing not less than the amount equal to 40% of the estimated cost.

**OR**

**b.** Two similar completed works costing not less than the amount equal to 50% of the estimated cost.

**OR**

**c.** One similar completed works costing not less than the amount equal to 80% of the estimated cost.

**13.** Bidder should be registered in Delhi –NCR region.
**14.** Bidder should be ESI & PF registered.
**15.** Bidder should be ISO Certified.

The Work Completion Certificates should be accompanied by work order and period of completion allotted for execution of works. Certificate of completed works above the period allotted for completion would not be considered.
The Work Completion Certificates should be attached with Contact details of the respective company

officials monitoring the work for verification purpose.
DEFINITION OF “SIMILAR WORK” means CIVIL REPAIRS WORKS.

11) **Latest Workman’s Insurance Policy Number with copy thereof**

12) **Details of projects in hand with names of the clients, address & phone nos.**
Details/Work Order of at least 2 ongoing projects of similar nature having contract value of more than or equal to 25 lakhs should be enclosed along with contact details of the client.
13) Black listing in any institution.

14) ISO certification

**Note :**
1) Submit the relevant papers in order along with this form.
2) Please ensure that all relevant papers are attached separately along with this format.
3) Incomplete format will be rejected.
4) Contractor will be liable for Rejection /Disqualification / Termination of the contract if found having given the false information at any stage of selection / execution of work etc. Company reserves the right to reject any contractor without giving any reason.
5) Any concealment of fact or misrepresentation will make the Technical Bid VOID.

## SECTION VIII
## TECHNICAL BID

The bidders are required to completely fill the Technical Bid Form with all the mentioned details. The enclosures wherever necessary are to be enclosed at the end of the technical bid documents and the pages are to be serially numbered. The page number of the enclosed documents is to be filled in the respective details column.

| Sr. No. | Requirement | Details (to be filled by Bidder) |
|---|---|---|
| 1 | Name of the organization | |
| 2 | Address of the Office with Tel / Email / Fax | |
| 3 | Year of establishment | |
| 4 | Status of firm (whether company / firm/ Proprietary) | |
| 5 | Copy of Permanent Account No (PAN) | |
| 6 | Copy of Registration with GST No. | |
| 7 | Average Annual Financial Turn over (Previous 3 years Balance Sheet and filed IT return) | 1.<br>2.<br>3. |
| 8 | Name & address of Bankers | |
| 9 | Workshop address with its shop & establishment certificate on owner's name | |
| 10 | Successful Completion Certificate | 1.<br>2.<br>3.<br>4. |
| 11 | Latest Workman's Insurance Policy Number with copy thereof | |

| | | |
|---|---|---|
| 12 | Details of projects in hand with names of the clients, address & phone nos. | 1.<br>2.<br>3. |
| 13 | Black listing in any institution | |
| 14 | ISO CERTIFICATE | |

## SECTION IX
## SELF-DECLARATION – NO BLACK LISTING

Before commencement of the work the following undertaking to be submitted by the contractor on Letter Head

(**Bid Security Declaration of bidder)**

Date:

**The Deputy General Manager,**
**United India Insurance Co. Ltd.,**
**Delhi Regional Office No. 1**
8th floor, Kanchenjunga Building,
Barakhamba Road – New Delhi - 11001.

Dear Sir/ Madam,

I / We / Our organization…….. …… including our Partners / Share holders / Directors hereby certify that our Company is not blacklisted by any Public Sector Undertaking and / or having dispute with any Public Sector Undertaking. In case at any stage if it is found that the information given by me /us is false/ incorrect, the UIICL shall have the absolute right to take any action as deemed fit without any prior intimation to me /us.
Thanking You,

Signature, Name and Seal of Organization

**SECTION X**
**INTEGRITY PACT**
**:: (Should be on Rs.100/- Stamp Paper)**
**: To be enclosed in Technical Bid :**

Between

THE UNITED INDIA INSURANCE CO.LTD. ( UIICL ) hereinafter referred to as "The Principal", and _____ hereinafter referred to as "The Bidder/ Contractor"

**Preamble**

The Principal intends to award, under laid down organizational procedures, contract/s for Civil repairs & other Related works at **House No.** ***848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049***
**Section 1** – Commitments of the Principal

(1.) The Principal commits itself to take all measures necessary to prevent corruption and to observe the following principles: -
a. No employee of the Principal, personally or through family members, will in connection with the tender for or the execution of a contract, demand, take a promise for or accept, for self or third person, any material or immaterial benefit which the person is not legally entitled to.
b. The Principal will, during the tender process treat all Bidder(s) with equity and reason. The Principal will in particular, before and during the tender process, provide to all Bidder(s) the same information and will not provide to any Bidder(s) confidential / additional information through which the Bidder(s) could obtain an advantage in relation to the tender process or the contract execution.
c. The Principal will exclude from the process all known prejudiced persons.
(2) If the Principal obtains information on the conduct of any of its employees which is a criminal offence under the IPC/PC Act, or if there be a substantive suspicion in this regard, the Principal will inform the Chief Vigilance Officer and in addition can initiate disciplinary actions.
**Section 2 –** Commitments of the Bidder(s)/ Contractor(s) which term shall include Vendor(s) / Agency(ies) /Sub-contractor(s) if any, etc.
(1)The Bidder(s)/ Contractor(s) commit themselves to take all measures necessary to prevent corruption. He commits himself to observe the following principles during his participation in the tender process and during the contract execution.
i. The Bidder(s)/ Contractor(s) will not, directly or through any other person or firm, offer, promise or give to any of the Principal's employees involved in the tender process or the execution of the contract or to any third person any material or other benefit which he/she is not legally entitled to, in order to obtain in exchange any advantage of any kind whatsoever during the tender process or during the execution of the contract.
ii. The Bidder(s)/ Contractor (s) will not enter with other Bidders into any undisclosed agreement or understanding, whether formal or informal. This applies in particular to prices, specifications, certifications, subsidiary contracts, submission or non- submission of bids or any other actions to restrict competitiveness or to introduce cartelization in the bidding process.
iii. The Bidder(s)/ Contractor(s) will not commit any offence under the relevant IPC/PC Act; further the Bidder(s)/ Contractor(s) will not use improperly, for purposes of competition or personal gain, or pass on to others, any information or document provided by the Principal as part of the business relationship, regarding plans, technical proposals and business details, including information contained or transmitted electronically.
iv. The Bidder(s)/Contractor(s) of foreign origin shall disclose the name and address of the Agents/ representatives in India, if any. Similarly, the Bidder(s)/Contractor(s) of Indian Nationality shall furnish the name and address of the foreign principals, if any. Further details as mentioned in the "Guidelines on Indian Agents of Foreign Suppliers" shall be disclosed by the Bidder(s)/ Contractor(s). Further, as mentioned in the Guidelines all the Payments made to the Indian agent/ representative have to be in Indian Rupees only. The "Guidelines on Indian Agents of Foreign Suppliers".
v. The Bidder(s)/ Contractor(s) will, when presenting his bid, disclose any and all payments he has made, is committed to or intends to make to agents or any other intermediaries in connection with the award of the contract.
(2) The Bidder(s)/ Contractor(s) will not instigate third persons to commit offences outlined above or be an accessory to such offences.

**Section 3-** Disqualification from tender process and exclusion from future contracts
If the Bidder(s)/Contractor(s), before award or during execution has committed a transgression through a violation of Section 2, above or in any other form such as to put his reliability or credibility in question, the Principal is entitled to disqualify the Bidder(s)/Contractor(s) from the tender process.
**Section 4** – Compensation for Damages
(1) If the Principal has disqualified the Bidder(s) from the tender process prior to the award according to Section 3, the Principal is entitled to demand and recover the damages equivalent to Earnest Money Deposit/ Bid Security.
If the Principal has terminated the contract according to Section 3, or if the Principal is entitled to terminate the contract according to Section 3, the Principal shall be entitled to demand and recover from the Contractor liquidated damages of the Contract value or the amount equivalent to Performance Bank Guarantee.
**Section 5** – Previous transgression
(1) The Bidder declares that no previous transgressions occurred in the last three years with any other Company in any country conforming to the anti-corruption approach or with any Public Sector Enterprise in India that could justify his exclusion from the tender process.
(2) If the Bidder makes incorrect statement on this subject, he can be disqualified from the tender process or action can be taken as per the procedure mentioned in "Guidelines on Banning of business dealings".
**Section 6** – Equal treatment of all Bidders / Contractors / Subcontractors
(1) The Bidder(s)/ Contractor(s) undertake(s) to demand from his subcontractors a commitment in conformity with this Integrity Pact.
(2) The Principal will enter into agreements with identical conditions as this one with all Bidders and Contractors.
(3) The Principal will disqualify from the tender process all bidders who do not sign this Pact or violate its provisions.
**Section 7** – Criminal charges against violating Bidder(s) /Contractor(s) / Subcontractor(s)
If the Principal obtains knowledge of conduct of a Bidder, Contractor or Subcontractor, or of an employee or a representative or an associate of a Bidder, Contractor or Subcontractor which constitutes corruption, or if the Principal has substantive suspicion in this regard, the Principal will inform the same to the Chief Vigilance Officer.
**Section 8 –** Pact Duration
This Pact begins when both parties have legally signed it. It expires for the Contractor 3 weeks after the last payment under the contract, and for all other Bidders 6 months after the contract has been awarded. If any claim is made / lodged during this time, the same shall be binding and continue to be valid despite the lapse of this pact as specified above, unless it is discharged / determined by the Deputy Gen. Manager, DRO-1 of ( UIIC)
**Section 9 –** Other provisions
1. This agreement is subject to Indian Law. Place of performance and jurisdiction is the Regional Office of the Principal, i.e. Delhi.
2. Changes and supplements as well as termination notices need to be made in writing.
3. If the Contractor is a partnership or a consortium, this agreement must be signed by all partners or consortium members.
4. Should one or several provisions of this agreement turn out to be invalid, the remainder of this agreement remains valid. In this case, the parties will strive to come to an agreement to their original intentions.
5. In the event of any contradiction between the Integrity Pact and its Annexure, the Clause in the Integrity Pact will prevail.

| | |
|---|---|
| (For & On behalf of the Principal) | (For & On behalf of Bidder/ Contractor) |
| (Office Seal)<br>Place & Date: | ( Office seal)<br>Place & Date: |
| Witness 1:<br>(Name & Address)<br>Date: | Witness 2:<br>( Name & Address)<br>Date: |

**SECTION XI**
**ARTICLE OF AGREEMENT**
**(To be submitted on Rs. 100 Stamp Paper)**

ARTICLES OF AGREEMENT made the .....
Day of ..... between The United India Insurance Co. Ltd. DRO I (hereinafter called "the Employer") of the one part and .....
(hereinafter called "the Contractor") of the other part.

Whereas the employer is desirous of Proposed Civil Repairs & Other related works at Civil, Electrical, Plumbing & other related works at **House No. *848 & 849, Asiad Village, Levy Pinto Block, New Delhi-110049***, and has caused Specifications describing the work to be done to be prepared by the Employer or his Architect.

AND WHEREAS the Contractor has agreed to execute upon and subject to the Conditions set forth herein and in the correspondence attached hereto and to the Conditions set forth in the Special Conditions and in the Schedule of Quantities and Conditions of Contract in Tender (all of which are collectively hereinafter referred to as "the said Conditions") the works described in the said Specifications and included in the said Schedule of Quantities at the respective rates therein set forth amounting to the sum as therein arrived or such other sum as shall become payable there under (hereinafter referred to as "the said Contract Amount").

**NOW IS HEREBY AGREED AS FOLLOWS: -**

1. In consideration of the said Contract Amount to be paid at the time and in the manner set forth in the said Conditions, the Contractor shall upon and subject to the said Conditions execute and compete the work shown upon the said Drawings and described in the said Specification and the Schedule of Quantities.

2. The Employer shall pay the Contractor the said Contract Amount, or such other sum as shall become payable, at the times and in the manner specified in the said Conditions.

3. The said Conditions and Appendix thereto and the correspondence attached hereto shall be read and construed as forming part of the Agreement and the parties hereto shall respectively abide by, submit themselves to the said Conditions and the correspondence and perform the agreement on their part respectively in the said Conditions and the correspondence contained.

4. The plans, agreement and documents mentioned herein shall form the basis of this contract.

5. The Employer reserves to itself the right of altering the items to be supplied by adding to or omitting any items without prejudice to this contract. However, the Contractor shall not be entitled to any payment for the works done exceeding the tender quantities unless specifically approved in writing by the Architect.

6. Time shall be considered as the essence of this Contract and the Contractor hereby agrees to commence the work from the date of issue of formal work order as provided for in the said conditions and to complete the entire contract within Twelve (12) weeks time.

7. All payments by the Employer under this Contract will be made only at Delhi.

8. All disputes arising out of or in any way connected with this Agreement shall be deemed to have arisen at and only Courts in Delhi shall have the jurisdiction to determine the same.

9. That the several parts of this Contract have been read by the Contractor and fully understood by the Contractor.

IN WITNESS WHEREOF the Employer and the Contractor have set their respective hands to these presents and two duplicates hereof the day and year first hereinabove written. (If the Contractor is a partnership or an individual).

Signature Clause
SIGNED AND DELIVERED by the
by the hand of

Shri .....
(Name & Designation)

in the presence of

1) .....
Address .....
.....

2) .....
Address .....
.....

Witnesses

SIGNED AND DELIVERED by

If the party is a Partnership firm or an individual should be signed by all or on behalf of all the partners.

.....
in the presence of

1) .....

Address .....

.....

2) .....

Address .....

.....

**SECTION XII**
**FINANCIAL BID**

**"Annexure 'II' enclosed with tender documents."**