

# MAHINDRA WORLD CITY AT JAIPUR

## Tender for Electrical Works (Block B1)

**General Conditions  
Special Conditions  
Technical Specifications  
List of Approved Makes of Material  
Schedule of Quantities**

ARCHITECT



B 6/17 Shopping Center  
Safdarjung Enclave, New Delhi-29  
Tel.: 26162930 / 26162931  
Fax: +91-11- 2618 6874

*Sarb*

CONSULTANTS PVT. LTD.

F-301, Lado Sarai, New Delhi,  
Tel: 29521180  
Fax: +91-11-29521183  
E-mail: kka@kkapl.com

June 2010

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CONSULTANTS PVT. LTD.

Electrical Consultants

**KANWAR KRISHEN  
ASSOCIATES PVT. LTD.**  
F-301, Lado Sarai, ,  
New Delhi - 110030,  
Tel: 29521180  
Fax: +91-11-29521183

HVAC Consultants

**B.R.MALHOTRA &  
ASSOCIATES**  
B1 / 1506 Vasant Kunj,  
New-Delhi -110 070  
Mob : 9811381370

Plumbing Consultants

**ASHOK KUMAR  
PANDE**  
SF-30, Lift Block  
C-Block, Sushant Lok-I  
Gurgaon - 122002  
Mob : 9810034874

## MAHINDRA WORLD CITY (JAIPUR) LIMITED, JAIPUR

### BID FOR ELECTRICAL WORKS AT MAHINDRA TECHNOLOGY PARK WITHIN THE IT/ITES SEZ

**Bid No** : MWCJL/MTP/B-1/T-04  
**Date of Issue** : 12-06-2010

**Bid Document issued to:**

M/s .....

.....

.....

**By**

**Mahindra World City (Jaipur) Limited**  
411, Neelkanth Tower#1,  
Bhawani Singh Marg, C-Scheme,  
Jaipur -302001  
Phone No: 0141-4007025  
Fax : 0141-4007030

**CONTENTS**

|                   |   | <b>Page No.</b> |
|-------------------|---|-----------------|
|                   | <b>Invitations for BIDS (IFB)</b>   | <b>4</b>        |
| <b>Section-1</b>  | <b>Instruction to Bidders</b>   | <b>6</b>        |
| <b>1A</b>         | <b>General Instructions</b>   | <b>8</b>        |
| <b>1B</b>         | <b>Bidding Documents</b>  | <b>8</b>        |
| <b>1C</b>         | <b>Preparation of Bids</b>  | <b>9</b>        |
| <b>1D</b>         | <b>Submission of Bids</b>   | <b>10</b>       |
| <b>1E</b>         | <b>Bid Opening and Evaluation</b>   | <b>10</b>       |
| <b>1F</b>         | <b>Award of Contract</b>  | <b>11</b>       |
|                   |   |                 |
| <b>Section-2</b>  | <b>Letter of Acceptance<br/>Issue of Notice to proceed with the work<br/>Agreement Form</b>                       | <b>13</b>       |
|                   |   |                 |
| <b>Section-3</b>  | <b>Conditions of Contract</b>   | <b>16</b>       |
| <b>3A</b>         | <b>General Conditions</b>   | <b>17</b>       |
| <b>3B</b>         | <b>Time Control</b>   | <b>21</b>       |
| <b>3C</b>         | <b>Quality Control</b>  | <b>23</b>       |
| <b>3D</b>         | <b>Cost Control</b>   | <b>23</b>       |
| <b>3E</b>         | <b>Finishing the Contract</b>   | <b>25</b>       |
| <b>3F</b>         | <b>Special Conditions of Contract</b>   | <b>27</b>       |
| <b>3G</b>         | <b>Safety Manual</b>  | <b>32</b>       |
|                   |   |                 |
| <b>Section-4</b>  | <b>Forms of Securities<br/>Bid Security<br/>Performance Bank Guarantee<br/>Bank Guarantee for Advance Payment</b> | <b>58</b>       |
| <b>Section -5</b> | <b>Technical Specifications and Bill of Quantities</b>  | <b>65</b>       |
|                   |   |                 |
|                   | <b>TENDER DRAWING</b>   | <b>1 No.</b>    |

**MAHINDRA WORLD CITY (JAIPUR) LIMITED, JAIPUR**

**Bid No** : **MWCJL/MTP/B-1/T-04**

**(ELECTRICAL WORKS)**

**NAME OF WORK** : **CONSTRUCTION OF MAHINDRA  
TECHNOLOGY PARK AT MAHINDRA  
WORLD CITY**

**PERIOD OF ISSUE OF  
BIDDING DOCUMENT** : FROM: **12-06-2010 to 14-06-2010**  
TIME:-**10:00 HOURS TO 17:00 HOURS**

**LAST DATE AND TIME** : Date: **21-06-2010 (Hard Copy Submission)**  
**FOR RECEIPT OF BIDS Time: 15:00 Hrs.**

**INVITATION FOR BID**  
**(IFB)**

**MAHINDRA WORLD CITY (JAIPUR) LIMITED, JAIPUR**

**INVITATIONS FOR BIDS (IFB)**

**Date: - 12-06-2010**

**Bid No : MWCJL/MTP/B-1/T-04**

1. **MAHINDRA WORLD CITY (JAIPUR) LIMITED** having its Registered office at **411, Neelkanth Tower#1, Bhawani Singh Marg, C-Scheme, Jaipur -302001**, is developing an IT/ITES SEZ and invites item rate Bids for the below mentioned works from the selected Bidders.
2. Hard copies of the document can be obtained from the Architect office at the below mentioned address by paying **Rs. 2000** only upto **14-06-2010**

**M/s Rajinder Kumar Associates**

B-6/17 Shopping Center,  
Safdarjung Enclave  
New Delhi 110029, India  
T: (91)11-26179093  
F: (91) 11-26186874

3. Bids must be delivered to **Mahindra World City (Jaipur) Limited, 411, Neelkanth Tower#1, Bhawani Singh Marg, C-Scheme, Jaipur -302001**, on or before **15:00 Hours** on **21-06-2010** in Hard Copy. If the office happens to be closed on the date of receipt of the Bids as specified, the Bids will be received on the next working day at the same time and venue.
4. Other details can be seen in the Bidding documents.

**TABLE - IFB 1**

| <b>Sr. No.</b> | <b>Name of work</b>  | <b>Bid security / EMD (Rs.)</b> | <b>Cost of document (Rs.)</b> | <b>Period of completion</b> |
|----------------|--|---------------------------------|-------------------------------|-----------------------------|
| 1              | <b>Electrical Works at Mahindra Technology Park Block B1</b> | <b>Rs. 50,000/-</b>             | <b>Rs. 2000/-</b>             | Four (04) Months            |

**Seal of office**

**SECTION 1: INSTRUCTIONS TO BIDDERS**  
**(ITB)**



**Section 1: Instructions to Bidders****Table of Clauses**

| <b>Sr. No.</b> | <b>Particulars</b>                 | <b>Page No.</b> | <b>Sr. No.</b> | <b>Particulars</b>                                   | <b>Page No.</b> |
|----------------|------------------------------------|-----------------|----------------|--|-----------------|
|                | <b>1A. General Instructions</b>    |                 |                | <b>1D. Submission of Bids</b>                        |                 |
| 1              | Scope of Bid                       | 8               | 15             | Sealing and Marking of Bids                          | 10              |
| 2              | One Bid per Bidder                 | 8               | 16             | Deadline for Submission of Bids                      | 10              |
| 3              | Cost of Bidding                    | 8               |                | <b>1E. Bid Opening and Evaluation</b>                |                 |
| 4              | Site Visit                         | 8               |                | Process to be Confidential                           | 10              |
|                | <b>1B. Bidding Document</b>        |                 | 17             | Correction of Errors                                 | 10              |
| 5              | Content of Bidding Documents       | 8               | 18             | Employers right to accept variation                  | 11              |
| 6              | Clarification of Bidding Documents | 9               |                | <b>1F. Award of Contract</b>                         |                 |
|                | <b>1C. Preparation Of Bid</b>      |                 | 20             | Award Criteria                                       | 11              |
| 7              | Language of Bid                    | 9               | 21             | Employer's right to accept or reject any or all Bids | 11              |
| 8              | Documents Comprising the Bid       | 9               | 22             | Notification of Award & Signing of Agreement         | 11              |
| 9              | Item Rate Contract                 | 9               | 23             | Performance Security                                 | 11              |
| 10             | Currencies of Bid & Payment        | 9               | 24             | Corrupt or Fraudulent Practices                      | 11              |
| 11             | Bid Validity                       | 9               |                |  |                 |
| 12             | Bid Security                       | 9               |                |  |                 |
| 13             | Format and Signing of Bid          | 9               |                |  |                 |
| 14             | Salient points                     | 10              |                |  |                 |

## **1A. General Instructions**

### **1. Scope of Bid**

- 1.1 **Mahindra World City (Jaipur) Limited** ("MWCJL"), (hereinafter referred to as "**Employer**") invite Bids for the [Electrical Works for Mahindra Technology Park Block B1 at Mahindra World City](#) being developed by it (as defined in these documents and referred to as "**the Works**").

### **2. One Bid per Bidder**

- 2.1 Each Bidder shall submit only one Bid for one Contract.  
2.2 Bid documents are not transferable

### **3. Cost of Bidding**

- 3.1 The Bidder shall bear all costs associated with the preparation and submission of his Bid, and the Employer will in no case be responsible and liable for those costs.

### **4. Site visit**

- 4.1 The Bidder, at the Bidder's own responsibility and risk is encouraged to visit and examine the Site (as defined in Clause 1 of GCC) and its surroundings and obtain all information that may be necessary for preparing the Bid and entering into a Contract for construction of the Works. The costs of visiting the Site shall be at the Bidder's own expense.  
4.2 After visiting the site the bidder shall confirm the fact of actual visit of the site to the employer which will be testimony to the fact that in fact site is available for commencing the work.  
4.3 The Contractor shall be deemed to have inspected, tested and examined the site and surroundings and to have satisfied himself as to all the conditions, factors and risks which can be reasonably obtained or inferred from the inspections, and examinations that may influence or affect the progress and cost of Contract Works.

## **1B. Bidding Documents**

### **5. Contents of Bidding Documents**

- 5.1 The set of bidding documents comprises the documents listed in the table below and addenda issued in accordance with Clause 8 (if any)

|          |    |   |
|----------|----|---|
| Sections | 1  | Instructions to Bidders                       |
|          | 2  | Letter of Acceptance and Agreement form       |
|          | 3  | Conditions of Contract                        |
|          | 4  | Forms of Securities                           |
|          | 5. | Technical Specifications & Bill of Quantities |

- 5.2 Qualification of Bidders : To be qualified for award of contract, bidders are required to

- a) Submit a written power of attorney authorising the signatory.  
b) Update the following information submitted with the application for qualification.  
i) Financial strength.  
ii) Works in hand  
iii) litigation if any.

### **6. Clarification of Bidding Documents**

Bidders requiring any clarification of the Bidding documents may notify the Employer by e-mail to [verma.shiva@mahindraworldcity.com](mailto:verma.shiva@mahindraworldcity.com) or by Fax only. The Employer will respond to any request for clarification. All such queries shall be made at least three (03) days before date of submission of Bids as per Clause 16.

## **1C. Preparation of Bids**

### **7. Language of the Bid**

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

### **8. Documents comprising the Bid**

8.1 The Bid submitted by the Bidder shall comprise the following:

- a) The Bill of Quantities wherein the Bidder shall fill in the rates; original plus one photocopy duly signed and stamped by the Bidder on each page.
  - b) Specifications, original plus one photocopy duly signed and stamped by the Bidder on each page.
  - c) any other materials required to be completed and submitted by bidders in accordance with these instructions
- The Financial Bid (BOQ) under Sections 5 of Sub-Clause 5.1 shall be filled in without exception.

### **9. Item Rate Contract**

9.1 The Contractor shall note that unless otherwise stated, the Tender is strictly on item rate basis contract.

### **10. Currencies of BID and payment**

10.1 The rates and the prices given are in Indian Rupees.

### **11. Bid Validity**

11.1 Bids shall remain valid for a period not less than 60 (sixty) days after the date for Bid submission specified in Clause 16. A Bid corrected by the Bidder as valid for a shorter period shall be rejected by the Employer as non-responsive.

### **12. Bid Security**

12.1 The Bidder shall furnish as a part of his Bid, a Bid security in the amount as shown in column 3 of the table IFB-1. The Bid security shall be in favour of **Mahindra World City (Jaipur) Limited** in the form of a Demand Draft or Banker's Cheque or Pay order payable at Jaipur.

12.2 The Bid Security of unsuccessful Bidders will be returned within 30 days of the end of the Bid validity period specified in Sub-Clause 11.1.

12.3 The Bid Security of the successful Bidder will be adjusted with Performance Security when the Bidder has signed the Agreement and furnished the required Performance Security.

12.4 The Bid Security may be forfeited

- (a) if the Bidder does not accept the correction of the Bid Price, pursuant to Clause 18; or
- (b) in the case of a successful Bidder, if the Bidder fails within the specified time limit to
  - (i) sign the Agreement; or
  - (ii) furnish the required Performance Security within 10 days from the date of Letter of Acceptance.

12.5 No interest shall be paid on any Bid security/Performance Security/ or Guarantee in lieu thereof.

### **13. Format and Signing of Bid**

13.1 The Bidder shall prepare the Bid as specified in Clause 8 in two (02) copies.

13.2 The Rate in the original and one duplicate copy of the Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder. All pages of the Bid where entries or amendments have been made shall be signed by the person or persons signing the Bid.

13.3 The Bid shall contain no alterations or additions or omission or interlocation except those to comply with instructions issued by the Employer, or as necessary to correct errors made by the Bidder, in which case such corrections shall be signed by the person or persons signing the Bid.

#### **14. Salient Points**

The Scope of work proposed in this Bid is for the [Electrical Works](#):

- 14.1 The Bidder should make himself acquainted with the site conditions, level and any other information required for giving a proper quote.
- 14.2 Bidders requiring any technical clarification should seek it from Employer's office before quoting and any ambiguity regarding quantities/specification and drawings will not be entertained after the Bids are finalised.
- 14.3 The Contractor should make his own arrangement of water and power for construction purposes and make all necessary arrangement. The power for commissioning will however be supplied by Employer.

#### **1D. Submission of Bids**

#### **15. Sealing and Marking of Bids**

- 15.1 The Bidders are not expected to include any conditions contrary to Bid provisions. However, if it is necessary to include certain conditions, the same should be submitted with proper reasons, in a separate sealed cover. The covers should be suitably super scribed indicating the contents. All letters, enclosures, and Bill of quantities shall be submitted in duplicate. Bidder should clearly indicate on each copy under their full signature, whether it is the Original or duplicate copy.
- 15.2 The Bidder shall submit the original Bid in one sealed envelop marking as "**FINANCIAL BID for [Electrical Works for Mahindra Technical Park Block B1](#)**" At **Mahindra World City, Jaipur**". The duplicate copy duly marked should be in separate sealed envelope.
- 15.3 The envelopes shall be addressed to the Employer at the following address:  
**Mahindra World City (Jaipur) Limited**  
[411, Neelkanth Tower#1,](#)  
[Bhawani Singh Marg, C-Scheme,](#)  
[Jaipur -302001](#)  
[Phone No: 0141-4007025](#)

#### **16. Deadline for Submission of the Bids**

- 16.1 Bids must be received by the Employer at the address specified above no later than **15:00** hours on **21-06-2010**. In the event of the specified date for the submission of Bids declared a holiday for the Employer, the Bids will be received up to the appointed time on the next working day.
- 16.2 The Employer may extend the deadline for submission of Bids by issuing an amendment indicating the revised deadline.

#### **1E. Bid Opening and Evaluation**

#### **17. Process to Be Confidential**

- 17.1 Information relating to the examination, clarification, evaluation, and comparison of Bids and recommendations for the award of a Contract shall not be disclosed to Bidders or any other persons not officially concerned with such process Any effort by a Bidder to influence the Employer's processing of Bids or award decisions may result in the rejection of his Bid.
- 17.2 The employer may at its absolute discretion , ask the bidders for any clarification including breakdown of rates, subject to this no bidder shall contact the employer relating to the bid from the time of opening to the time of contract awarded.

#### **18. Correction of Errors**

- 18.1 Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:
  - (a) Where there is a discrepancy between the rates in figures and in words, the rate in words will govern; and
  - (b) Where there is a discrepancy between the unit and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern.

- 18.2 The amount stated in the Bid will be adjusted by the Employer in accordance with the above procedure for the correction of errors and, with the concurrence of the Bidder, shall be considered as binding upon the Bidder. If the Bidder does not accept the corrected amount the Bid will be rejected.

**19. Employer's Right to Accept any Variation**

- 19.1 The Employer reserves the right to accept or reject any variation, deviation from the Bid document, or any alternative offer. Variations, deviations and alternative offers and other factors which are in excess of the requirements of the Bidding documents or otherwise result in unsolicited benefits for the Employer shall not be taken into account in Bid evaluation.
- 19.2 Acceptance of tender on behalf of employer (Mahindra World City [Jaipur] Ltd) shall be done by the committee empowered in this behalf or by officer of company duly authorised in this behalf.
- 19.3 It is made clear that the employer is not bound to accept lowest or any tender(bid). The employer reserves the right to reject any or all tenders received for consideration without assigning any reasons and without incurring any liability to affected bidders.

**1F. Award of Contract**

**20. Award Criteria**

- 20.1 The Employer will negotiate with the Bidder whose Bid has been determined to be substantially responsive to the Bidding documents. On completion of negotiations the Employer will award the Contract to the most suitable Bidder.

**21. Employer's Right to Accept any Bid and to Reject any or all Bids**

- 21.1 Notwithstanding Clause 20, the Employer reserves the right to accept or reject any Bid or part of the Bid, and to cancel the Bidding process and reject all Bids, at any time prior to the award of Contract, without thereby incurring any liability to the affected Bidder or Bidders or any obligation to inform the affected Bidder or Bidders of the grounds for the Employer's action.

**22. Notification of Award and Signing of Agreement**

- 22.1 The Bidders whose Bid has been accepted will be notified of the award by the Employer prior to expiration of the Bid validity. This letter (hereinafter and in the Conditions of Contract called the "Letter of Acceptance") will state the sum that the Employer will pay the Contractor in consideration of the execution, completion, and maintenance of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price").
- 22.2 The Agreement will incorporate all Agreements between the Employer and the successful Bidder. Within 10 days of issue of Letter of Acceptance, the successful Bidder will sign the Agreement and deliver it to the Employer.
- 22.3 Upon accepting the Performance Security for the Successful Bidder and signing of the Agreement, the Employer shall issue a 'Notice to Proceed' to the Contractor, in which the date of commencement of the Contract shall be indicated.
- 22.4 Upon furnishing of the Performance Security by the successful Bidder, the Employer will promptly notify the other Bidders that their Bids have been unsuccessful.

**23. Performance Security**

- 23.1 Within 10 days of receipt of the Letter of Acceptance, the successful Bidder shall deliver to the Employer a Performance Security valid till Completion of the Contract in the form of a bank guarantee in Employer's prescribed format for an amount equivalent to 5 % of the Contract price by adjusting Bid Security:
- 23.2 Failure of the successful Bidder to comply with the requirements of Sub-Clause 23.1 shall constitute a breach of Contract, cause for annulment of the award, forfeiture of the Bid security and any such other remedy the Employer may take under the Contract, and the Employer may resort to awarding the Contract to any other Bidder, on sole discretion of Employer.

**24. Corrupt or Fraudulent Practices**

- 24.1 The Employer expects the Bidders, Suppliers, Contractors, and Consultants, observe the highest standard of ethics and integrity during the Bid/ procurement and execution of such Contracts. Therefore, the Employer will reject the Bid/ terminate the contract with no obligations

and blacklist such Bidder / contractor, barring him from participation in future Bidding in the event he found indulged in any malpractice such as gift, bribe, or other inducements to any person with a view to influence the placing or operation of the Contract.

- 24.2 The bidder hereby undertakes that if the information given in bidding documents or otherwise be found to be untrue or false, he will be liable to be disqualified and his security will be forfeited and further it is discovered to be false during the contract period affecting prejudicially the interest of employer, the contract will be terminated and security deposit will be liable to be forfeited.

**SECTION-2**

**LETTER OF ACCEPTANCE AND AGREEMENT FORM**

**Table of Forms:**

- LETTER OF ACCEPTANCE & PROCEED THE WORK
- AGREEMENT FORM

**Letter of Acceptance**  
(letterhead paper of the Employer)

To,  
.....  
.....

Dear Sirs,

This is to notify that your Bid and subsequent negotiations for the execution of **ELECTRICAL WORKS AT MAHINDRA TECHNOLOGY PARK IN BLOCK B1 WITHIN THE IT/ITES SEZ** for the negotiated Contract Price of Rs..... (Rupees.....) is hereby accepted by Mahindra World City (Jaipur) Limited.

You are hereby requested to furnish Performance Security Deposit in the prescribed format of the Bank Guarantee attached herewith for an amount of Rs. .... within ten (10) days, of receipt of this Letter Of Acceptance, valid up to 180 days from the Date Of Intended Completion i.e. .... any extension thereof and sign the Contract, failing which action as per Sub-Clause 21.1 of Instruction to Bidders shall be taken.

Subsequent to furnishing the requisite security, you are hereby instructed to proceed with the execution of the said works as the site will be handed over to you on \_\_ \_\_2010\_ in accordance with the Contract documents. The stipulated date of commencement and stipulated completion dates will be \_\_\_\_\_ and \_\_\_\_\_ respectively.

Thank you

Yours faithfully,

Chief Operating Officer  
**Mahindra World City (Jaipur) Limited**  
411, Neelkanth Tower#1,  
Bhawani Singh Marg, C-Scheme,  
Jaipur -302001  
Phone No: 0141-4007025



**Agreement Form (On stamp paper of Rs 100/-)**

**Agreement**

This Agreement, made the \_\_\_\_\_ - 2010, between **Mahindra World City (Jaipur) Limited** (hereinafter called "the Employer") of the one part and

\_\_\_\_\_ [name and address of Contractor] (hereinafter called "the Contractor" ) of the other part.

Whereas the Employer is desirous that the Contractor execute **ELECTRICAL WORKS AT MAHINDRA TECHNOLOGY PARK IN BLOCK B1 WITHIN THE IT/ITES SEZ** (Bid No. **MWCJL/MTP/B-1/T-04** (hereinafter called "the Works") and the Employer has accepted the Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein, at a Contract price of Rs. \_\_\_\_\_ (Rupees \_\_\_\_\_ )

NOW THIS AGREEMENT WITNESSETH as follows:

1. In this Agreement, words and expression shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to, and they shall be deemed to form and be read and construed as part of this Agreement.
2. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy any defects therein in conformity in all aspects with the provisions of the Contract.
3. The Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying the defects wherein the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.
4. The following documents shall be deemed to form and be read and construed as part of this Agreement, viz.:
  - i) Letter of Acceptance;
  - ii) Contractor's Bid;
  - iii) Contract Data;
  - iv) Conditions of Contract (including Special Conditions of Contract);
  - v) Specifications;
  - vi) Drawings;
  - vii) Bill of Quantities and Rates; and
  - viii) Any other document listed in the Contract Data as forming part of the Contract.

In witness whereof the Parties thereto have caused this Agreement to be executed the day and year first before written.

The Common Seal of

\_\_\_\_\_

was hereunto affixed in the presence of:

Signed, Sealed and Delivered by the said \_\_\_\_\_  
\_\_\_\_\_

in the presence of:

Binding Signature of Employer \_\_\_\_\_

Binding Signature of Contractor \_\_\_\_\_

## **SECTION 3: CONDITIONS OF CONTRACT**

**SECTION 3:**  
**CONDITIONS OF CONTRACT : General Conditions**

**3A. General**

**1. Definitions**

The following terms shall have the meaning hereby assigned to them except where the context otherwise requires:

**ARCHITECT / CONSULTANT:**

Rajinder Kumar Associates  
B-6/17 Shopping Center, Safdarjung Enclave  
New Delhi 110029, India  
T: (91)11-26162930 / 26162931  
F: (91) 11-26186874

**Bill of Quantities or BOQ** means the priced and completed bill of quantities and rates forming part of the Contract.

The **Contract** is the binding between the Employer and the Contractor to execute, complete and maintain the Works. It consists of the documents listed in Clause 2.2 below.

The **Contractor** shall mean the successful Bidder and their heirs and legal representative, assigns and successors on whom the work order or letter of intent has been issued by the Employer.

The **Contractor's Bid** is the completed Bidding document submitted by the Contractor to the Employer.

The **Contract Price** is the price stated in the Letter of Acceptance and thereafter as adjusted in accordance with the provisions of the Contract.

**Date of Commencement** is the date as stated in the Letter to Proceed from the Employer to the Contractor.

**Actual Date of Commencement** is the date from which the Contractor started his work.

**Days** are calendar days; **months** are calendar months.

A **Defect** is any part of the Works not completed in accordance with the Contract.

The **Defects Liability Period** is 24 months calculated from the Actual Completion Date

The Employer is the Party who will employ the Contractor to carry out the Works.

**Engineer in Charge** shall be HEAD (Infrastructure & Development) of the Employer or person nominated by him.

**Equipment** is the Contractor's machinery and vehicles brought temporarily to the Site to construct the Works.

The **Intended Completion Date** is the date on which it is intended that the Contractor shall complete the Works. The Intended Completion Date is specified in the Contract Data. The Intended Completion Date may be revised only by the Engineer in Charge by issuing an extension of time.

The **Actual Completion Date** is the date on which the Engineer in Charges shall issue the Completion Certificate as per Clause 28

The **Site Possession Date** shall be the date within seven days from the date of issue of Notice to proceed with the work.

**Materials** are all supplies, including consumables, used by the Contractor for incorporation in the Works.

**Plant** is any integral part of the Works which is to have a mechanical, electrical, electronic or chemical or biological function.

The **Site** is located at **Mahindra World City (Jaipur) Limited, PO-Mahindra World City, Tehsil: Sanganer, District: Jaipur - 302037**

**Specification** means the Specification of the Works referred in the Contract and any modification or addition made or approved by the Engineer in Charge in writing.

**Temporary Works** are works designed, constructed, installed, and removed by the Contractor which are needed for construction or installation of the Works.

**A Variation** is a written instruction given by the Engineer in Charge which varies the Works.

The **Works** are what the Contract requires the Contractor to construct, install, and turn over to the Employer, as defined in the Contract Data.

**Party and Parties** is the Employer and the Contractor individually and the word Parties shall be construed accordingly

**Relevant Authority** shall mean all Parties which have jurisdiction on the works.

## 2. Interpretation

2.1 In interpreting these Conditions of Contract, singular also means plural, male also means female or neuter, and the other way around. Headings have no significance. Words have their normal meaning under the language of the Contract unless specifically defined. The Engineer in Charge will provide instructions clarifying queries about the Conditions of Contract.

2.2 The documents forming the Contract shall be as follows and their order of priority shall be interpreted in the given order

- (i) Agreement
- (ii) Letter of Acceptance, Notice to proceed with work.
- (iii) Contractor's Bid
- (v) Conditions of Contract including Special Conditions of Contract
- (vi) Bill of Quantities
- (vii) Drawings
- (viii) Specifications
- (ix) any other document listed in the Contract Data as forming part of the Contract.

## 3. Legal Construction

3.1 Subject to provision of clause, the Work Order shall be in all aspect, construed and operated as Contract under Indian Contract Act 1872, and in accordance with Indian Laws enforce for the time being and is subject to the jurisdiction of the court, Jaipur only.

## 4. Language and Law

4.1 The language of the Contract shall be English only and the Law governing the Contract shall be Law of Republic Of India and the law which will govern the conduct of the contract and according to which the contract shall be in force in the state of Rajasthan, it will include the exemption granted under various enactments.

## 5. Communications

5.1 Communications between Parties which are referred to in the conditions are effective only when given in writing. A notice shall be effective only when it is delivered. In the case delivery is refused, it will be deemed to be received if service is effected by postal agency. Any letter, notice and notification under the contract shall be served on the party concerned when received by fax, telex, courier deliver or registered post letter at the following address of contractor or employer.

Address of Contractor :

Address of Employers

Corporate Address

**Mahindra World City (Jaipur) Limited**

411, Neelkanth Tower#1,  
Bhawani Singh Marg, C-Scheme,  
Jaipur -302001

Phone No : 0141-4007025

Fax : 0141-4007030

## 6. Personnel

- 6.1 The Contractor shall submit organisation chart indicating the key personnel to carry out the functions stated in the Schedule or other personnel approved by the Engineer in Charge. The Engineer in Charge will approve any proposed replacement of key personnel only if their qualifications, abilities, and relevant experience are substantially equal to or better than those of the personnel listed in the Schedule.
- 6.2 If the Engineer in Charge or Construction Manager asks the Contractor to remove a person who is a member of the Contractor's staff or his work force the Contractor shall ensure that the person leaves the Site within seven days and has no further connection with the work in the Contract.

## 7. Insurance and obligation under labour and environment law :

- 7.1 Notwithstanding that the Contractor is to indemnify the Employer and submit the policies in original to the Employer, the Contractor shall take All Risks and Workmen's Compensation insurance policies to cover the whole project as envisaged under the Contract and without limiting the obligations, responsibilities, duties and/or liabilities of the Contractor, the Contractor shall effect at his own costs for others insurance policies deemed necessary in the joint names of the Employer and the Contractor to cover the Contract works as given below:  
Insurance requirements are as under:

| Sr. No. | Policy for   | Insurance cover required   |
|---------|--|--|
| 1       | All risk insurance for works                                     | By Contractor  |
| 2       | Loss or damage to Employer's Equipment & material.               | By Contractor  |
| 3       | Other Employers property   | By Contractor  |
| 4       | Personal injury or death insurance:<br>a) Third Party            | By Contractor  |
|         | b) For Contractor's Employee                                     | By Contractor<br>Contractor should ensure such insurance is in force through out the Contract period (Including defect liability period) and necessary proof to be submitted before the commencement of the project and at least a fortnight before the expiry of current insurance.<br>The Contractor should indemnify and include in the policy the Employer |
| 5       | Motor Vehicle Insurance  | Comprehensive insurance policy to be taken by contractor as per statutory requirement.   |
| 6       | Third Party liability insurance (Including the name of Employer) | By Contractor<br>Minimum cover Rs. 10 Lacs.  |

|   |   |                |
|---|---|----------------|
| 7 | Contractor's Equipments (Including liability arising out of usages of such equipment) | By Contractor. |
|---|---|----------------|

## 8 Possession of the Site

- 8.1 The Employer shall give possession of the Site to the Contractor alongwith the **acceptance letter**.

## 9 Settlement of Dispute

- 9.1 If any dispute of any kind whatsoever shall arise between the Employer and the Contractor in connection with or arising out of the Contract, including without prejudice to the generality of foregoing, any question regarding its existence, validity or termination or the execution of the works, whether during the process of works or after completion and whether before or after termination or breach of the Contract, the Parties shall seek to resolve any such dispute or difference by referring the matter to Engineer in Charge. The Engineer in Charge will give its decision within fifteen (15) days of referring the dispute. Either Party if not in Agreement with Engineer in Charge's decision, may within fifteen days of decision by the Engineer in Charge refer to the senior management of the Employer, who will give its decision with thirty (30) days of referring the dispute. Either Party if not in Agreement with senior management decision, may refer to arbitration pursuant to Clause no. 10 of General Conditions of Contract.

## 10 Procedure for Disputes Resolution

- 10.1 The Arbitration shall be conducted in accordance with the arbitration procedure stated below. The procedure for arbitration will be as follows:
- 10.1.1 In case of dispute or difference arising between the Employer and a Contractor relating to any matter arising out of or connected with this Agreement, such disputes or difference shall be settled in accordance with the Arbitration and Conciliation Act, 1996. The arbitral tribunal shall consist of three (03) arbitrators one each to be appointed by the Employer and the Contractor. The third Arbitrator shall be chosen by the two Arbitrators so appointed by the Parties and shall act as Presiding arbitrator. In case of failure of the two arbitrators appointed by the Parties to reach upon a consensus within a period of thirty (30) days from the appointment of the arbitrator appointed subsequently, the Presiding Arbitrator shall be appointed by the Indian Council of Arbitration/President of the Institution of Engineer (India)/The International Centre for Alternative Dispute Resolution (India).
- 10.1.2 If one of the Parties fails to appoint its arbitrator in pursuance of sub-Clause 10.1.1 above within 30 days after receipt of the notice of the appointment of its arbitrator by the other Party, then the Indian Council of Arbitration/President of the Institution of Engineer (India)/The International Centre for Alternative Dispute Resolution (India), shall appoint the arbitrator. A certified copy of the order of the Indian Council of Arbitration /President of the Institution of Engineer in Charges (India)/The International Centre for Alternative Disputes Resolution (India), making such an appointment shall be furnished to each of the Parties.
- 10.1.3 Arbitration proceedings shall be at Jaipur, Rajasthan, India, and the language of the arbitration proceedings and that of all documents and communications between the Parties shall be English.
- 10.1.4 The decision of the majority of arbitrators shall be final and binding upon both Parties. The cost and expenses of Arbitration proceedings will be paid as determined by the arbitral tribunal. However, the expenses incurred by each Party in connection with the preparation, presentation, etc. of its proceedings as also the fees and expenses paid to the arbitrator appointed by such Party or on its behalf shall be borne by each Party itself.
- 10.1.5 Without prejudice to the above provision, Where the amount in dispute is Rs.50 lacs and below, the disputes or differences arising shall be referred to the Sole Arbitrator. To be nominated by employer. The arbitration will take place in accordance with the Indian Arbitration and Conciliation Act 1996. The Arbitration shall be at Jaipur. Arbitration may be commenced prior to or after completion of the contract provided that the obligation of the employer and the

contractor shall not be altered by reason of the arbitration being conducted during the progress of the contract.

- 10.1.6 Performance under the Contract shall continue during the arbitration proceedings and subject to the satisfactory performance of the Contractor, payments due to the Contractor by the Employers shall not be withheld, unless they are the subject matter of the arbitration proceedings.

### **3B. TIME CONTROL**

#### **11 Avoidance Of Delay**

- 11.1 It is paramount that the Contractor shall constantly plan his work so as to most efficiently utilize all or any available part or parts of the Site, any completed part or parts of another Contractor's works which is to be integrated into the Contract Works (if any), the available drawings and all others matters as are available to him, as well as his own resources in order to avoid or reduce any standstill and down time.
- 11.2 In the event that the Contractor cannot commence or proceed with a particular part of the Contract Works as per the programme furnished to the Employer in accordance with Clause 12.1, for any reason whether attributed to the Contractor or not, the Contractor shall be obliged to reschedule and proceed with other parts of the Contract Works at no costs to the Employer to ensure that the completion date of the Contract Works will be met.
- 11.3 Should the Contractor fall behind any program submitted in accordance with Clause 12.2, due to any act, default, neglect or omission of the Contractor and requires over- time, night work or shift work and /or an increase of man power and/or construction plant to regain the scheduled progress (whether or not instructed by the Employer), the cost of such measures shall be borne by the Contractor.
- 11.4 Within the time stated in the Contract Data, the Contractor shall submit to the Engineer in Charge for approval a Construction Program.
- 11.5 The Engineer in Charge's approval of the Program shall not alter the Contractor's obligations. The Contractor may revise the Program and submit it to the Engineer in Charge again at any time. A revised Program is to show the effect of Variations.

#### **12 Extension of the Intended Completion Date**

- 12.1 **Time shall be of the essence with respect to the commencement and completion as per the key Contractual dates as mentioned in the Contract Data as Milestones for the execution and completion of the Contract Works as stated.**
- 12.2 The Contractor acknowledges that a high rate of working is required to achieve the Dates for Completion of the Contract Works and Contractor shall be deemed to have allowed for shift working, sufficient plant, labour, floodlighting and any or all other measures to achieve the same.
- 12.3 The Dates of Completion of the Contract Works may be extended by the Employer subject to compliance by the Contractor with Clause 11 (Avoidance of Delay), by such period which reasonably reflects any delay in completion of the Contract Works which, notwithstanding due diligence and taking of all reasonable steps by the Contractor to avoid or reduce the delay as provided for in Clause 11, is caused:-
- a) By the occurrence of an event of Force Majeure;
  - b) By a delay in handing over of the Site or part of the Site by the Employer after the Dates for Commencement of the Contract Works;
  - c) Any variations requested by the Employer;
  - d) By other Contractors carrying out works not forming part of the works to be carried out under the Contract, and employed by the Employer;
  - e) By an instruction to suspend the Contract Works issued by the Employer pursuant to this Contract provided that such suspension is not due to the default of the Contractor; and which affects the Contract Works PROVIDED that such delays are not due to the Contractor. PROVIDED FURTHER THAT if, while the Contractor is continuing works during the period when liquidated and ascertained damages are being deducted, the Employer gives instruction

or matters occur which would entitle the Contractor to an extension of time then the Employer shall assess and give the Contractor an extension of time and so notify the Contractor accordingly.

- 12.4 It shall be a condition precedent that the Contractor shall notify the Employer in writing of any factors and the relevant Contract provision (if any) which entitles Contractor to an extension of time together with a statement of :
- a.) the reason why the delay in completion of the Contract Works is likely to result or has resulted;
  - b.) an estimate of the period by which the Contract Works are likely to be or had been delayed; and
  - c.) details of steps that the Contractor proposes to take to avoid or reduce the delay; within seven (07) days of the commencement or occurrence of any such factor or such extension of this seven (07) days period as the Employer may allow.
- 12.5 The Contractor shall notify The Employer within fourteen (14) days of the cessation of the factors notified to The Employer under Sub-Clause 12.4; to enable any provisions, that the Contractor may require to the proposed extended Date for Completion to be made as quickly as possible and such other particulars as shall be reasonably necessary to enable the Employer to properly consider the revision.
- 12.6 Without prejudice to any other grounds which do not entitle the Contractor to an extension of time, the Contractor shall not be entitled to extensions of time for delays resulting from weather conditions, or discrepancy in the Contract Documents, whether such events affect the Contract Works or not.
- 12.7 Notwithstanding the foregoing, the Employer shall not be obliged to take into account any circumstances that are not notified to The Employer in accordance with the periods referred to in Sub-Clause 12.3 and 12.4.
- 12.8 The Employer shall as soon as is reasonably practical after receipt of the Contractor's notification furnished in accordance with the sub-Clause 11.3 determine and notify the Contractor in writing of any extension of time to which the Employer considers the Contractor is entitled under Sub-Clause 12.4.
- 12.9 The Contractor had agreed NOT TO CLAIM for all costs, loss and /or expense suffered or incurred by reason of any extension of time granted by the Employer in accordance to Sub-Clause 12.4 herein.

### **13 Force Majeure**

- 13.1 Force Majeure shall mean any event beyond the reasonable control of the Employer or of the Contractor, as the case may be, and which is unavoidable notwithstanding the reasonable care of the Party affected, and shall include the following:
- 13.1.1 War, hostilities or warlike operations (whether a state of war be declared or not), invasion, act of foreign enemy and civil war, rebellion, revolution, insurrection, mutiny, usurpation of civil or military government, riot, civil commotion and terrorist acts, confiscation, nationalization, mobilization, commandeering or requisition by or under the order of any government authority or act of any local state or national government authority
  - 13.1.2 Strike (other than strike by employees/staff/labour of Contractor or Sub-Contractor), sabotage, embargo, import restriction, epidemics, quarantine and plague.
  - 13.1.3 Earthquake, volcanic activity, fire, flood or inundation, tidal wave, typhoon or cyclone, hurricane, storm, lightning, or nuclear or other natural disaster

### **14 Delays Ordered by the Engineer in Charge**

- 14.1 The Engineer in Charge may instruct the Contractor to delay the start or progress of any activity within the Works.



### 3C. QUALITY CONTROL

#### 15 Identifying Defects

- 15.1 The Engineer in Charge / Architect shall check the Contractor's work and notify the Contractor of any Defects that are found. Such checking shall not affect the Contractor's responsibilities. The Engineer in Charge may instruct the Contractor to search for a Defect and to uncover and test any work that the Engineer in Charge considers may have a Defect.
- 15.2 The Contractor shall permit the Employer's technical auditor to check the Contractor's work and notify the Engineer in Charge and Contractor of any defects that are found..

#### 16 Correction of Defects

- 16.1 The Engineer in Charge shall give notice to the Contractor of any Defects before the end of the Defects Liability Period, which begins at Completion and is defined in the Contract Data. Once the defects are notified to the contractor the Defects Liability Period shall extend automatically for as long as Defects remain to be corrected.
- 16.2 Every time notice of a Defect is given, the Contractor shall correct the notified Defect within the length of time specified by the Engineer in Charge's notice.

#### 17 Uncorrected Defects

- 17.1 If the Contractor has not corrected a Defect within the time specified in the Engineer in Charge's notice, the Engineer in Charge will have the right to engage third party to the defects rectified at risk & cost of the contractor along with overheads. Such amount will be recovered from the Contractor.

### 3D. COST CONTROL

#### 18 Bill of Quantities

- 18.1 The Bill of Quantities shall contain items for the construction, installation, testing, and commissioning work to be done by the Contractor.
- 18.2 The Bill of Quantity is used to calculate the Contract Price. The Contractor Shall be paid for the actual quantities executed & inspected & duly approved and accepted by the Engineer in Charge and the Contract Price shall be adjusted based on approved actual quantities of the Contract works as described in Bill Of Quantity for each item.
- 18.3 The rates set out in the Bill of Quantity (BOQ) are fixed, firm and shall be inclusive of all costs and expenses as under. No escalation in rate is permitted during the tenure of contract and shall not be subject to variation on any account what so ever.
- 18.3.1 Preliminaries works / costs such as site measurement, supervision, setting out, insurances, water, electricity/power, security/ watch & ward protection of public, working/liaison with consultant engineers, Government and other Relevant Authorities etc.
- 18.3.2 All associated temporary and false works.
- 18.3.3 All tests, sampling, inspection, reports, opening up of works and related works
- 18.3.4 Material, labour, plant, equipment, machinery, tools and all related costs.
- 18.3.5 Shifts works, night works, overtime works, incentives, bonus, related labour employment costs etc.
- 18.3.6 Working with site constraints and conditions.
- 18.3.7 Liaison, including dealing and compliances with requirements, restrictions, etc. of all Relevant Authorities.
- 18.3.8 Overhead cost, profits, etc.
- 18.3.9 Protection and maintaining all Contract works and any thing affected by the Contract works until completion and handing over.
- 18.3.10 Coordination with Development Commissioner Office located within the SEZ for verification etc. for availing benefits of exemptions for works within SEZ
- 18.3.11 Any other costs and / or expenses deemed necessary for the due execution and completion of the works.

- 18.4 This Project is an SEZ. As per Special Economic Zone Act 2005, all the taxes, duties, royalties, levies (except income tax on the profit of the Contractor) are exempted; hence, the quoted rates shall be exclusive of all taxes, duties, royalties, levies, service tax etc. Any tax component, considered shall be indicated separately and shall be admissible only if applicable, proof of payment of such taxes will be required for acceptance of claim in there respect. The Contractor shall put his best efforts to forward the exemptions and benefits granted by the Government he gets from time to time. Employer shall deduct Tax Deduction at Source (TDS) for such taxes at the rates fixed and revised by Relevant Authorities from each payment/bill due to Contractor. Employer shall issue TDS certificate in favour of Contractor for the TDS so recovered. In case employer is not able to avail any tax benefit due to negligence or non compliance of SEZ rule and regulation by contractor then the same will be recovered from contractor.
- 18.4.1 The rates as contained in the BOQ shall include all PF, ESI etc. and all other payment as per the statutory requirements. The Contractor shall produce proof of compliance of such requirement to the Employer and upon submission of such proof only, the Employer shall release periodic payments to the Contractor. In the event that the Contractor fail to produce such proof / paying such payment, Employer shall pay such payment direct (but is not obliged) to the Relevant Authorities and shall recover the same from whatsoever monies due or to become due to the Contractor along with 15% overhead charges.

## **19 Tax**

- 19.1 The rates quoted by the Contractor shall be deemed to be exclusive of taxes which are exempted under **SEZ Act 2005** and separate disclosure of all taxes which are not exempted alongwith basic rate in the bid. In case, any tax is levied inspite of Employer giving all requisite documents to the Contractor and Contractor's best efforts, same shall be paid extra to the Contractor upon Contractor submitting proof of such payments.
- 19.2 INCOME TAX: Deduction of income tax at source will be made by the Employer at the applicable rates which is obligatory as per the provisions of Income Tax Act. It shall be the responsibility of Contractor to arrange and produce a "No Deduction Certificate" from the Income Tax Authorities, if the payment of their invoices are to be made without deduction of Income Tax at source.
- 19.3 If any tax exemptions, concessions, reductions, allowances or privileges may be available to the Employer, the Contractor shall use its best endeavours to enable the Employer to benefit from any such tax savings to the maximum allowable extent.
- 19.4 BASE DATE : Base date for reimbursement of any new enactment in taxes, duties and levies by central or state govt. or any other statutory authorities as applicable to the Contract, shall be seven (7) days prior to the date on which the price bid or revised price bids were stipulated to be received.

## **20 Retention**

- 20.1 Retention Money at the rate of 5 % of the value of work done for each running bill will be deducted until the actual completion of work, up to a maximum of 5% of Contract Price.
- 20.2 Retention money shall be refunded within 30 days after discharge of defect liability period of 12 months.
- 20.3 No retention sum shall be deducted from interim progress payment subject to the submission of an unconditional bank guarantee from a scheduled bank in the Employer's format equivalent to 5% of the Contract Price which would valid up to the Completion of Defect Liability period with 180 days extra claim period.

## **21 Liquidated Damages**

- 21.1 If the contractor fails to complete the works by the date of completion as stated in the Tender or within extended time as per agreed project baseline schedule, the Owner shall withhold a sum calculated at the rate of 1 % of the total contract value per week (or part thereof) of delay as liquidated damages for the period during which the said work shall so remain or have remained in-complete. The owner may deduct such damages from any money's otherwise

payable to the contractor under this contract, up to a maximum of 10 % of the total contract value after which Owner will have right to terminate the contract and claim for compensation from contractor for the financial losses on account of delay of project. The contractor admits that the loss shall always be caused if there is failure on its part.

21.2 The delay shall be assessed based on average delay over all due milestones. Reconciliation statement for Project Tracking giving detail of delay, duly verified by Engineer-in-Charge / project manager shall be submitted alongwith monthly running bills.

21.3 The Liquidated Damages imposed for not achieving intermediate milestone shall be subjected to refund/adjustment in case of Contractor achieve the final Milestone with the period as stipulated in the Contract.

**21.4 Time shall be of the essence with respect to the commencement and completion as per the key Contractual dates for the execution and completion of the Contract Works as stated in Contract Data**, and payment or deduction of liquidated damages shall not relieve the Contractor from his obligation to complete the work as per agreed construction program and milestones or from any other of the Contractor's obligations and liabilities under the Contract.

## **22 Performance Security**

The Performance Security in the form of unconditional bank guarantee shall be provided to the Employer no later than the date specified in the Letter of Acceptance and shall be issued in an amount equal to 5% of Contract Price from a Nationalised or Scheduled bank in the Employer's prescribed format the Performance Security shall be valid until a date 180 days from the date of expiry of Actual Date of Completion.

## **23 Defect Liability and Cost of Repairs**

Loss or damage to the Works or Materials to be incorporated in the Works between the Actual Date of Completion and the end of the Defects Liability Periods shall be remedied by the Contractor at the Contractor's cost if the loss or damage arises from the Contractor's acts or omissions. The Contractor shall be responsible to make good at his own expense any defect which may develop within the period mentioned as Defect Liability Period in the Contract Data. The Employer shall give the Contractor a notice in writing about the defects and the Contractor shall repair the defect within maximum of seven (07) days or fourteen (14) days depending upon whether the defect is minor or major. If the Contractor fails to repair/remove the defect, the Employer may get the work execute from others at Contractor's risk & cost . The Employer shall have the right to appropriate all or part of the Retention Money towards the expense in repairing the defects.

### **3E. FINISHING THE CONTRACT**

## **24 Completion**

24.1 After completion of the work, the Contractor will serve a written notice to the Engineer in Charge to this effect. The Engineer in Charge upon receipt of this notice shall conduct a complete joint survey of the work within seven (07) days and prepare a defects list jointly. The defects pointed out by the Engineer in Charge or his nominee would be rectified by the Contractor within fourteen (14) days and thereafter acceptance report be signed jointly by the Contractor, Engineer in Charge and the Employer. And a '**Completion Certificate**' shall be issued to Contractor by Employer.

## **25 Taking Over**

25.1 The Employer shall take over the Site and the Works within seven days of the Engineer in Charge issuing a certificate of Completion.

## **26 As Built Drawings**

26.1 The Contractor shall supply "As Built" Drawings 3 sets (hard copy) and soft copies in CAD format in CD alongwith Operation & Maintenance Manuals, SOPs and Gurantees by the dates stated in the Contract Data.

- 26.2 Contractor's rates include the As-built drawings and associated manuals. If the Contractor does not supply the As Built drawings by the dates stated in the Contract Data, or they do not receive the Engineer in Charge's approval, the Engineer in Charge shall withhold the amount stated in the Contract Data from payments due to the Contractor.

## **27 Termination Of Contract**

- 27.1 Due to any default by the Contractor, the Employer shall be entitled to terminate the Contractor's employment under the Contract by giving one (01) week advanced notice in writing by stating the reason. The date after seven (07) days from the date of issuance of the Termination Notice shall hence be defined as "Date of Termination". The Contractor will be paid for all works duly and properly completed up to the Date of Termination but shall not be entitled to anticipated profit or any consequential or indirect loss or damage and shall hold harmless and indemnify the Employer against Contractor's Contractors/suppliers or third parties arising from termination under this Clause.
- 27.2 The Contractor had agreed in the event of delay in progress or non-achievement of the Milestone Dates, The Employer shall reserve the sole discretion right in deploying its own plant and machinery or engaging third party to speed up the Contractor's works and the Contractor's Contract shall be terminated with written notice at any point of time without any compensation or claims to be paid to the Contractor. All additional / extra cost incurred by The Employer shall be charged to the Contractor due to such event.

## **28 Payment upon Termination**

- 28.1 Full payment to Contractor's workers, Contractors, suppliers and third parties engaged by the Contractor for any portion of the Contract works shall be paid in full by the Contractor and thereafter must be removed from site on or before the Date of Termination. If the Contractor failed to make full payment to these workers, Sub Contractors, suppliers and third parties and/or remove them from site on the Date of Termination, then the Employer will carry out such duties on behalf of the Contractor. The Employer will recover all cost incurred due to the performing of such duties on behalf of the Contractor by making deduction from amount/s due to the Contractor or by any other process.

## **29 Breach Of Contract**

The following events shall be fundamental breach of Contract:

- 29.1 The Contractor has contravened any Clause / sub-Clause of the Conditions of Contract.
- 29.2 The Contractor does not adhere to the agreed construction program and agreed environmental management plan and also fails to take satisfactory remedial action as per Agreements.

The Contractor shall carry out all instruction of the Engineer in Charge which comply with the applicable laws where the Site is located if the Contractor fails to carry out the instructions of Engineer in Charge within a reasonable time determined by the Engineer in Charge in accordance with General Condition of Contract Clause 11.

### 3F Special Conditions of Contract

#### 1. General

The Contractor is advised to note that the following Special Conditions are part of the Contract and he will not have any right to claim at any time for delays or for expenditure incurred by him in fulfilling the following special conditions.

#### 2. Scope of Works

2.1 The Contract Works shall comprise of but not be limited to:-

2.1.1 The scope of work is for the construction of Mahindra Technology Park [Electrical Works](#) as defined in BOQ

2.1.2 The work to be carried out under the contract shall include all the items given in the Bill of Quantities and such other item as may be instructed by the Employer time to time and shall expect as otherwise specified in these conditions include all labour, materials, tools plant equipment and transport, hoisting, etc. which may be required in preparation and completion of the works.

2.1.3 All the above shall be as per issued relevant drawings, Specifications of IS and other relevant National and International Standard Specifications and good engineering practices, safety measures as required all as per agreed construction methodology in consultation and coordination with and under the inspection of the Employer's personnel / design consultants.

2.2 All the Contract Works shall be executed in full compliance with the Specifications of the Contract and all requirements and always to the satisfaction of the Employer.

2.3 The Contractor acknowledge that he understands the Special Economic Zone (SEZ) rules and regulation as per **SEZ Act 2005** and he further acknowledge that he will abide all the rules and regulations of SEZ Act, laws related to custom duties, notified area and all other related things affecting the Contract works directly or indirectly and shall keep the employer harmless from any violation of the provisions of SEZ Act 2005.

2.4 The Contractor shall resolve local constraints and problems, liaise, seek, and obtain any consent, permit, license, approval, etc. from all Relevant Authorities including paying all fees, charges, levies, etc all at his own cost.

2.5 Clearing all debris and disposing to location approved by Municipal authorities during progress of Contract works and before and after the dates of Completion.

2.6 All temporary works, haul/access roads that are necessary for the proper and due completion of the Contract Works.

#### 3. Milestone dates:

Milestone date shall be as negotiated and agreed at the time of award of contract.

#### 4. Schedule of Works

The Contractor shall submit a work schedule including the commencement date, to reflect the ground realities and indicating the milestones.

#### 5. Measurements

The payable quantity (ies) against the executed work shall be determined on the basis of quantity certified, wherein certification conducted jointly by the Contractor and the Engineer-in-Charge. Work accepted, approved and certified by the Contract Dept. / PM, will only be paid for as specified in Bills of Quantities and payments shall be at the same rates.

#### 6. Running Account Bills

The Contractor has to prepare and submit the Running Account Bills in triplicate once in a month along with details measurements in serially machine numbered register, abstract sheets, deviation statement and any specific instructions which may be given in this regard by the Engineer In-Charge shall also be attached to by the contractor

**Running Bill Certification:**

- 6.1 The Contractor shall prepare and submit running bill to the Engineer In-Charge once a month throughout the construction period considering that No payment shall be made for works estimated to cost less than rupees 1 (One) Lac.
- 6.2 Within 5 days of the receipt of Contractor's running bill for payment, the Engineer In-Charge / Employer's representative shall check and point out corrections, if any to be made in the bill. The Contractor shall correct the bill and resubmit the same to the Engineer In-charge.
- 6.3 Within 10 days of receipt of the corrected bill from the Contractor, the Engineer In-charge/ Employer representative shall check the bill and forward the same to Manager Contract for verification for certification, who will certify the amount due to Contractor and recommend payment of the amount by the accounts department to the Contractor
- 6.4 Within 6 days of receipt of the bill from Engineer In-Charge, account dept will release the payment along with certificate showing details pertaining to works done, total recoveries and statutory deductions.
- 6.5 Any running / interim Certificate of Payment given by the Infra / Account Dept. relating to work done or the materials delivered shall be adhoc in nature and may be modified or corrected by any subsequent interim Certificate or the Final Certificate of payment.
- 6.6 An interim payment not exceeding 75% of the provisional bill amount may be certified by the Engineer-in-charge. Balance payment shall be made once Engineer-in-charge certifies quantity and item rate. Interim payment can be made within 7 days of engineer-in-charge certificate.

**Final Bill payment**

- 6.7 The Final Bill shall be submitted by the Contractor within two month of the date of Completion of the Work or if the work is completed earlier, within one month of such completion. The contractor shall give to the employer a detailed account of the total amount which he consider payable to him under the contract..
- 6.8 The final bill will be checked in terms actual measurement at site, quality of works and material supplied / used, approved extra items, by the Engineer In-Charge within **30** days from the date of the bill is received by the Engineer In-Charge, provided the contractor has complied with all formalities as described in various clauses of the Contract and thereafter the same would be forwarded to the next concerned dept.
- 6.9 The payment of the final bill shall be made to the Contractor by the Employer within 15 days from the receipt of the Engineer in-charge approval certificate for payment.
- 6.9.1 No further claim shall be made by the Contractor in respect thereof even after submission of the final bill and the same shall be deemed to have been fully waived and absolutely extinguished.
- 6.10 The final billing shall be accompanied by all substantiating documents as required for running bills with the addition of the following items that shall be supplied by the contractor:
  - 6.10.1 All written guarantees / warranties and spares required by the Contract documents.
  - 6.10.2 Operation and Maintenance manuals and instructions for equipment and apparatus.
  - 6.10.3 Re producible and blue prints of all requisite As Built drawings along with the soft copy thereof on latest version of AutoCad software.

**Certificate for payment format : (may be finalized later with the Engineer In-Charge)**

|          |   |                  |
|----------|---|------------------|
|          | Value of Work done for Interim Certificate<br>As per Contract   | (1)              |
| Less (-) | <b>Deductions :</b>   |                  |
|          | Retention 5% on '1' subject to a maximum of 5% on<br>Contract Value   | (a)              |
|          | Previous Payments made<br>(Payment made till date including Advance/ Adhoc<br>payments made upto the period of this bill) | (b)              |
|          | <b>Deductions (a+b)</b>   | <b>(c)</b>       |
|          | Deduction on Govt. / Statutory liabilities such as TDS<br>etc.  | (d)              |
|          | <b>Total Deductions (c+d)</b>   | <b>( 2 )</b>     |
|          | Net Value of This Bills<br>(Amount payable)   | <b>( 1 - 2 )</b> |

**7. Subcontract or Subletting of Works****7.1 Sub-Letting:**

No part of the Contract shall be sublet without the written permission of the Employer nor shall transfers be made by the 'Power of Attorney' authorizing others to carryout the work or receive payment on behalf of the Contractor.

**7.2 Sub-Contract:**

7.2.1 The Contractor is not permitted to subcontract any part of his works in this Contract without prior approval in writing from the Employer. It may be made clear that under ordinary circumstances, no subcontract shall be permitted.

7.2.2 In any case, whether any part of the works is subcontracted or not; the principal liabilities of the works shall lie with the Contractor.

**8. Contract Drawings**

8.1 The Engineer in Charge shall give Two sets of Contract Drawings, approved for construction, to the Contractor within 2 weeks from the date of submission.

8.2 The Contractor shall ensure that a complete up to-date list of drawing is maintained at site. All Contract Drawings shall be properly filed and indexed for ready reference.

8.3 The Contractor shall ensure that only the valid up to-date Contract Drawings are used for preparation of Working Drawings.

8.4 The privilege of the authorship and Employership of drawing and designs of the building remains with Engineer in Charge. Drawings and design prepared by their Consultants shall be used only for the purpose specified in the Contract and all drawings issued shall be returned to Engineer in Charge after completion of works.

8.5 The Contractor shall submit shop and fabrication drawings as required by the Engineer- in-Charge.

8.6 Contractor is not authorize to disclose drawings or any part of drawing and photographs of site without written approval from the Employer.

**9 Additional Work**

Any additional works, instructed during the Contract Period and within the Contract Amount, will be paid as per Bill of Quantity rates and it shall not be considered as a cause for the Contractor to claim for delay, incurred overhead, mobilization etc.

**10 Protection of the Works during Contract Period**

It is clearly understood that any damage occurring to the Works (completed or under execution) is the Contractors responsibility and no claims will be entertained by the Employer since the matter shall be covered by the relevant Insurances.

**11 Discrepancies in alignment**

Discrepancies in alignment and levels etc. noticed during construction and/or on completion shall be rectified (including affected works executed by other Contractors) by the Contractor at his own cost and risk, Engineer in Charge's approval does not relieve the Contractor of his responsibilities.

**12 Temporary Power and Water Supply**

All costs, both for power supply and temporary installations and Power and Water required for construction and labour shall be borne by the Contractor.

**13 Site Offices of the Contractor**

The successful Bidder is to provide and maintain a site office at a location approved by the Engineer in Charge, within 15 days from the date of issue of Notice to Proceed.

**14 Safety on Site**

The Contractor shall ensure full compliance of Safety Code. All measures to ensure safety of workers and plant at site shall be taken by the Contractor. The cost of all safety equipments and the cost of full compliance of provisions given in safety code at site would be deemed to be included in various Items of the Bill of Quantities and Rates.

**15 As Built Drawings**

The Contractor shall prepare As Built Drawings both in hard copy and in digital format. The drawings shall be prepared for any given section of the work as soon as the work for that particular section is completed. Preparation of As Built Drawings shall keep pace with the work and shall not be left over towards the end of the project. Three (03) hard copies and one soft copy of all drawings shall be submitted.

No separate payment will be made for the preparation of As-Built Drawings; Cost of preparation of As Built Drawing is deemed to be included in all other priced bill items.

**16 Labour**

The Contractor shall, unless otherwise provided in the Contract, make his own arrangements for the engagement of all staff and labour, local or other, and for their payment, housing, feeding and transport.

The Contractor shall, if required by the Engineer in Charge, deliver to the Engineer in Charge a return in detail, in such form and at such intervals as the Engineer in Charge may prescribe, showing the staff and the numbers of the several classes of labour from time to time employed by the Contractor on the Site and such other information as the Engineer in Charge may require.

The contractor shall make his/their arrangements for the engagement of all labour, skilled and unskilled. No Contractor shall employ any person who is under the age of 18 years.

The Contractor shall, in respect of labour employed by him, comply with or cause to be complied with the provision of various labour laws and rules as applicable to them from time to time in regard to all matters provided therein and shall indemnify the Employer in respect of all claims that may be made against the Employer for non-compliance thereof by the Contractor.



## **17 Contractor's Other Obligations**

- 17.1 All safety training and skill development of Contractor's workers and operators shall be carried out by the Contractor and all costs related to such training shall be borne by the Contractor as required under statutory law.
- 17.2 The Contractor shall obtain all necessary approvals/ permission from the Relevant Authorities including where necessary securing the presence of the Relevant Authorities or their representative to inspect and supervise the operations in connection with the Contract Works. The Contractor shall bear all costs, fees, charges etc so imposed for the attendance of the Relevant Authorities or their representatives.
- 17.3 The Contractor shall be responsible for any damage caused by any work carried out by Contractor to the existing services and utilities whether shown or not shown in the drawings from whatsoever cause arising thereof and shall make good to its original condition at his own costs and expense to the satisfaction of the Employer.
- 17.4 Upon completion of the Contract Works the Contractor shall remove and clear all debris, waste and/or any excess materials, construction plant, and temporary works from the site and shall do all things to clear up the site which shall include any cleaning where instructed by the Employer to other areas affected by the Contract Works. During the Contract period the Contractor shall ensure that the site is kept clean and in proper order and free from rubbish, waste or debris and Contractor shall do all things necessary to prevent any damage to or pollution or the creation of any health or environmental hazard at or around or adjacent to the Site.
- 17.5 The Contractor shall defend (if requested to), save harmless and indemnify the Employer against all claims, demands, interest, penalties, proceedings, damages, loss, costs, charges and expenses arising out of or in connection with any failure, neglect or omission, by the Contractor to perform his obligations under the Contract or any damage to property (including the Contract Works) or injury to person (whether resulting in death or not) caused or contributed by the Contractor and/or his servants or agents or independent Contractors appointed by the Employer to carry out works on behalf of Contractor (whether or not such claims, losses and/or damages have been insured by the Employer). In addition, this indemnity shall include all legal costs incurred by the Employer as a consequence of such claim, demand or proceeding being made.
- 17.6 The Contractor shall, subject to this Contract and other obligations imposed by law, execute the Contract Works and provide all labour, materials, construction equipment and all things necessary and incidental for the Contract Works to the satisfaction of the Employer and / or the Relevant Authorities.
- 17.7 The contractor shall abide by labour laws. It will get itself registered under the provision of contract labours (Registration and abolition) Act'1970 and it will obtain a separate PF code number for payment of PF contribution to Fund. The contractor shall take all necessary precaution against the pollution of drinking water, underground water and for the protection of the environment, tree and vegetation etc.
- 17.8 The Contractor shall bear all payments and other related costs on his own in connection with the execution and completion of additional, rectification, etc, works due to or caused by any act, default, neglect or omission by the Contractor. This shall also include the employment of consulting Engineer in Charges, professional experts and such other personnel as may be necessary for such works.
- 17.9 The Contractor acknowledges that he will not have any objection in re-structuring the Contract with respect to material and labour in order to realize the exemptions and benefits granted by the Government whenever required, and he will pass on such benefits to the Employer.
- 17.10 The Contractor shall indemnify the Employer against all claims in respect of patent rights and any or all other intellectual property rights, and shall defend all actions arising from such claims, and shall himself pay all royalties, license fees, damages, cost of charges of all and every sort that may be legally incurred in respect thereof.

- 17.11 The Contractor shall never disclose, share, publish, and/or make copies of any drawing, specification, methodology or any other information in any manner given to the Contractor during the Contract or after the completion of the Contract without the written permission of Employer.

### **3G. SAFETY MANUAL**

#### **CHAPTER 01**

#### **1.0. THE MAIN CONTRACTOR.**

##### **1.1. RELATIONSHIP WITH THE CLIENT.**

A close relationship and continuous interaction must be maintained with the client by the Construction Manager of the main or managing contractor. The client does have specific safety and health requirements to be observed and co-operation with his contractor, throughout the contract is essential. The prospective main contractors are given information on which to base their tenders and at the Tender Stage; the prospective contractors are expected to understand fully the Scope and Design Intent of these provisions.

##### **1.2. Selection of sub contractors.**

Management contractors should select sub or works contractors, using the same criteria of practical safety policy. Again, it must be ensured that the terms of contracts include adequate provision for safe working and for specified safety and health items.

##### **1.3. Planning.**

**Detailed planning should take the following matters into account**

- Know hazardous operations, e.g., use of cranes and site transport, steel erection scaffolding, etc.
- Requirement for plant and equipment to ensure safe working, or ease of handling.
- The sequence of work and its phasing between contractors, to minimise the possibility of one contractor placing another contractor's men at risk. Where appropriate, the segregation of contractors should be considered.
- The need to provide information, instruction and appropriate training, both on general site safety and on hazards specific in the site. The latter could range from restricted zones, permit-to-work systems and lifting operation, to the wearing of safety helmets.
- The need for fire precautions and emergency procedures.
- The need for environmental monitoring and health surveillance.
- Site security and foreseeable risks to the public, including the need for directional and warning signs
- Safe access across the site for persons, vehicles and plant. Thought should be given to arrangements for keeping the site tidy, accommodation for site staff, welfare, first aid and other facilities
- The provision of safe places of work at different stages of the job, including the provision of scaffolding for a number of sub or works contractors.

##### **1.4. Control.**

Sub and works contractors should be briefed about the safety policy and site rules of the main contractor at an initial safety meeting. Decisions on all other matters affecting safety and health should be laid down so that the responsibilities of all parties are made clear before contractors start work. Such matters should include.

- Appropriate precautions and work methods for identified hazards or hazardous work.
- Necessary plant and equipment and arrangements for its provision, maintenance use and inspection.
- The question of trade union or other workforce safety representation and the need for a joint safety committee.
- Arrangements for some form of induction training for new-starters on site.
- Arrangements for any specialist training.
- Arrangements for promulgating safety and health information, e.g. on site notice boards.

It is important that such safety and health arrangements are reviewed at the first project meeting, where the site management can set the tone for the conduct of work by resolving, at an early stage, any difficulties which may arise.

**1.5 Co-ordination.**

The Construction Manager, appointed by the main contractor, must be totally responsible for compliance with health and safety code. He must appoint a Chief Safety Officer and form a Safety Committee along with operatives from sub vendors. This Safety Committee will be Chaired by the Client's representative and sit twice a week and report to the Project Controller. The Construction Manager must take suitable arrangements to ensure the effective co-ordination of the work of all contractors on site. He should ensure that he is kept informed on a day to day basis, of progress and problems which arise. Clear lines of communication should be set up between each contractor and the Safety Officer of the Main Contractor. Operatives must also know whom to contact over safety and health matters requiring action or a decision. Such effective co-ordination will be enhanced by ensuring that 'safety and health' figures prominently on the agenda of regular project meetings. Safety Committee's weekly report must be submitted to the Project Controller in every Project Meeting.

**1.6 Monitoring.**

Arrangements must be made for safety and health monitoring of the site on a regular basis. This will include, not only ensuring the safety of such items as scaffolding excavations and plant but also environmental matter such as hazardous dust fume noise etc. In all cases, the Construction Manager should ensure that daily site inspections are carried out, by Safety Officer, more in depth inspections being done periodically by visiting safety advisers. It may be necessary for arrangements to be made for specialist occupational health and hygiene advice. The Check List for daily inspection is given in the following Chapters.

**1.7 Records.**

The main contractor should ensure that all statutory notifications, examinations and inspections are carried out. Except for plant used exclusively by individual contractors, all records should be kept by the Construction Manager.

**1.8 Standards.**

The following standards shall be followed, unless more onerous provisions have been specified in the Safety Provisions given in this Code.

IS: 3696 (Part I) - 1966 Safety code for scaffolds and ladders: Part I Scaffolds

IS: 3696 (Part II) - 1966 Safety code for scaffolds and ladders: Part II Ladders

IS: 4082-1977- Recommendations on stacking and storage of construction materials at site (first revision)

**1.9 Non Compliance of Safety and Health Provisions:**

The Compliance of the Safety and Health provisions are of utmost important to the Client. The prospective contractors must note that the client will take a serious view of any non compliance report of Safety Committee. Based on Safety Committee's report, the Client has a right to order stoppage of work till rectification is carried out to the satisfaction of the Safety Committee and all stoppages on this account will be at the entire risk, costs and consequences of the Contractor.

**CHAPTER 2.0**

**2.0 CONTRACTOR'S SAFETY INSPECTION CHECKS LIST.**

Contractor \_\_\_\_\_ Contract No. \_\_\_\_\_  
 Project \_\_\_\_\_  
 Location \_\_\_\_\_  
 Type of Work \_\_\_\_\_  
 Date \_\_\_\_\_ Checked By \_\_\_\_\_

| Sr   | ITEM  | STATUS | (Inspector)<br>REMARKS |
|------|---|--------|------------------------|
| 3.0  | <b>ACCIDENT PREVENTION ORGANISATION.</b>              |        |                        |
| 3.1  | Trained First Aid Person                              |        |                        |
| 3.2  | First Aid Kit.  |        |                        |
| 3.3  | Safety Material Posted.                               |        |                        |
| 3.4  | Emergency Phone # Posted.                             |        |                        |
| 4.0  | <b>HOUSEKEEPING &amp; SANITATION</b>                  |        |                        |
| 4.1  | General neatness of working areas.                    |        |                        |
| 4.2  | Regular disposal of waste and trash.                  |        |                        |
| 4.3  | Passageways and walkways clear.                       |        |                        |
| 4.4  | Adequate lighting                                     |        |                        |
| 4.5  | Projecting nails removed.                             |        |                        |
| 4.6  | Oil and grease removed.                               |        |                        |
| 4.7  | Waste containers provided and used.                   |        |                        |
| 4.8  | Sanitary facilities adequate and clean.               |        |                        |
| 4.9  | Drinking water tested and approved.                   |        |                        |
| 4.10 | Adequate supply of water.                             |        |                        |
| 4.11 | Drinking cups, Clean Dispensers.                      |        |                        |
| 5.0  | <b>FIRE PREVENTION.</b>                               |        |                        |
| 5.1  | Fire extinguishers identified, checked, lighted.      |        |                        |
| 5.2  | Hydrants clear access to public thoroughfare open.    |        |                        |
| 5.3  | Good housekeeping.                                    |        |                        |
| 5.4  | NO SMOKING posted and enforced where needed.          |        |                        |
| 6.0  | <b>PERSONAL PROTECTION.</b>                           |        |                        |
| 6.1  | Hard-hats   |        |                        |
| 6.2  | Noise Level Exposure.                                 |        |                        |
| 6.3  | Eye Protection.                                       |        |                        |
| 6.4  | Safety Lines & Belts.                                 |        |                        |
| 6.5  | Life Jackets.   |        |                        |
| 7.0  | <b>ELECTRICAL INSTALLATION.</b>                       |        |                        |
| 7.1  | Adequate well insulated wiring.                       |        |                        |
| 7.2  | Fuses & GFI provided.                                 |        |                        |
| 7.3  | Fire hazards checked.                                 |        |                        |
| 7.4  | Electrical dangers posted.                            |        |                        |
| 8.0  | <b>HAND &amp; POWER TOOLS</b>                         |        |                        |
| 8.1  | Tools and cords in good condition.                    |        |                        |
| 8.2  | Proper grounding.                                     |        |                        |
| 8.3  | All mechanical safeguards in use.                     |        |                        |
| 8.4  | Tools neatly stored when not in use.                  |        |                        |
| 8.5  | Right tool being used for the job at hand.            |        |                        |
| 8.6  | Wiring properly installed.                            |        |                        |
| 8.7  | Enough men used to handle material.                   |        |                        |
| 9.0  | <b>LADDERS.</b>                                       |        |                        |
| 9.1  | Stock ladders in good condition.                      |        |                        |
| 9.2  | Stock ladders not spliced.                            |        |                        |
| 9.3  | Properly secured, top and bottom.                     |        |                        |
| 9.4  | Side rails on fixed ladders extend above top landing. |        |                        |
| 9.5  | Built-up ladders constructed of sound materials.      |        |                        |
| 9.6  | Rungs not over 12 inches on centre.                   |        |                        |
| 9.7  | Stepladders fully open when in use.                   |        |                        |

- 9.8 Metal ladders not used around electrical hazards.
- 9.9 Proper maintenance and storage.
- 10.0 **SCAFFOLDING.**
- 10.1 All structural members adequate for use.
- 10.2 All connections adequate
- 10.3 Safe tie-in to structure.
- 10.4 Ladders and working areas free of debris, snow, ice, grease.
- 10.5 Proper footings provided.
- 10.6 Passerby protected from falling objects.
- 10.7 Supports plumb, adequate cross bracing provided.
- 10.8 Guard rails and toe boards in place.
- 10.9 Scaffold machines in working order.
- 10.10 Ropes and cables in good condition.
- 11.0 **HOISTS, CRANES & DERRICKS.**
- 11.1 Inspect cables and sheaves.
- 11.2 Check slings and chains, hooks and eyes.
- 11.3 Equipment firmly supported.
- 11.4 Outriggers used if needed.
- 11.5 Power lines inactivated, removed, or at safe distance.
- 11.6 Proper loading for capacity at lifting radius.
- 11.7 All equipment properly lubricated and maintained.
- 11.8 Signalmen where needed.
- 12.0 **MOTOR VEHICLES.**
- 12.1 Brakes, lights, warning devices operative.
- 12.2 Weight limits and load sizes controlled.
- 12.3 Personnel carried in safe manner.
- 13.0 **BARRICADES.**
- 13.1 Floor openings planked over or barricaded.
- 13.2 Roadways and sidewalks effectively protected.
- 13.3 Adequate lighting provided.
- 13.4 Traffic controlled.
- 14.0 **HANDLING & STORAGE OF MATERIALS.**
- 14.1 Neat storage area, clear passageway.
- 14.2 Stacks on firm footings, not too high.
- 14.3 Men picking up loads, correctly.
- 14.4 Materials protected from heat and moisture.
- 14.5 Protection against falling into hoppers and bins.
- 14.6 Dust protection observed.
  
- 17.0 **MASONRY.**
- 17.1 Proper scaffolding.
- 17.2 Masonry saws properly equipped, dust protection provided.
- 17.3 Safe hoisting equipment.

**CHAPTER 3.0****3.0 ACCIDENT PREVENTION ORGANISATION.****3.1 Trained First Aid Person**

A contractor shall provide, or ensure that there is provided, such number of suitable persons as is adequate and appropriate in the circumstances for rendering first aid to his employees if they are injured or become ill at work: and for this purpose a person shall not be suitable unless he has undergone -

- a) Such training and has such qualifications as the Health and Safety Executive may approve for the time being in respect of that case of the class of case, and
- b) Such additional training, if any, as may be appropriate in the circumstances of that case.

In practice, (a) refers to a trained first aider and (b) to an occupational first aider. In addition, a person who holds a current first aid certificate issued by registered medical association or Indian Red Cross Society will be classed as a "Suitable Person" for the purposes of Regulation.

For most sites, the contractor should ensure that at least one first aider is normally present when the number of employees at work is between 50 and 150, there should be at least one additional first aider for every 150 or so should ensure that sufficient first aiders are appointed to provide adequate coverage for each shift. Provisions for medical care must be made available by the contractor for every employee covered by the regulations. In the absence of infirmaries, clinics, or hospitals in proximity to the work site, properly trained and certified first aid personnel must be available, and first aid supplies must be provided by the contractor. Appropriate equipment for transportation of injured personnel to a physician or hospital must be provided for.

**3.2. First Aid Kit**

Regardless of the number of employees there must be at least one first-aid box on site. Every first aider and occupational first aider should have easy access to first-aid equipment, and provision should be made for every employee to have reasonably rapid access to first aid. Each box should be placed in a clearly identified and readily accessible location, and contain a sufficient quantity of suitable first-aid materials and nothing else. Boxes and kits should be checked frequently to ensure they are fully stocked and all items are in a usable condition. Sufficient quantities of each item should always be available in every first aid box or cabinet.

| Sr.No | Item   | Numbers of Employees. |      |       |     |     |
|-------|--|-----------------------|------|-------|-----|-----|
|       |  | 1-5                   | 6-10 | 11-50 | 100 | 150 |
| 1     | Guidance Card individually wrapped.  | 1                     | 1    | 1     | 1   | 1   |
| 2.    | Sterile adhesive dressings.  | 10                    | 20   | 40    | 40  | 40  |
| 3.    | Sterile eye pads with attachment.  | 1                     | 2    | 4     | 6   | 8   |
| 4     | Triangular bandages  | 1                     | 2    | 4     | 6   | 8   |
| 5     | Sterile coverings for serious wounds (where applicable)                                  | 1                     | 2    | 4     | 6   | 8   |
| 6     | Safety pins.   | 6                     | 6    | 12    | 12  | 12  |
| 7     | Medium sized sterile un medicated dressings.   | 3                     | 6    | 8     | 10  | 12  |
| 8     | Large sterile un medicated dressings   | 1                     | 2    | 4     | 6   | 10  |
| 9     | Extra Large sterile un medicated dressings.  | 1                     | 2    | 4     | 6   | 8   |
| 10    | Sterile water or saline in 300 ml disposable containers, where tap water is unavailable. | 1                     | 1    | 3     | 6   | 6   |

The first-aid box or cupboard should protect the contents from dampness and dust and be clearly marked with a white cross on green background.

**3.2.1 First - Aid Rooms.**

Where there is 250 or more person at work on site, a suitably staffed and equipped first-aid room should be provided. In addition, where there is a large (over 150) number of employees divided into several dispersed working groups, or the location of the site makes access to places of treatment outside it difficult, the contractor should consider whether a centralised first-aid room may be needed.

- A first aid room should:
- a) Be under the charge of an occupational first aider in most circumstances; names and locations of all first aiders should be displayed.
  - b) Be readily available and used only for the rendering of first aid
  - c) Be clearly identified and of sufficient size to allow access for a stretcher, wheelchair, etc. and to hold a couch with space for people to work around it
  - d) Contain in addition to the previously mentioned first aid materials ; a sink with hot and cold running water, drinking water, paper towels, impermeable work surfaces, clean garments for use by first aiders and occupational first aider's clinical thermometer a couch with pillow and blankets frequently cleaned
  - e) Be heated, lighted, ventilated and cleaned regularly
  - f) Be designed so that immediate contact can be made with the person on call, e.g. radio, siren, and a telephone link if feasible. It should be stressed that a sufficient number of first - aid boxes must be provided for any work area which is not within easy reach of the first aid room.

### 3.3 Emergency Phone # Posted.

Project Name \_\_\_\_\_ Project No. \_\_\_\_\_

The following are the business telephone numbers where project key personnel can be reached at all times. In addition, the emergency telephone numbers of other vital agencies are listed:

|  | <b>BUSINESS</b> | <b>RESIDENCE</b> |
|--|-----------------|------------------|
| CLIENTS PROJECT CONTROLLER               |                 |                  |
| CHIEF CONSTRUCTION MANAGER               |                 |                  |
| SAFETY OFFICER (CONTRACTOR).             |                 |                  |
| <b>OTHER EMERGENCY TELEPHONE NUMBERS</b> |                 |                  |
| FIRE                                     |                 |                  |
| AMBULANCE                                |                 |                  |
| DOCTOR                                   |                 |                  |
| HOSPITAL                                 |                 |                  |
| POLICE                                   |                 |                  |
| GAS COMPANY                              |                 |                  |
| ELECTRIC COMPANY                         |                 |                  |
| WATER COMPANY                            |                 |                  |
| TELEPHONE COMPANY                        |                 |                  |
| INSURANCE CARRIER                        |                 |                  |
| OTHER                                    |                 |                  |
| OTHER                                    |                 |                  |
| OTHER                                    |                 |                  |

## **CHAPTER 4.0**

### **4.0 HOUSEKEEPING & SANITATION**

At the work site, an adequate supply of potable water must be provided, as well as clean drinking water dispensers. Potable water for cleanup must be provided. Where non potable water is used for industrial or fire fighting purposes it must be identified by appropriate signs.



## **CHAPTER 5.0**

### **5.0 FIRE PREVENTION.**

Electrical wiring equipment for heating, light, or power purposes must be installed in compliance with the requirements. Internal combustion engine-powered equipment must be located with exhausts well away from combustible materials. Smoking is to be prohibited in the vicinity of fire hazards, and such areas must be conspicuously posted. Care shall be taken properly to ground nozzles, hoses, or steam lines used in hazardous tankage or vessels.

In location of temporary buildings and yard storage, appropriate care shall be taken for proper separation to preclude an accumulation of fire potential. The contractor is responsible for maintaining the entire area, but particularly storage areas, free from accumulation of unnecessary combustible materials.

#### **Site Fire Check List**

1. Are safe ashtrays provided where smoking is permitted?
2. Are heaters properly guarded?
3. Are wet clothes kept clear of heaters?
4. Are portable heaters secure from being knocked over?
5. Is all temporary wiring well supported and protected?
6. Are any circuit's overloads?
7. Are all flammable liquids, gas cylinders and flammable materials separately and properly stored?
8. Are all gas appliances fitted with control taps?
9. Is rubbish being "burned in proper fashion"?
10. Is all flame cutting and welding taking place with proper precautions?
11. Are all blowlamps and blowtorches being used correctly?
12. Do all night watchmen and security patrols know the fire routines?

#### **Preventing the spread of fire**

1. Is waste accumulating in hoist shafts, under butts, in odd corners?
2. Are separate metal waste containers supplied for each of the following: oily rags, paint rags, paint scrapings, waste flammable liquids, wood shavings and off cuts?
3. Is all waste regularly cleared?
4. Are all huts safely sited?

#### **Means of escape**

1. Are all gangways, stairs and platforms free from obstruction?
2. Does everyone know what to do in emergency?
3. Is fire drill practised, and is there a system to ensure that all persons have evacuated the area?

#### **Fire Fighting**

1. Have all extinguishers been checked and / or recharged?  
Are they clearly identified and easily accessible? Are operatives trained in their use

## CHAPTER 6.0

### 6.0 PERSONAL PROTECTION.

Workers are often reluctant to use protection equipment. Such items should not only be suitable for their purpose but also be as comfortable as possible and acceptable to the workers concerned. Only then can efforts to ensure that equipment is worn or used prove successful.

All necessary personal safety equipment as considered adequate by the Engineer-in-charge shall be available for use of persons employed on the site and maintained in a condition suitable for immediate use; and the contractor shall take adequate steps to ensure proper use of equipment by those concerned.

- a) Workers employed on mixing asphaltic materials, cement and lime mortars / concrete shall be provided with protective footwear and protective gloves.
- b) Those engaged in handling any material which is injurious to eyes shall be provided with protective goggles.
- c) Those engaged in welding works shall be provided with welder's protective eye-shields.
- d) Stone workers are employed in sewers and manholes, which are in use, the contractor shall ensure that man-holes cover are opened and manholes are ventilated at least for an hour before workers are allowed to get into them. Manholes so opened shall be cordoned off with suitable railing and provided with warning signals or boards to prevent accident to public.
- e) The contractor shall not employ men below the age of 18 and women on the work of painting with products containing lead in any form. Whenever men above the age of 18 are employed on the work of lead painting, the following precautions shall be taken :-
  - i) No paint containing lead or lead products shall be used except in the form of paste or ready.
  - ii) Suitable face masks shall be supplied for use by workers when paint is applied in the form of spray or a surface having lead paint dry rubbed and scraped.
  - iii) Overalls shall be supplied by the contractor to workmen and adequate facilities shall be provided to enable working painters to wash during and on cessation of work.

## **CHAPTER 7.0**

### **7.0 HAND & POWER TOOLS**

Hand and power tools must be maintained in a safe condition, whether furnished by the contractor or by the employee. When power-operated tools are designed to accommodate guards, they must be equipped with appropriate guards when in use. Belts, gears, shafts, pulleys, sprockets, spindles, drums, flywheels, chains and other moving parts of equipment must be guarded if the parts are exposed to contact by employees.

All hand-held power tools must be equipped with a constant pressure switch that shuts off when the pressure is released. Electric power-operated tools shall be of the approved double insulated type, or grounded in accordance with good electrical practice. Pneumatic power tools must be secured to the hose or whip by positive means. Safety clips or retainers must be maintained on pneumatic impact (percussion) tools to prevent attachments from being accidentally expelled.

Pneumatically driven nails, staplers, and similar equipment provided with automatic fastener feed that operate at more than 100 psi pressure at the tool must have safety devices on the muzzle to prevent the tool from ejecting fasteners, unless the muzzle is in direct contact with the work surface.

Hoses shall not be used for hoisting or lowering tools, and hoses exceeding ½-in inside diameter must have a safety shutoff at the source of supply to reduce pressure in case of a hose failure.

All fuel-powered tools must be stopped while being refuelled, serviced, or maintained.

Only trained employees may be allowed to operate a powder-actuated tool. Such tools must be tested each day before loading to see that the safety devices are in proper working condition, in accordance with manufacturer's recommended test procedure. Tools shall not be loaded until just prior to the intended firing time. Neither loaded nor empty tools are to be pointed at any employee, and hands shall be kept clear of the open barrelled end. Fasteners shall not be driven into very hard or brittle materials such as cast iron, glass block, face brick, hardened steel, or hollow tile. For driving into materials that are easily penetrated, appropriate backing must be available to prevent the pin fastener from passing completely through.

All employees using abrasive wheels must use eye protection, and other tools must be operated using appropriate personal safety equipment.

## **CHAPTER 8.0**

### **8.0 LADDERS**

#### **Use of Ladders and Folding Step-Ladders.**

- This regulation applies to all ladders and pairs of steps but not roof ladders and crawling boards.

#### **Ladders must :**

- a) Be fixed near the top if practicable, or near the bottom if not: if suspended they must be secure,
  - b) Be placed (except when suspended) on a firm level base; they must not stand on loose packing (e.g. bricks),
  - c) Be intermediately secured, where necessary, to prevent swaying and sagging, and
  - d) Be supported, or suspended, equally on each stile.
- If a ladder, standing on the ground, cannot be fixed to prevent slipping, then someone must hold it at the base when it is being used.
  - A ladder which is not more than 3 m in length, need not be fixed or footed, provided it is securely placed so as to prevent it from slipping or falling. This exemption does not apply to ladders which are used as a means of communication between one working place and another, or to suspended ladders.
  - Ladder must :
    - a) Extend at least 1.05 m above any landing place beyond the highest rung from which a person may be working, or have a nearby handhold of equivalent height.
    - b) Be placed so that there is space behind each rung for proper foothold (e.g. no rung should coincide with a scaffold tube).

## **CHAPTER 9.0**

### **9.0 SCAFFOLDING**

Collapse of any scaffold or part of a substantial part of the scaffold falling or overturning; also collapse or part collapse of the suspension arrangements of a slung or suspended scaffold, causing the platform or cradle to fall more than 5m.

#### **9.1. Provision of Scaffolds, ETC.**

Scaffolds must be provided for all work which cannot be safely done from the ground or part of the building.

Ladders, properly secured, can be used - but only for light work which can be done with one hand.

#### **9.2. Supervision of Work and Inspection of Material.**

Scaffolds must be erected, altered, or dismantled only under competent supervision and, as far as possible, by experienced persons. All scaffolding materials must be inspected before use to check that they are up to standard.

#### **9.3. Construction and Material.**

Sufficient sound material must be provided for a scaffold to be strong enough and stable enough for the job.

Wherever timber is used for any kind of scaffolding purpose, it must be of the right type for the job, be free from back and must not be painted so that any defects are hidden.

Scaffold tubes and fittings must not be bent, distorted or unduly rusty.

#### **9.4. Defective Material**

- Scaffold tubes, couplers or fittings that are bent unduly rusty or distorted should be rejected.

**Timber with dangerous splits and knots should always be rejected.**

- Ropes and lashings showing signs of chafing through wear, or of being corroded, should be rejected.
- All scaffold components must be properly stored when not in use and kept separately from all other building materials.

#### **9.5. Maintenance of Scaffolds.**

Scaffolding must be kept in good order and every effort made to prevent the accidental displacement of any part.

#### **9.6. Partly Erected or Dismantled Scaffolds.**

In any scaffold is either partly erected (or partly dismantled), but nevertheless is still capable of being used to some extent, it must have a bold warning notice fixed, or all access blocked off or barred, at the point beyond which it cannot be safely used.

#### **9.7. Standards or Uprights, Ledgers and Putlogs.**

- Scaffold standards should be vertical and spaced closely enough for the intended use of the scaffold.
- Base plates must be used. Timber sole plates should also be used to distribute the load from the standard over a wider area, as well as to offset possible local subsidence.
- Ledgers must be level and fixed to standards with right-angle couplers.
- Putlogs and transoms must be firmly fixed to ledgers or standards.

**The flattened end of the putlog must be pushed right into the wall to provide maximum support.**

- Putlogs and transoms should be spaced according to the expected load and the thickness of the boards to be used in the platform.

In normal use, putlogs and transoms should be spaced so that the spans of scaffold boards should not be greater than:

32 mm boards : 1 m  
38 mm boards : 1.50 m  
50 mm boards : 4.60 m

#### **9.8. Ladders used in Scaffolds**

- Ladders used as uprights must be :
  - a) Strong enough for the load,
  - b) Equally supported on each stile, and
  - c) Secured to prevent slipping.
- Ladders are only to be used to support a scaffold platform when the work is light, e.g. painting.

#### **9.9. Stability of Scaffolds**

- All scaffolds must be :
  - a) On a solid, even base; or suspended from a sound structure.
  - b) Braced to prevent failure, and
  - c) Tied to the building or structure unless specially designed to be completely independent.
- Any building or structure which supports a scaffold must be strong enough to carry the scaffold and its load.
- Mobile scaffolds must :
  - a) Be stable, weighted at the base if necessary.
  - b) Be used only on a flat, level surface.
  - c) have the wheels locked to prevent movement whilst being used for work, and
  - d) Be pushed, or pulled only at the base when being moved.
- Scaffolds must not be built on loose bricks, drain pipes, chimney pots, etc. Bricks or blocks can be used to support a platform no higher than 600 mm from the ground or floor.

#### **9.10. Slung Scaffolds**

- a) Be strong enough,
  - b) Be properly secured to be overhead anchor-ages and to be platform frame,
  - c) Be spaced so as to keep the platform stable,
  - d) Be vertical, and
  - e) Be kept taut.
- No rope other than wire rope may be used for suspension.
  - Packing must be used to prevent damage to suspension ropes or chains at any point where sharp or rough - edged protrusions could cause chafing.
  - The platform must be secured to prevent swaying whilst in use.

#### **9.11. Cantilever, Jib, Figure and Bracket Scaffolds.**

Cantilever or jib scaffolds must be anchored to a structure which is strong enough to carry the total load. Outriggers must be long enough and strong enough and the scaffold must be braced to ensure stability.

Figure or bracket scaffolds supported by dogs or spikes must not be used if there is any danger of these pulling out of the brickwork or stone-work.

### **9.12. Support for Scaffolds, etc.**

No part of the building may be used to support scaffolding unless it is strong enough to do so. Unless gutters have been designed as walkways and are strong enough to bear the weight, they must not be used to support scaffolding or ladders.

### **9.13 Suspended Scaffolds (Not Power Operated)**

- The ropes, winches, blocks and tackle must be strong enough and correctly rigged. A safe anchorage for the suspension must be provided.
- Winches or similar lifting devices must :
  - a) Have brakes which apply when the operating lever is released, and
  - b) Be protected from the weather, falling dirt, etc.
- Outriggers must :
  - a) Be long enough and strong enough,
  - b) Be horizontal (light cradles are excepted),
  - c) Have stops at their outer ends (light cradles excepted)
  - d) Be tied down or properly counterweighted at the tail, and
  - e) Be close enough together to support the rails and scaffolds properly.
- Counterweights Must :
  - a) Be bolted or securely attached to the outriggers, and
  - b) Be at least three times the overturning moment or load.
- Platforms must be hung clear of the building or face of the structure.
- Runways must :
  - a) Be strong enough and in good condition,
  - b) Have stops at each, and
  - c) Be bolted or tied securely to their supports.
- Suspension ropes or chains must :
  - a) Be properly secured, both overhead and to the frame of the platform, and
  - b) Be kept taut.
- Winches must :
  - a) Have at least two full turns of rope on the drum when the platform is in its lowest position, and
  - b) Be marked with the length of rope on the drum.
- Suspended scaffolds and associated equipment must be maintained in good condition. Platforms must be prevented from tipping or swaying whilst in use.
- Steel wire rope must be used for the suspension of all platforms other than lightweight cradles.

Lightweight cradles may be suspended by fibre ropes and pulley blocks which should not be more than 3.20 m apart. (only ropes recommended by manufacturers for this purpose should be used).

- Platforms of suspended scaffold must :
  - a) Be close boarded,
  - b) Be at least 430 mm wide on lightweight cradles.  
be at least 600 mm wide on all other types, if used only for workmen, or be at least 800 mm wide, if used for workmen and materials, and
  - c) Never be used to carry another higher platform.

Platforms should be as close as possible to the face of the building, but where persons sit on the edge of the platform to carry out their work, then the distance between platform and building can be up to 300 mm.

**9.14. Boatswain's Chairs Cages, Skips etc. (Not Power Operated)**

- Hand-operated boatswain's chairs, skips etc. must :
  - a) Be well constructed, strong enough, and properly maintained.
  - b) have outriggers strong enough and firmly anchored,
  - c) Have chains, ropes and lifting gear firmly secured to the outriggers above and to the chair, skip etc. The construction (lifting operations) regulations apply to the lifting gear,
  - d) Be designed so that the occupant cannot fall out,
  - e) Carry no loose materials which could interfere with the safety of the occupant,
  - f) Have means of preventing spinning and tipping (a swivel connection at the suspension point is strongly advised),
  - g) In the case of skips, be at least 910 mm deep, and
  - h) Be under the supervision of a competent person during installation and use.
  
- A boatswain's chair may only be used as a workplace when the work would not take long enough to make the use of a suspended (or standard) scaffold reasonably practicable.



## **CHAPTER 10.0**

### **10.0 HOISTS, CRANES & DERRICKS**

#### **Safety of Hoist ways. Platforms and Cages.**

- Hoist ways must be enclosed wherever access is provided or wherever persons could be struck by the platform or other moving parts. Gates must be fitted in the enclosure at all landing places and must normally be at least 2m high, but gates 910 mm high are acceptable where persons are not at risk of falling down the hoist-way or coming into contact with moving parts. Gates must be kept closed except for the movement of persons and materials; it is the duty of all persons to see that this is done.
- Hoist platforms and cages must be fitted with a device capable of supporting them, fully loaded, should hoists, ropes or driving gear fail.
- Hoists must be fitted with ver-run stops at the top.

#### **Operation of Hoists.**

- Hoists must only be capable of being operated from one position at a time, whether by rope, lever or switch. Hoists must not be operated from the cage.
- Where the hoist driver cannot see the platform or cage during its movement, a signalling system, which covers all landing places, must be used.

#### **Safe working Load and Marking of Hoists.**

- A) The platform of materials or goods hoists must carry a notice stating (i) the safe working load and (ii) that passengers must not ride on the platform.
- 
- The safe working load must not be exceeded except for test purposes.
- B) Cages for passenger's hoists must carry a notice stating (i) the safe working load and (ii) the number of passengers permitted.
- No greater number of passengers may be carried and the safe working load must not be exceeded except for test purposes.

### **Cranes & Derricks**

Manufacture's recommendations on operating conditions shall be followed by the contractor. Rated load capacities and recommended operating speeds and special hazard warnings or instructions must be conspicuously posted on all equipment visible to the operator while he is at his control station.

A boom angle indicator and a load-indicating device in good working order must be provided for cranes and derricks. Hand signals to crane and derrick operators shall be those prescribed by the applicable ANSI standards for the type of crane in use. Accessible areas within the swing radius of the rear of the rotating superstructure of a crane must be barricaded to prevent an employee from being struck or crushed by the crane.

In operating boom equipment, careful clearance shall be given to electrical distribution and transmission lines. For lines rated 50 kV or below, minimum clearance is 10 ft, whereas for loads rated over 50 kV, minimum clearance shall be 10 ft + 0.4 in per each kV over 50 - or use twice the length of the line insulator, but never less than 10 ft.

For hammerhead tower cranes, adequate clearance must be maintained between the moving and rotating structures and fixed objects to allow the passage of employees without harm. Employees required to perform duties on the horizontal booms of hammerhead tower cranes must be protected against falling by guard rails or by safety belts and lanyards. Overhead and gantry cranes must have the rated load of the crane plainly marked on each side, and if the crane has more than one hoisting unit, each must have its rated load marked on the load block in marking clearly legible from the ground or floor. All operation must be prescribed in ANSI B30.2, "Safety code for Overhead and Gantry Cranes"

Derricks in use must meet the applicable requirements for design, construction, installation, inspection, testing, maintenance, and operation prescribed in ANSI B30.6, "Safety code for Derricks"

## **CHAPTER 11.0**

### **11.0 MOTOR VEHICLES**

Motor equipment left unattended at night near areas where work is in progress must have appropriate lights, reflectors, or barricades to identify the location of the equipment. A safety tire rack, cage, or equivalent protection must be used when a worker is inflating, mounting, tires installed on split rims or rims equipped with locking rings. Heavy machinery that is suspended or held aloft by the use of slings, hoists, or jacks must be blocked or cribbed to prevent falling or shifting before employees are permitted to work under them. Bulldozer and scraper blades and similar equipment shall be either fully lowered or blocked when being repaired or when not in use. All controls must be in the neutral position and the motor stopped and brakes set, unless work being performed requires otherwise. Parked equipment must be checked and parking brakes set. All cab glass shall be safety glass. All vehicles must have a service brake system, an emergency brake system, and a parking brake system. Vehicles that require additional light shall have at least two headlights, as well as brake lights.

Other standard vehicles equipment such as seat belts, rear-view mirrors, and safety latches on operating levers shall be in accordance with standard vehicle codes, and state-inspected where appropriate.

## **CHAPTER 12.0**

### **12.0 BARRICADES**

- i) Contractor shall erect and maintain barricades required in connection with his operation to guard or protect.
  - a) Hoisting Areas.
  - b) Areas adjudged hazardous by contractor or Client.
  - c) Owner's existing property subject to damage by Contractor's operations.
- ii) Contractor's employees and those of his subcontractors shall become acquainted with Project Managers barricading practice and shall respect the provisions thereof.

#### 12.1. Guarding of Floor Openings and Floor Holes.

12.1.1 Every temporary floor opening shall have railings, or shall be constantly attended by someone. Every floor hole into which persons can accidentally fall shall be guarded by either:

- a) A railing with toe board on all exposed sides, or
- b) A floor hole cover of adequate strength and it should be hinged in place. When the cover is not in place, the floor hole shall be constantly attended by some one or shall be protected by a removable railing.

12.2. Every stairway floor opening shall be guarded by a railing on all exposed sides, except at entrance to stairway. Every ladder way floor opening or platform shall be guarded by a guard railing with toe board on all exposed sides (except at entrance to opening), with the passage through the railing either provided with a swinging gate or so offset that a person can not walk directly into the opening.

#### 12.3. Guarding of Open-Side Floors and Platform.

Every open-sided floor or platform 120 cm or more above adjacent floor or ground level shall be guarded by a railing (or the equivalent) on all open sides, except where there is entrance to ramp, stair-way, or fixed ladder. The railing shall be provided with a toe board beneath the open sides wherever.

- a) Persons may pass;
- b) There is moving machinery ; or
- c) There is equipment with which falling materials could create a hazard.

## **CHAPTER 13.0**

### **13.0 HANDLING & STORAGE OF MATERIALS**

#### **13.1 Paints Varnishes and Thinners.**

- a) Storage and Stacking - Paints, varnishes, lacquers, thinners and other flammable materials shall be kept in properly sealed or closed containers. The containers shall be kept in a well ventilated location, free from excessive heat, smoke, sparks or flame. The floor of the paint stores shall be made up of 10 cm thick loose sand.

Paint materials in quantities other than required for daily use shall be kept stocked under regular storage place.

Where the paint is likely to deteriorate with age, the manner of storage shall facilitate removal and use of lots in the same order in which they are received.

Temporary electrical wiring / fittings shall not be installed in the paint store. When electric lights, switches or electrical equipment are necessary, they shall be of explosion proof design.

- b) Handling - Ventilation shall be adequate to prevent the accumulation of flammable vapours to hazardous levels of concentration shall be provided in all areas where painting is done.

When painting is done in confined spaces where flammable or explosive vapours may develop, any necessary heat shall be provided through duct work remote from the source of flame.

Sources of ignition, such as open flame and exposed heating elements, shall not be permitted in area or rooms where spray painting is done nor shall smoking be allowed there.

Care should be taken not to use any naked flame inside the paint store. Buckets containing sand shall be kept ready for use in case of fire. Fire extinguishers when required shall be of foam type conforming to accepted standards.

Each workman handling lead based paints shall be issued 1/2 litre milk per day for his personal consumption.

## **CHAPTER 14.0**

### **14.0 HEALTH STANDARDS**

#### **14.1 DRINKING WATER**

- a) In every work place, there shall be provided and maintained at suitable places, easily accessible to labour, a sufficient supply of cold water fit for drinking.
- b) Where drinking water is obtained from an intermittent public water supply, each work place shall be provided with storage where such drinking water shall be stored.
- c) Every water supply or storage shall be at a distance of not less than 50 feet from any latrine drain or any other source of pollution.

#### **14.2 WASHING FACILITIES**

- a) In every work place adequate and suitable facilities for washing shall be provided and maintained for the use of contract labour employed therein.
- b) Separate and adequate cleaning facilities shall be provided for the use of male and female workers.
- c) Such facilities shall be conveniently accessible and shall be kept in clean and hygienic condition.

#### **14.3 LATRINES AND URINALS**

- a) Latrines shall be provided in every work place on the following scale namely:-
  - i) Where female are employed there shall be at least one latrine for every 25 females.
  - ii) Where males are employed, there shall be at least one latrine for every 25 males.

Provided that where the number of males or females exceeds 100, it shall be sufficient if there is one latrine for 25 males or females as the case may be upto first 100, and one for every 50 thereafter.

- b) Every latrine shall be under cover and so partitioned off as to secure privacy and shall have proper door and fastenings.
- c) Construction of latrines: The inside walls shall be constructed of masonry or some suitable heat-resisting non-absorbent materials and shall be cement washed inside and outside at least once a year , latrines shall not be of standard lower than borehole system.
- d)
  - i) Where workers of both sexes are employed, there shall be displayed out side each block of latrine and urinal, a notice in the language understood by the majority of the workers " For Men only " or " For Women only " as the case may be.
  - ii) The notice shall also bear the figure of man or woman, as the case may be.
- e) There shall be at least one urinal for male workers upto 50 and for female workers upto 50 employed at a time, provided that where the number of male or female workers, as the case may be exceeds 500 , it shall be sufficient if there is one urinal for every 50 males or females upto the first 500 and one for every 100 or part thereafter.
- f)
  - i) The latrines and urinals shall be adequately lighted and shall be maintained in a clean and sanitary condition at all times.
  - ii) Latrines and urinals other than those connected with a flush sewage system shall comply with the requirements of Public Health Authorities.
- g) Water shall be provided by means of tap or otherwise so as to conveniently accessible in or near the latrines and urinals.
- h) Disposal of excreta: Unless otherwise arranged by the local sanitary authority, arrangements for proper disposal of excreta by incineration at the work place shall be made by means of a suitable incinerator. Alternately excreta may be disposed off by putting a layer of night soil at the bottom of a pucca tank prepared for the purpose and covering it with 15 cm layer of waste or refuse and then covering it with a layer of earth for a fortnight (when it will turn to manure).

- i) The contractor shall at his own expense , carry out all instructions issued to him by the Engineer-in-charge to effect proper disposal of night soil and other conservancy work in respect of the contractor's workmen or employees of the site. The contractor shall be responsible for payment of any charges which may be levied by the municipal or cantonment authority for execution of such on behalf.

#### 14.4 PROVISION OF SHELTER DURING REST

At every place there shall be provided , free of cost , four suitable sheds , two for meals and other two for rest separately for the use of men and women labour . The height of each shelter shall not be less than 3m from the floor level to the lowest part of the shed roof. These shall be kept clean and the space provided shall be on the basis of 0.6sq.m per head.

Provided that the Engineer-in-charge may permit subject to his satisfaction , a portion of building under construction or other alternative accommodation to be used for the purpose.

#### 14.5 CRÈCHES

- i) At every work place , at which 20 or more women workers are ordinarily employed , there shall be provided two rooms of reasonable dimensions for the use of their children under at the age of six years . One room shall be used as a play room for the children and the other as their bedroom.
- ii) The rooms shall be provided with suitable and sufficient openings for light and ventilation. There shall be adequate provision of sweepers to keep the places clean.
- iii) The contractor shall supply adequate number of toys and games in playroom and sufficient number of cots and bedding in the bed room.
- iv) The contractor shall provide one aya to look after the children in the crèche when the number of women workers does not exceed 50 and two when the number of women workers exceeds 50.
- v) The use of the rooms earmarked as crèches shall be restricted to children, their attendants and mothers of the children.

#### 14.6 CANTEENS

- i) In every work place where the work regarding the employment of contract labour is likely to continue for six months and where in contract labour numbering 100 or more are ordinarily employed , an adequate canteen shall be provided by the contractor for the use of such labour .
- ii) The canteen shall be maintained by the contractor in an efficient manner.
- iii) The canteen shall consist of at least a dining hall, kitchen, storeroom, pantry and washing places separately for workers and utensils.
- iv) The canteen shall be sufficiently at all times when any person has access to it.
- v) The floor shall be made of smooth and impervious materials and inside walls shall be lime washed or colour washed at least once a year .The inside walls of the kitchen shall be lime washed every four months.
- vi) The premises of the canteen shall be maintained in a clean and sanitary condition.
- vii) Suitable arrangements shall be made for the collection of disposal of garbage.
- viii) Waste water shall be carried away in suitable covered drains and shall not be allowed to accumulate so as to cause nuisance.
- ix) The dining hall shall accommodate at a time 30 percent of the contract labour working at a time.
- x) The floor area of the dining hall, excluding the area occupied by the service counter and any furniture except tables and chairs shall not be less than one sq.m per diner to be accommodated as prescribed in sub-rule (ix).
- xi)
  - a)
    - 1. There shall be provided and maintained sufficient utensils crockery, furniture and any other equipment necessary for efficient running of canteen.
    - 2. The furniture utensils and other equipment shall be maintained in a clean and hygienic condition.
  - b)
    - 1. Suitable clean clothes for the employees serving in the canteen shall be provided and maintained.
    - 2. A service counter, if provided, shall have top of smooth and impervious material.
    - 3. Suitable facilities including an adequate supply of hot water shall be provided for the cleaning of utensils and equipment.
- xii) A portion of the dining hall and service counter shall be partitioned off and reserved for women workers in proportion to their number.

- xiii) Sufficient tables stools or benches shall be available for the number of diners to be accommodated as prescribed in sub rule (ix).
- xiv) The food stuff and other items to be served in the canteen shall be in conformity with the normal habits of the contract labour .
- xv) The charges for food stuffs, beverages and other items served in the canteen shall be based on "No profit No loss" and shall be conspicuously displayed in the canteen.
- xvi) In arriving at the price of foodstuffs, and other article served in the canteen , the following items shall not be taken into consideration as expenditure namely :-
  - a) The rent of land and building.
  - b) The depreciation and maintenance charges for the building and equipment provided for the canteen.
  - c) The purchase, repairs and replacement of equipment including furniture , crockery, cutlery and utensils.
  - d) The water charges and other charges incurred for lighting and ventilation.
  - e) The interest and amounts spent on the provision and maintenance of equipment provided for the canteen.
- xvii) The accounts pertaining to the canteen shall be audited once every 12 months by registered accountants and auditors.

#### **14.7 ANTI-MALARIAL PRECAUTIONS**

The contractor shall at his own expense, conform to all anti-malarial instructions given to him by Engineer-in-charge including the filling up of any borrow pits which may have been dug by him.

**CHAPTER 15.0**

**15.0 RECORD OF FIRST AID TREATMENT.**

**Project Data:** \_\_\_\_\_

Project:

Location:

**Injured Data:**

Name:

Employer:

Employer's Supervisor:

**Injury Data:**

Date:

Time:

Description of Injury:

**First Aid Treatment:**

Treatment administered by:

Type of treatment administered:

Referred for Medical Treatment:

\_\_\_\_\_ No

\_\_\_\_\_ Yes.

Doctor \_\_\_\_\_

Hospital \_\_\_\_\_

\_\_\_\_\_

Report Prepared By:

Date:

Treatment Received By:

Date:



**CHAPTER 16.0**

**16.0 DAMAGE REPORT FORM**

Contract \_\_\_\_\_

Plant and equipment affected. \_\_\_\_\_

Serial numbers or identifying marks \_\_\_\_\_

Owner of plant or equipment \_\_\_\_\_

Place, date and time of incident \_\_\_\_\_

Circumstances of incident \_\_\_\_\_

\_\_\_\_\_

Details of damage \_\_\_\_\_

\_\_\_\_\_

Names of operators involved (if not Company employers, also give details of such contractors concerned) \_\_\_\_\_

\_\_\_\_\_

Were normal working methods used ? \_\_\_\_\_

Contributory causes of incident \_\_\_\_\_

\_\_\_\_\_

Names of witness \_\_\_\_\_

(attach statements) \_\_\_\_\_

\_\_\_\_\_

**Preventative action proposed or taken** \_\_\_\_\_

**Signature of Site Agent or Manager** \_\_\_\_\_

Date \_\_\_\_\_.

**CHAPTER 17.0**

**17.0 PERSONNEL ACCIDENT REPORT FORM.**

Division / Dept (if applicable) \_\_\_\_\_

Contractor \_\_\_\_\_

Full name and address of injured person (IP) \_\_\_\_\_

\_\_\_\_\_

Occupation of IP \_\_\_\_\_ Age of IP \_\_\_\_\_

Employed (state if self - employed or under training) \_\_\_\_\_

Trade of sub contractor (where applicable) \_\_\_\_\_

Particulars of accident:

Date and time of accident \_\_\_\_\_

Exact place where accident happened. \_\_\_\_\_

What was IP doing at time of accident? \_\_\_\_\_

Did IP cease work? \_\_\_\_\_

First air or hospital treatment. \_\_\_\_\_

Time lost (state if IP is still off work) \_\_\_\_\_

Brief description of accident, giving dimensions where applicable \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Details of tools, equipment plant or machinery. \_\_\_\_\_

\_\_\_\_\_

What protective clothing / equipment was being worn / used by IP? \_\_\_\_\_

Nature of injury and part of the body injured. e.g. punctured foot, hand, broken leg. \_\_\_\_\_

\_\_\_\_\_

\_\_\_\_\_

Contributory factors:

Unsafe system of work YES/NO \_\_\_\_\_

Lack of training, supervision etc. YES/NO \_\_\_\_\_

Environmental Conditions (wind, rain, ice, etc.) YES/NO \_\_\_\_\_

State of equipment (faulty brakes, damaged lifting gear, etc.) YES/NO \_\_\_\_\_

Housekeeping (untidy access, nails in timber. etc) YES/NO \_\_\_\_\_

Other \_\_\_\_\_

Delete as appropriate and give details.

Names and address of witness \_\_\_\_\_  
\_\_\_\_\_

If reportable:

Date and time Safety Officer informed by Telephone \_\_\_\_\_

Preventative action taken or proposed \_\_\_\_\_

Signature of Site Agent or Manager \_\_\_\_\_

Date \_\_\_\_\_

## **SECTION 4: FORMS OF SECURITIES**

### **Forms of Securities**

Acceptable forms of securities are annexed. Bidders should not complete the Performance and Advance Payment Security forms at this time. Only the successful Bidder will be required to provide Performance and Advance Payment Securities in accordance with one of the forms, or in a similar form acceptable to the Employer.

**Annex A:** Performance Bank Guarantee

**Annex B:** Bank Guarantee for Advance Payment

**ANNEXURE –A**

**PERFORMANCE GUARANTEE**

This Guarantee of guarantee (hereinafter referred to as “**Guarantee**”) made this date ..... by Bank (Bank Name)....., a scheduled bank with its head office at (address)..... (hereinafter referred to as the “**Bank**”) of the first part in favour of M/s. Mahindra World City (Jaipur) Limited, a company incorporated under Companies Act, 1956 and having its office at **411, Neelkanth Tower#1, Bhawani Singh Marg, C-Scheme, Jaipur -302001** (hereinafter referred to as “**Employer**” which expression shall, unless repugnant to the meaning and context here to, include its affiliates, successors and assigns) of the other part.

**WHEREAS:**

- A. M/s. Mahindra World City (Jaipur) Limited is developing a special economic zone at Jaipur called “Mahindra World City, Jaipur” (hereinafter referred to as “**SEZ**”);
- B. On the assurance of M/s -----having its office at ----- (hereinafter referred to “**Contractor**”) that they are having the necessary infrastructure and capacity to undertake construction of ----- package at the SEZ to the quality, specifications and time frame as per the terms and conditions stipulated by MWCJ, MWCJ and Contractor have entered into a contract ref: **MWCJL/MTP/B-1/T-04** dated \_\_\_\_ day \_\_\_\_ Month \_\_\_\_ Year (hereinafter referred to as “**Contract**” which expression shall include any agreed amendments or modifications thereto) to execute the work within the SEZ in accordance with the terms and conditions of such Contract;
- C. Contractor has, by its acceptance to enter into the Contract with MWCJ has agreed to furnish a bank guarantee to MWCJ to ensure timely and satisfactory performance and completion of the work as per terms of the Contract;
- D. The Bank has, at the request of the Contractor, agreed to grant in favour of MWCJ, a guarantee to secure performance by Contractor of its obligations under the said works contract.

**NOW THIS GUARANTEE WITNESSES AS FOLLOWS:**

- 1. The Bank hereby unconditionally, unequivocally and irrevocably guarantee to MWCJ and agrees and undertakes that if in the sole and unfettered opinion of MWCJ, Contractor has failed to perform its obligations under the said Contract and any amendments or modifications thereto, the Bank shall upon demand of MWCJ forthwith pay to MWCJ, without demur, contestation or dispute, without reference to Contractor, the amount set forth in certificate by MWCJ as the amount of loss / claim / damage / cost / expense arising or likely to arise out of breach or non fulfilment of the said Contract. Any such certificate or demand by MWCJ on the Bank, shall be conclusive as regards the amount due and payable by the Bank to MWCJ under this Guarantee, notwithstanding any dispute between Contractor and MWCJ as to the liability for or quantum of loss / damage / claim / costs / expenses and notwithstanding any notice by Contractor to the Bank withhold or not to pay any amount to MWCJ against this Guarantee either before or after invoking of this Guarantee by MWCJ Provided always the total liability of the Bank hereunder shall be limited to Rs. (.....). (Rupees.....).
- 2. This Guarantee of the Bank shall be effective immediately from the date hereof and shall be in force for till a certificate is issued by MWCJ to the Bank in accordance with Clause 4 of this Guarantee or the claim expiry date of this guarantee whichever is earlier. If a demand is so served, before the claim expiry date, this Guarantee shall continue in full force and effect (notwithstanding the validity date) in respect of the amount so demanded until the obligation of the Bank in respect hereof is finally determined and the payment made to MWCJ.

3. The Bank agrees that MWCJ has the fullest liberty, without affecting in any manner the Bank's obligations hereunder, to vary any of the terms and conditions of the said Contract, to extend the time of performance by the Contractor from time to time and to forbear from enforcing any of the terms of the said Contract without any notice to or the consent of the Bank and the Bank shall not be released from its liability under this Guarantee by reason of any such variation or extension or forbearance being granted to Contractor. The Bank agrees that MWCJ has no obligation whatsoever to exercise its rights against collateral, if any, of Contractor but may immediately call on this Guarantee.
4. This Guarantee herein contained shall remain in valid and effect till MWCJ certify that the terms and conditions of the said Contract have been fully and properly carried out and that the Contractor has fulfilled all its obligations under the Contract and that MWCJ has no claim against the Contractor on any account against the said Contract or the expiry date whichever is earlier.
5. Only neglect or forbearance, on the part of MWCJ, in the enforcement of the payment of any money, the payment whereof is intended to be hereby secured or the giving of the time for the payment hereto shall in no way relieve the Bank of their liability under this Guarantee.
6. The Bank shall not revoke this Guarantee during its currency except with the previous consent in writing of MWCJ.
7. Any notice or communication under this Guarantee shall be in writing and shall be served on the Bank at its address first hereinbefore mentioned and to MWCJ at its address first hereinbefore mentioned. Either party may notify to the other in writing any change in such address for service of notice upon it. The notices shall be served personally against acknowledgement or by Registered Post
8. This Guarantee shall not be affected by any change in the constitution of the Bank or of Contractor or of MWCJ.
9. This Guarantee shall be governed by the applicable laws of India.
10. The expression "The Bank" and the Contractor hereinbefore used shall include their respective successors and permitted assigns.

Notwithstanding anything contained herein above in the Bank Guarantee.

- 1- Our liability under this Bank Guarantee shall not exceed Rs. \_\_\_\_\_/-
- 2- This Bank Guarantee shall be valid up to \_\_\_\_\_
- 3- We shall be liable to pay any amount under this Bank Guarantee or part thereof only if we received (if your serve upon us) a written claim or demand under this Guarantee up to \_\_\_\_\_ at \_\_\_\_\_ Bank Ltd., \_\_\_\_\_(Address)

**ANNEXURE –XXXX**

**DRAFT FOR ADVANCE BANK GUARANTEE**

**Bank Guarantee Bond (RE : Mobilization Advance)**

This Bond (hereinafter referred to as “**Guarantee**”) made this (date)..... by Bank (Bank Name)....., a scheduled bank with its head office at (address)..... (hereinafter referred to as the “**Guarantor**”) of the first part in favour of M/s. Mahindra World City (Jaipur) Limited, a company incorporated under Companies Act, 1956 and having its office at **411, Neelkanth Tower#1, Bhawani Singh Marg, C-Scheme, Jaipur -302001** (hereinafter referred to as “**Employer**” which expression shall, unless repugnant to the meaning and context here to, include its affiliates, successors and assigns) of the other part.

**WHEREAS:**

- A. M/s. Mahindra World City (Jaipur) Limited is developing a special economic zone at Jaipur called “Mahindra World City, Jaipur” (hereinafter referred to as “**SEZ**”);
- B. On the assurance of M/s -----having its registered office at ----- (hereinafter referred to “**Contractor**”) that they are having the necessary infrastructure and capacity to undertake construction of ----- package at the SEZ to the quality, specifications and time frame as per the terms and conditions stipulated by EMPLOYER, EMPLOYER and Contractor have entered into a contract Ref. No. \_\_\_\_\_ dated \_\_\_\_\_ (hereinafter referred to as “**Contract**” which expression shall include any agreed amendments or modifications thereto) to execute the work\_\_\_\_\_ (work specification) within the SEZ in accordance with the terms and conditions of such Contract;
- C. And whereas Employer has agreed to pay the said Contractor a sum of Rs.\_\_\_\_\_ (Rupees \_\_\_\_\_) as Mobilisation Advance as per terms and conditions of the above said Contract, that the said Contractor shall submit in favour of your company and an unconditional and irrevocable Bank Guarantee for an equal amount valid till completion period i.e \_\_\_\_\_.(Date)
- D. The said Contractor has agreed to refund to the Company the balance unrecovered sum in the event of the said Contract Agreement being terminated or coming to as end for whatsoever reason,
- E. We the Guarantor, at the request of the Contractor, agreed to Guarantee in favour of EMPLOYER, a guarantee to advance payment made by EMPLOYER to the Contractor.

**NOW THIS GUARANTEE WITNESSES AS FOLLOWS:**

- 1. The Bank hereby unconditionally, unequivocally and irrevocably guarantee to EMPLOYER and agrees and undertakes that if in the sole and unfettered opinion of EMPLOYER, Contractor has failed to pay the amount equivalent to Rs. -----given as advance by EMPLOYER to the Contractor (hereinafter referred to as “**Advance**”)with in the time stipulated in the Contract, the Bank shall upon demand of EMPLOYER forthwith pay to EMPLOYER, without demur, contestation or dispute, without reference to Contractor, amount equivalent to Advance. Any such certificate or demand by EMPLOYER on the Bank, shall be conclusive as regards the amount due and payable by the Bank to EMPLOYER under this Guarantee, notwithstanding any dispute between Contractor and EMPLOYER as to the liability for or quantum of loss / damage / claim / costs / expenses and notwithstanding any notice by Contractor to the Bank withhold or not to pay any amount to EMPLOYER against this Guarantee



either before or after invoking of this Guarantee by EMPLOYER Provided always the total liability of the Bank hereunder shall be limited to Rs. (.....) (Rupees.....).

2. This Guarantee of the Bank shall be effective immediately from the date hereof and shall be in force for till a certificate is issued by EMPLOYER to the Bank in accordance with Clause 5 of this Guarantee unless a claim or demand in writing is served upon the Bank by EMPLOYER. If a demand is so served, this Guarantee shall continue in full force and effect (notwithstanding the expiration date) in respect of the amount so demanded until the obligation of the Bank in respect hereof is finally determined and the payment made to EMPLOYER.
3. The Bank agrees that EMPLOYER has the fullest liberty, without affecting in any manner the Bank's obligations hereunder, to vary any of the terms and conditions of the said Contract, to extend the time of performance by the Contractor from time to time and to forbear from enforcing any of the terms of the said Contract without any notice to or the consent of the Bank and the Bank shall not be released from its liability under this Guarantee by reason of any such variation or extension or forbearance being granted to Contractor. The Bank agrees that EMPLOYER has no obligation whatsoever to exercise its rights against collateral, if any, of Contractor but may immediately call on this Guarantee.
4. The Bank agrees that EMPLOYER has the fullest liberty, without affecting in any manner the Bank's obligation hereunder, to assign this guarantee in favour of any EMPLOYER affiliate company in India without the consent of but with prior intimation to, the Bank, and the Bank shall not be released from its liability under this Guarantee by reason of any such assignment. The Bank shall forthwith, on receipt of such intimation; undertake necessary endorsements or amendments hereto to incorporate the assignment in favour of such EMPLOYER affiliate assignee.
5. This Guarantee herein contained shall remain in force and effect till EMPLOYER certify that the Contractor has dully paid the Advance back to EMPLOYER. The Bank shall be released of its liabilities and obligations under this Guarantee only after such a certificate as aforesaid is issued by EMPLOYER to the Bank.
  - i) The Bank shall not revoke this Guarantee during its currency except with the previous consent in writing of EMPLOYER.
  - ii) Only neglect or forbearance, on the part of EMPLOYER, in the enforcement of the payment of any money, the payment whereof is intended to be hereby secured or the giving of the time for the payment hereto shall in no way relieve the Bank of their liability under this Guarantee.
6. Any notice or communication under this Guarantee shall be in writing and shall be served on the Bank at its address first hereinbefore mentioned and to EMPLOYER at its address first hereinbefore mentioned. Either party may notify to the other in writing any change in such address for service of notice upon it. The notices shall be served personally against acknowledgement or by Registered Post / Fax / Telex.
7. The Bank hereby agrees that their liability hereunder shall not be discharged or released or altered or impaired in any manner by ay change in the constitution structure or our Bank or by merger or amalgamation by our Bank with any other Bank, Company, Corporation or Body.
8. The Bank hereby agrees that their liability hereunder shall not be discharged or released or altered or impaired in any manner by ay change in the constitution structure or powers of the said, Contractor or of the Employer.
9. This Guarantee shall be governed by the applicable laws of India.

10. The expression "The Bank" and the Contractor hereinbefore used shall include their respective successors and permitted assigns.

**Notwithstanding anything contained herein**

We the Bank \_\_\_\_\_ (Name) \_\_\_\_\_ (Address) \_\_\_\_\_ hereby irrevocably and unconditionally undertake to pay your company, by Banker's Cheque / Demand Draft favouring **Mahindra World City (Jaipur) Ltd., payable at Jaipur** on First Demand without protest or demur or proof or condition any and all amount demanded by your Company in writing, with reference to the guarantee and that the liability of the \_\_\_\_\_ (Bank Name), under this guarantee is restricted to Rs. \_\_\_\_\_ (amount in figures) \_\_\_\_\_ (Amount in words). Our guarantee shall remain in force until \_\_\_\_\_ (date) Unless a claim in writing is presented to us during the validity period of this Guarantee and / or during a further grace period of \_\_\_\_\_ (extended period) thereafter upon expiry of the said validity,

11. IN WITNESS WHEREOF..... FOR AND ON BEHALF OF THE BANK HAS SIGNED THIS GUARANTEE ON THE DAY AND THE YEAR FIRST ABOVE WRITTEN.

12. ( )

13. WITNESSES :

1-

2-

**TECHNICAL SPECIFICATIONS  
BILL OF QUANTITIES**

**MAHINDRA WORLD CITY, JAIPUR****TENDER FOR ELECTRICAL WORKS****LIST OF APPROVED MAKES**

The following is the list of products and the names of the approved manufacturers against each product. Where more than one manufacturer is listed, the names are given in order of preference. The Contractor shall quote rates for the various items of work based on the materials of FIRST preference, after ascertaining the availability, delivery schedule etc of the same. Unless the Contractor stipulates to the contrary in his tender, it shall be presumed that rates quoted are for FIRST PREFERENCE makes.

In the event the Contractor is permitted to use materials of lower preferences, because of valid reasons, the contract rates for the relevant items of work shall be suitably adjusted on the basis of the variation in prices of materials of first preference and those actually used. If the prices of material used are higher than the prices of materials of first preference, the Owner shall NOT be liable to make any enhanced payment for the affected item of work on this account.

| SI No    | Item  | Approved Makes of Material                                  |
|----------|---|---|
| <b>1</b> | <b>Wiring</b>   |   |
| 1.1      | MS Conduits ISI embossed black enamelled /galvanized                                    | AKG, BEC, New India   |
| 1.2      | Galvanized steel flexible conduit   | Trinity Touch   |
| 1.3      | MS/GI Conduit accessories superior type as per approved samples                         | Sharma Sales Corpn., Super Sales Corpn.                     |
| 1.4      | MS Raceways and raceway accessories.  | Needo, Steelways  |
| 1.5      | PVC rigid conduit and accessories ISI embossed  | AKG, BEC, Polypack  |
| 1.6      | PVC flexible conduit and accessories  | AKG, BEC, Trinity Touch                                     |
| 1.7      | FRLS PVC insulated stranded copper conductor wires                                      | Rajnigandha, Skyline, Rallison,                             |
| <b>2</b> | <b>Wiring accessories</b>   |   |
| 2.1      | Modular grid plate wiring accessories (switches, socket outlets bells etc.) with boxes. | Legrand Mosaic, Clipsal Opale, Anchor Woods, MK Plus        |
| 2.2      | Metal clad Socket Outlets with boxes  | Legrand, Neptune  |
| 2.3      | Industrial plugs and sockets (IP 65 / 66)   | Legrand, Neptune  |
| 2.4      | Floor Outlet Boxes  | Fraser  |
| 2.5      | Boxes for table recess mounting   | Fraser  |
| <b>3</b> | <b>LT Distribution equipments</b>   |   |
| 3.1      | MCB's/RCCB's  | Legrand – Lexic, Schneider                                  |
| 3.2      | Earth leakage circuit breaker   | Legrand – Lexic, Schneider                                  |
| 3.3      | Timers in Distribution Boards   | Legrand , Schneider   |
| 3.4      | Distribution Boards   | Legrand , Schneider   |
| 3.5      | Air Circuit Breaker   | Schneider (Master Pact), Siemens (3WL), L&T (U Power)       |
| 3.6      | Moulded Case Circuit Breakers, Motor protection circuit breaker                         | Schneider (Compact NS), Legrand, Siemens (3VL), L&T(D Sine) |
| 3.7      | Power/auxiliary Contactors  | Siemens, Telemecanique, L&T                                 |
| 3.8      | Change over switch / Isolators  | HPL Socomac, Cutler Hammer                                  |
| 3.9      | Protection relays   | Alstom, ABB, Siemens  |
| 3.10     | APFC relay 3 phase  | Neptune , L&T   |

| Sl No     | Item  | Approved Makes of Material                                     |
|-----------|---|--|
| 3.11      | Single phase preventer, overload relays                                   | L&T, Minilec, Syntron  |
| 3.12      | MPP heavy duty Capacitors   | Neptune Ducati, Siemens (Epcos)                                |
| 3.13      | Current Transformer   | Gilbert & Maxwell, Precise, AE, Kappa                          |
| 3.14      | Control / Potential Transformer   | Gilbert & Maxwell, Precise, AE, Kappa                          |
| 3.15      | Push Buttons, Indicating lamps LED  | L & T (Esbee), Siemens, Vaishno, Teknik                        |
| 3.16      | Selector switches`  | L & T Salzer, Siemens  |
| 3.17      | Instruments – analogue  | L&T Rishab, AE   |
| 3.18      | Digital energy meter  | Conzerv, Neptune, Secure                                       |
| 3.19      | Power and harmonic analyzer   | Neptune Ducati, Secure, Conzerv                                |
| 3.20      | Capacitor panels  | Tricolite, Adlec, Neptune                                      |
| 3.21      | Main LT switchboards, PLC based DG Logic Panel, Synchronizing Panels      | Tricolite Electrical Industries, Adlec,                        |
| 3.22      | Programmable Logic Controller (PLC)                                       | Allen Bradley, Siemens   |
| 3.23      | Floor switchboards (compartmentalized)                                    | Tricolite Electrical Industries, Adlec, System & Power Control |
| 3.24      | Rising mains and Bus Duct   | Tricolite Power Duct, Control Switchgear                       |
| 3.25      | ATS   | Tricolite ASCO   |
|           |   |  |
| <b>4</b>  | <b>Low Tension System</b>   |  |
| 4.1       | Telephone wires   | Skyline, Finolex, Delton                                       |
| 4.2       | CAT 5 Telephone wires, Coaxial wires and PA system wires                  | Belden   |
| 4.3       | Telephone Tag Blocks  | Krone, Pouyet  |
| 4.4       | Fire Survival Cable MICC of CWZ type                                      | Tyco or equivalent   |
|           |   |  |
| <b>5</b>  | <b>Cables</b>   |  |
| 5.1       | 1100 volt grade XLPE Insulated Aluminium Conductor Armoured cables        | Skytone, Polycab, Rallison, KEI                                |
| 5.2       | 33000 volt grade XLPE insulated, FRLS aluminium conductor armoured cables | Skytone, Polycab, RPG  |
| 5.3       | 1100 volts grade FRLS PVC control cables                                  | Skytone, Finolex, RPG  |
| 5.4       | Double compression brass cable glands                                     | Trinity Touch (Jacob), Dowells, Peeco, comet                   |
| 5.5       | Double compression PVC cable glands                                       | Trinity Touch (Jacob)  |
| 5.6       | Cable lugs  | Dowell's (Biller India Pvt. Ltd), Trinity Touch                |
| 5.7       | 11000 volts cable termination kits  | Raychem  |
| 5.8       | Cable trays   | Profab, Steelways  |
|           |   |  |
| <b>6</b>  | <b>Bus Duct</b>   |  |
|           |   |  |
| 6.1       | Sandwich type Bus Ducts   | Tricolite Power Duct, Control & Switchgear,                    |
|           |   |  |
| <b>7.</b> | <b>Substation equipment</b>   |  |
| 7.1       | 33 kV Vacuum Switchgear   | Siemens, ABB   |
| 7.2       | Potential Transformer   | Pragati, Kappa, Jyoti  |
| 7.3       | 33 kV/ 433 V indoor oil type transformer                                  | Voltamp, Crompton, Kirloskar Electric                          |
| 7.4       | Rubber matts  | Jyoti  |
| 7.5       | CO2 Fire extinguishers  | Vijay Fire, Minimax, Ceasefire                                 |
| 7.6       | Battery banks maintenance free  | Exide, Amar Raja, Standard Furukawa                            |
| 7.7       | Battery charger   | AE Cldyne, System, Control, Chaabi, Electronics, Statcon       |
|           |   |  |
| <b>8</b>  | <b>Miscellaneous</b>  |  |
| 8.1       | Anchor Fastner  | Hilti , Fisher   |

| <b>Sl No</b> | <b>Item</b>   | <b>Approved Makes of Material</b>                                  |
|--------------|---|--|
| 8.2          | Welding rods  | Advani Oerlikon  |
| 8.3          | Paints  | ICI, Asian, Shalimar   |
| 8.4          | Fire sealing material   | Hilti  |
| 8.5          | Lighting protection   | Alltec, Franklin   |
| 8.6          | Maintenance free earthing                                     | Alltec   |
| 8.7          | Surge protection  | Phoenix Contact, OBO Bettermann                                    |
| <b>9.</b>    | <b>Addressable Fire Detection &amp; Public Address System</b> |  |
| 9.1          | Smoke Detectors   | Notifier Onyx Series, Bosch FPA Series, Siemens Fire Finder Series |
| 9.2          | Heat Detectors  | Notifier Onyx Series, Bosch FPA Series, Siemens Fire Finder Series |
| 9.3          | Fix. Temp. Detectors  | Notifier Onyx Series, Bosch FPA Series, Siemens Fire Finder Series |
| 9.4          | Manual Pull Station   | Notifier Onyx Series, Bosch FPA Series, Siemens Fire Finder Series |
| 9.5          | Control Module  | Notifier Onyx Series, Bosch FPA Series, Siemens Fire Finder Series |
| 9.6          | Monitor Module  | Notifier Onyx Series, Bosch FPA Series, Siemens Fire Finder Series |
| 9.7          | Main Panel/Repeater Panel                                     | Notifier Onyx Series, Bosch FPA Series, Siemens Fire Finder Series |
| 9.8          | Hooters   | Notifier Onyx Series, Bosch FPA Series, Siemens Fire Finder Series |
| 9.9          | Exit Signs battery backed                                     | System Tek, Legrand  |
| 9.10         | Public address system   | Bosch, RCF   |
| <b>10.</b>   | <b>CCTV</b>   |  |
| 10.1         | Cameras   | Bosch, Pelco, Panasonic  |
| 10.2         | Digital Video Recorders                                       | Bosch, Pelco, Panasonic  |
| 10.3         | Monitors  | Bosch, Pelco, Panasonic  |

We have noted the above and confirm that our tender is based on the First Preference of the approved makes indicated above

**Signature of Tenderer**

**Mahidra World City Jaipur,Block B1  
Specifications for LT Distribution panels**

**Reference drawing ED-101(A)**

The Schedule is to be correlated with the reference drawing and in case of any clarifications the same should be referred to Owners/ Consultants

| <b>Metering</b>  | <b>MPR-1(H)</b>   | <b>MPR-1</b>   | <b>MPR-2</b>  | <b>MPR-3</b>   | <b>PR-4</b>   |
|--|---|--|---|--|---|
| <b>Energy Metering BMS</b><br>All single phase and three phase energy digital meters shall have BMS connectivity to provide readings on a central computerised billing system. The rates quoted shall be inclusive all accessories required to achieve requirements of the central billing system. | <b>Protection</b><br>Over Current 40%-100% with time setting<br>Selective Short Circuit 60%-1000% with time setting<br>Instantaneous Short Circuit 150%-1500%<br>Earth Fault with adjustable relay 20%-100%<br>Under Voltage 60%-95% with time setting<br>Over Voltage 105%-120% with time setting<br>Residual Voltage 10%-40% with time setting<br>Reverse Power<br><b>Measurements</b><br>Current - Phases, Neutral<br>Voltage - Phases, Neutral<br>Power - Active, Reactive<br>Energy - Active, Reactive<br>Power Factor<br>Frequency<br>Harmonics<br><b>Connectivity</b><br>MODBUS connectivity for ACB ON/OFF STATUS<br>Protection Parameters Set/Fault Trip Signals | <b>Protection</b><br>Over Current 40%-100% with time setting<br>Selective Short Circuit 60%-1000% with time setting<br>Instantaneous Short Circuit 150%-1500%<br>Earth Fault with adjustable relay 20%-100%<br>Under Voltage 60%-95% with time setting<br>Over Voltage 105%-120% with time setting<br>Residual Voltage 10%-40% with time setting<br>Reverse Power<br><b>Measurements</b><br>Current - Phases, Neutral<br>Voltage - Phases, Neutral<br>Power - Active, Reactive<br>Energy - Active, Reactive<br>Power Factor<br>Frequency<br><b>Connectivity</b><br>MODBUS connectivity for ACB ON/OFF STATUS<br>Protection Parameters Set/Fault Trip Signals | <b>Protection</b><br>Over Current 40%-100% with time setting<br>Selective Short Circuit 60%-1000% with time setting<br>Instantaneous Short Circuit 150%-1500%<br>Earth Fault with adjustable relay 20%-100% | <b>Protection</b><br>Thermal Over Current 40%-100% with time setting<br>Magnetic Short Circuit with Instantaneous 150%-1200% | <b>Protection</b><br>Thermal Over Current<br>Magnetic Short Circuit |

| <b>Subhead V Item 2</b>      |                 |                         |  |                           |                           |                    |                          |                             |  |   |  |   |  |
|------------------------------|-----------------|-------------------------|--|---------------------------|---------------------------|--------------------|--------------------------|-----------------------------|--|---|--|---|--|
| <b>A MAIN BLOCK B1 PANEL</b> |                 |                         |  |                           |                           |                    |                          |                             |  |   |  |   |  |
| <b>Bus Bar</b>               | <b>Rating</b>   | <b>Material</b>         | <b>Current Density</b>                                     | <b>Configura<br/>tion</b> | <b>Neutral<br/>rating</b> | <b>Fault level</b> | <b>Short Time rating</b> |                             |  |   |  |   |  |
| <b>Bus Bars</b>              | 1500 amps       | Aluminium               | 1.0 amp per sq<br>mm and/or to<br>withstand fault<br>level | TPN                       | 100%                      | 25 kA              | 25 kA for 1 sec          |                             |  |   |  |   |  |
| <b>Feeder</b>                | <b>Quantity</b> | <b>Switching Device</b> | <b>Current rating</b>                                      | <b>Fault level</b>        | <b>Voltage</b>            | <b>Mechanism</b>   | <b>Configuration</b>     | <b>Current Transformers</b> | <b>Metering</b>  | <b>Protection</b>   | <b>Indicating lamps</b>  | <b>accessories</b>                        |  |
| Incoming                     | 1 no            | ACB                     | 1250 amps  | 25 kA                     | 440 volts                 | MDO                | 3 Pole and Neutral Link  | 3 - CI 1.0 - 1250/5 CT's    | 1 - Digital Voltmeter scaled 0-500 volts with 3 way and Off selector switch<br>1 - Digital Ammeter scaled 0-1250 amps with 3 way and OFF selector switch<br>1 - Digital Energy Meter with BMS connectivity | Microprocessor based releases control unit for protection MPR-2 | 1 - set of Red/Green On/OFF lamps<br>1 - Amber trip circuit healthy<br>3 - phase indicating lamps(R,Y,B) | Terminals to receive aluminium XLPE Cable |  |
| <b>Outgoing</b>              |                 |                         |  |                           |                           |                    |                          |                             |  |   |  |   |  |
| Rising Main-I,II & spare     | 3 nos           | MCCB                    | 800 amps   | 25 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 800/5 CT's     | 1 - Digital Kwh meter with BMS connectivity  | Microprocessor based releases control unit for protection MPR-3 | 1 - set of Red/Green On/OFF lamps  | Terminals to receive aluminium XLPE Cable |  |
| Basement Ventilation Panel   | 1 no            | MCCB                    | 400 amps   | 25 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 400/5 CT's     | 1 - Digital Ammeter scaled 0-400 amps with 3 way and OFF selector switch   | Microprocessor based releases control unit for protection MPR-3 | 1 - set of Red/Green On/OFF lamps  | Terminals to receive aluminium XLPE Cable |  |
| Lift Swbd,spare              | 2 nos.          | MCCB                    | 200 amps   | 25 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 200/5 CT's     | 1 - Digital Ammeter scaled 0-200 amps with 3 way and OFF selector switch   | Microprocessor based releases control unit for protection MPR-3 | 1 - set of Red/Green On/OFF lamps  | Terminals to receive aluminium XLPE Cable |  |
| Pressurisation Panel ,Spare  | 2 nos.          | MCCB                    | 100 amps   | 25 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 100/5 CT's     | 1 - Digital Ammeter scaled 0-100 amps with 3 way and OFF selector switch   | Thermal over load and magnetic short circuit release PR-4       | 1 - set of Red/Green On/OFF lamps  | Terminals to receive aluminium XLPE Cable |  |

|           |  |                 |                         |   |                      |                       |                    |   |   |   |   |  |                    |
|-----------|--|-----------------|-------------------------|---|----------------------|-----------------------|--------------------|---|---|---|---|--|--------------------|
|           | Basement lighting TP DB, Tertiary pump panel | 2 nos.          | MCCB                    | 63 amps   | 25 kA                | 440 volts             | Fixed Type         | 3 Pole and Neutral Link 3 - CI 1.0 - 63/5 CT's  | 1 - Digital Ammeter scaled 0-63 amps with 3 way and OFF selector switch | Thermal over load and magnetic short circuit release PR-4   | 1 - set of Red/Green On/OFF lamps                         | Terminals to receive aluminium XLPE Cable                                      |                    |
|           |  |                 |                         |   |                      |                       |                    |   |   |   |   |  |                    |
|           | <b>Subhead V Item 3</b>                      |                 |                         |   |                      |                       |                    |   |   |   |   |  |                    |
| <b>A.</b> | <b>Ground Floor Panel</b>                    |                 |                         |   |                      |                       |                    |   |   |   |   |  |                    |
|           | <b>Bus Bar</b>                               | <b>Rating</b>   | <b>Material</b>         | <b>Current Density</b>                            | <b>Configuration</b> | <b>Neutral rating</b> | <b>Fault level</b> | <b>Short Time rating</b>                        |   |   |   |  |                    |
|           | <b>Bus Bars</b>                              | 250 amps        | Aluminium               | 1.0 amp per sq mm and/or to withstand fault level | TPN                  | 100%                  | 15 kA              | 15 kA for 1 sec                                 |   |   |   |  |                    |
|           | <b>Feeder</b>                                | <b>Quantity</b> | <b>Switching Device</b> | <b>Current rating</b>                             | <b>Fault level</b>   | <b>Voltage</b>        | <b>Mechanism</b>   | <b>Configuration</b>                            | <b>Current Transformers</b>   | <b>Metering</b>   | <b>Protection</b>   | <b>Indicating lamps</b>  | <b>accessories</b> |
|           | <b>Incoming</b>                              |                 |                         |   |                      |                       |                    |   |   |   |   |  |                    |
|           | Incoming                                     | 1 no            | Change over Switch      | 200 amps  | 15 kA                | 440 volts             | Fixed Type         | 4 Pole  |   |   |   |  |                    |
|           | Incoming                                     | 1 no            | MCCB                    | 200 amps  | 15 kA                | 440 volts             | Fixed Type         | 3 Pole and Neutral Link 3 - CI 1.0 - 200/5 CT's |   | 1 - Digital Voltmeter scaled 0-500 volts with 3 way and Off selector switch<br>1 - Digital Ammeter scaled 0-200 amps with 3 way and OFF selector switch | Thermal over load and magnetic short circuit release PR-4 | 1 - set of Red/Green On/OFF lamps<br>Terminals to receive aluminium XLPE Cable |                    |
|           | <b>Outgoings</b>                             |                 |                         |   |                      |                       |                    |   |   |   |   |  |                    |
|           | DB-G1, DB-G2, Spare                          | 3 nos           | MCCB                    | 100 amps  | 15 kA                | 440 volts             | Fixed Type         | 3 Pole and Neutral Link 3 - CI 1.0 - 100/5 CT's |   | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |  |                    |
|           | DB Common Area, Spare, Spare                 | 3 nos           | MCCB                    | 40 amps   | 15 kA                | 440 volts             | Fixed Type         | 3 Pole and Neutral Link 3 - CI 1.0 - 40/5 CT's  |   | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |  |                    |
|           | Common Area AHU                              | 1 no            | MCCB                    | 32 amps   | 15 kA                | 440 volts             | Fixed Type         | 3 Pole and Neutral Link 3 - CI 1.0 - 32/5 CT's  |   | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |  |                    |
|           | DB-E   | 1 no            | MCB                     | 40 amps   | 10 kA                | 250 volts             | Fixed Type         | DP  |   | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |  |                    |
| <b>B.</b> | <b>First Floor Panel</b>                     |                 |                         |   |                      |                       |                    |   |   |   |   |  |                    |
|           | <b>Bus Bar</b>                               | <b>Rating</b>   | <b>Material</b>         | <b>Current Density</b>                            | <b>Configuration</b> | <b>Neutral rating</b> | <b>Fault level</b> | <b>Short Time rating</b>                        |   |   |   |  |                    |
|           | <b>Bus Bars</b>                              | 250 amps        | Aluminium               | 1.0 amp per sq mm and/or to withstand fault level | TPN                  | 100%                  | 15 kA              | 15 kA for 1 sec                                 |   |   |   |  |                    |
|           | <b>Feeder</b>                                | <b>Quantity</b> | <b>Switching Device</b> | <b>Current rating</b>                             | <b>Fault level</b>   | <b>Voltage</b>        | <b>Mechanism</b>   | <b>Configuration</b>                            | <b>Current Transformers</b>   | <b>Metering</b>   | <b>Protection</b>   | <b>Indicating lamps</b>  | <b>accessories</b> |
|           | <b>Incoming</b>                              |                 |                         |   |                      |                       |                    |   |   |   |   |  |                    |
|           | Incoming                                     | 1 no            | Change over Switch      | 200 amps  | 15 kA                | 440 volts             | Fixed Type         | 4 Pole  |   |   |   |  |                    |
|           | Incoming                                     | 1 no            | MCCB                    | 200 amps  | 15 kA                | 440 volts             | Fixed Type         | 3 Pole and Neutral Link 3 - CI 1.0 - 200/5 CT's |   | 1 - Digital Voltmeter scaled 0-500 volts with 3 way and Off selector switch<br>1 - Digital Ammeter scaled 0-200 amps with 3 way and OFF selector switch | Thermal over load and magnetic short circuit release PR-4 | 1 - set of Red/Green On/OFF lamps<br>Terminals to receive aluminium XLPE Cable |                    |



| Outgoings                    |                 |                         |  |                           |                           |                    |                          |                             |   |   |                                   |   |  |
|------------------------------|-----------------|-------------------------|--|---------------------------|---------------------------|--------------------|--------------------------|-----------------------------|---|---|-----------------------------------|---|--|
| DB-F1,DB-F2,Spare            | 3 nos           | MCCB                    | 100 amps   | 15 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 100/5 CT's     | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
| Spare                        | 1 nos           | MCB                     | 40 amps  | 10 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 40/5 CT's      | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
| Common Area AHU              | 1 no            | MCB                     | 32 amps  | 10 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 32/5 CT's      | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
| <b>C. Second Floor Panel</b> |                 |                         |  |                           |                           |                    |                          |                             |   |   |                                   |   |  |
| <b>Bus Bar</b>               | <b>Rating</b>   | <b>Material</b>         | <b>Current Density</b>                                     | <b>Configura<br/>tion</b> | <b>Neutral<br/>rating</b> | <b>Fault level</b> | <b>Short Time rating</b> |                             |   |   |                                   |   |  |
| <b>Bus Bars</b>              | 250 amps        | Aluminium               | 1.0 amp per sq<br>mm and/or to<br>withstand fault<br>level | TPN                       | 100%                      | 15 kA              | 15 kA for 1 sec          |                             |   |   |                                   |   |  |
| <b>Feeder</b>                | <b>Quantity</b> | <b>Switching Device</b> | <b>Current rating</b>                                      | <b>Fault level</b>        | <b>Voltage</b>            | <b>Mechanism</b>   | <b>Configuration</b>     | <b>Current Transformers</b> | <b>Metering</b>   | <b>Protection</b>   | <b>Indicating lamps</b>           | <b>accessories</b>                        |  |
| <b>Incoming</b>              |                 |                         |  |                           |                           |                    |                          |                             |   |   |                                   |   |  |
| Incoming                     | 1 no            | Change over Switch      | 200 amps   | 15 kA                     | 440 volts                 | Fixed Type         | 4 Pole                   |                             |   |   |                                   |   |  |
| Incoming                     | 1 no            | MCCB                    | 200 amps   | 15 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 200/5 CT's     | 1 - Digital Voltmeter scaled 0-500 volts with 3 way and Off selector switch<br>1 - Digital Ammeter scaled 0-200 amps with 3 way and OFF selector switch | Thermal over load and magnetic short circuit release PR-4 | 1 - set of Red/Green On/OFF lamps | Terminals to receive aluminium XLPE Cable |  |
| <b>Outgoings</b>             |                 |                         |  |                           |                           |                    |                          |                             |   |   |                                   |   |  |
| DB-S1,DB-S2,Spare            | 3 nos           | MCCB                    | 100 amps   | 15 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 100/5 CT's     | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
| Spare                        | 1 nos           | MCB                     | 40 amps  | 10 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 40/5 CT's      | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
| Common Area AHU              | 1 no            | MCB                     | 32 amps  | 10 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 32/5 CT's      | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
| <b>D. Third Floor Panel</b>  |                 |                         |  |                           |                           |                    |                          |                             |   |   |                                   |   |  |
| <b>Bus Bar</b>               | <b>Rating</b>   | <b>Material</b>         | <b>Current Density</b>                                     | <b>Configura<br/>tion</b> | <b>Neutral<br/>rating</b> | <b>Fault level</b> | <b>Short Time rating</b> |                             |   |   |                                   |   |  |
| <b>Bus Bars</b>              | 250 amps        | Aluminium               | 1.0 amp per sq<br>mm and/or to<br>withstand fault<br>level | TPN                       | 100%                      | 15 kA              | 15 kA for 1 sec          |                             |   |   |                                   |   |  |
| <b>Feeder</b>                | <b>Quantity</b> | <b>Switching Device</b> | <b>Current rating</b>                                      | <b>Fault level</b>        | <b>Voltage</b>            | <b>Mechanism</b>   | <b>Configuration</b>     | <b>Current Transformers</b> | <b>Metering</b>   | <b>Protection</b>   | <b>Indicating lamps</b>           | <b>accessories</b>                        |  |
| <b>Incoming</b>              |                 |                         |  |                           |                           |                    |                          |                             |   |   |                                   |   |  |
| Incoming                     | 1 no            | Change over Switch      | 200 amps   | 15 kA                     | 440 volts                 | Fixed Type         | 4 Pole                   |                             |   |   |                                   |   |  |
| Incoming                     | 1 no            | MCCB                    | 200 amps   | 15 kA                     | 440 volts                 | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 200/5 CT's     | 1 - Digital Voltmeter scaled 0-500 volts with 3 way and Off selector switch<br>1 - Digital Ammeter scaled 0-200 amps with 3 way and OFF selector switch | Thermal over load and magnetic short circuit release PR-4 | 1 - set of Red/Green On/OFF lamps | Terminals to receive aluminium XLPE Cable |  |

| <b>Outgoings</b>                 |                 |                         |   |                       |                       |                    |                          |                             |   |   |                                   |   |  |
|----------------------------------|-----------------|-------------------------|---|-----------------------|-----------------------|--------------------|--------------------------|-----------------------------|---|---|-----------------------------------|---|--|
| DB-T1,DB-T2,Spare                | 3 nos           | MCCB                    | 100 amps  | 15 kA                 | 440 volts             | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 100/5 CT's     | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
| Common Area AHU,DB-CA,Spare      | 3 nos           | MCB                     | 32 amps   | 10 kA                 | 440 volts             | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 32/5 CT's      | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
| <b>E. Fourth Floor Panel</b>     |                 |                         |   |                       |                       |                    |                          |                             |   |   |                                   |   |  |
| <b>Bus Bar</b>                   | <b>Rating</b>   | <b>Material</b>         | <b>Current Density</b>                            | <b>Configura tion</b> | <b>Neutral rating</b> | <b>Fault level</b> | <b>Short Time rating</b> |                             |   |   |                                   |   |  |
| <b>Bus Bars</b>                  | 250 amps        | Aluminium               | 1.0 amp per sq mm and/or to withstand fault level | TPN                   | 100%                  | 15 kA              | 15 kA for 1 sec          |                             |   |   |                                   |   |  |
| <b>Feeder</b>                    | <b>Quantity</b> | <b>Switching Device</b> | <b>Current rating</b>                             | <b>Fault level</b>    | <b>Voltage</b>        | <b>Mechanism</b>   | <b>Configuration</b>     | <b>Current Transformers</b> | <b>Metering</b>   | <b>Protection</b>   | <b>Indicating lamps</b>           | <b>accessories</b>                        |  |
| <b>Incoming</b>                  |                 |                         |   |                       |                       |                    |                          |                             |   |   |                                   |   |  |
| Incoming                         | 1 no            | Change over Switch      | 200 amps  | 15 kA                 | 440 volts             | Fixed Type         | 4 Pole                   |                             |   |   |                                   |   |  |
| Incoming                         | 1 no            | MCCB                    | 200 amps  | 15 kA                 | 440 volts             | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 200/5 CT's     | 1 - Digital Voltmeter scaled 0-500 volts with 3 way and Off selector switch<br>1 - Digital Ammeter scaled 0-200 amps with 3 way and OFF selector switch | Thermal over load and magnetic short circuit release PR-4 | 1 - set of Red/Green On/OFF lamps | Terminals to receive aluminium XLPE Cable |  |
| <b>Outgoings</b>                 |                 |                         |   |                       |                       |                    |                          |                             |   |   |                                   |   |  |
| DB-F1,DB-F2,Spare                | 3 nos           | MCCB                    | 100 amps  | 15 kA                 | 440 volts             | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 100/5 CT's     | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
| Common Area AHU,Spare            | 2 nos           | MCB                     | 32 amps   | 10 kA                 | 440 volts             | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 32/5 CT's      | 1 - Digital Energy Meter with BMS   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
| <b>F. Swbd-Lift for Block B1</b> |                 |                         |   |                       |                       |                    |                          |                             |   |   |                                   |   |  |
| <b>Bus Bars</b>                  | 250 amps        | Aluminium               | 1.0 amp per sq mm and/or to withstand fault level | TPN                   | 100%                  | 15 kA              | 15 kA for 1 sec          |                             |   |   |                                   |   |  |
| <b>Feeder</b>                    | <b>Quantity</b> | <b>Switching Device</b> | <b>Current rating</b>                             | <b>Fault level</b>    | <b>Voltage</b>        | <b>Mechanism</b>   | <b>Configuration</b>     | <b>Current Transformers</b> | <b>Metering</b>   | <b>Protection</b>   | <b>Indicating lamps</b>           | <b>accessories</b>                        |  |
| <b>Incoming</b>                  |                 |                         |   |                       |                       |                    |                          |                             |   |   |                                   |   |  |
| Incoming                         | 1 no            | Change over Switch      | 200 amps  | 15 kA                 | 440 volts             | Fixed Type         | 4 Pole                   |                             |   |   |                                   |   |  |
| Incoming                         | 1 no            | MCCB                    | 200 amps  | 15 kA                 | 440 volts             | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 200/5 CT's     | 1 - Digital Voltmeter scaled 0-500 volts with 3 way and Off selector switch<br>1 - Digital Ammeter scaled 0-200 amps with 3 way and OFF selector switch | Thermal over load and magnetic short circuit release PR-4 | 1 - set of Red/Green On/OFF lamps | Terminals to receive aluminium XLPE Cable |  |
| <b>Outgoings</b>                 |                 |                         |   |                       |                       |                    |                          |                             |   |   |                                   |   |  |
| Lift1,Lift2,Lift3,Spare          | 4 nos           | MCCB                    | 100 amps  | 15 kA                 | 440 volts             | Fixed Type         | 3 Pole and Neutral Link  | 3 - CI 1.0 - 100/5 CT's     | 1 - Digital Ammeter scaled 0-100 amps with 3 way and OFF selector switch  | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
| DB-Lift,Spare                    | 2 nos           | MCB                     | 32 amps   | 10 kA                 | 440 volts             | Fixed Type         | 3 Pole and Neutral Link  |                             |   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |

| Subhead V Item 4  |          |                  |   |             |           |            |                         |                         |   |   |                                   |   |  |
|---|----------|------------------|---|-------------|-----------|------------|-------------------------|-------------------------|---|---|-----------------------------------|---|--|
| A. SWBD-Pressurisation Panel  |          |                  |   |             |           |            |                         |                         |   |   |                                   |   |  |
| Feeder  | Quantity | Switching Device | Current rating                                    | Fault level | Voltage   | Mechanism  | Configuration           | Current Transformers    | Metering  | Protection  | Indicating lamps                  | accessories                               |  |
| <b>Bus Bars</b>   | 150 amps | Aluminium        | 1.0 amp per sq mm and/or to withstand fault level | TPN         | 100%      | 15 kA      | 15 kA for 1 sec         |                         |   |   |                                   |   |  |
| <b>Incoming</b>   |          |                  |   |             |           |            |                         |                         |   |   |                                   |   |  |
| Incoming  | 1 no     | MCCB             | 100 amps  | 15 kA       | 440 volts | Fixed Type | 3 Pole and Neutral Link | 3 - CI 1.0 - 100/5 CT's | 1 - Digital Voltmeter scaled 0-500 volts with 3 way and Off selector switch<br>1 - Digital Ammeter scaled 0-100 amps with 3 way and OFF selector switch | Thermal over load and magnetic short circuit release PR-4 | 1 - set of Red/Green On/OFF lamps | Terminals to receive aluminium XLPE Cable |  |
| <b>Outgoings</b>  |          |                  |   |             |           |            |                         |                         |   |   |                                   |   |  |
| Liftwell 1,Liftwell 2,Liftwell3,Stairwell 1,Stairwell 2,Spare,Spare | 7 nos    | MCB              | 32 amps   | 10 kA       | 440 volts | Fixed Type | 3 Pole and Neutral Link |                         |   | Thermal over load and magnetic short circuit release PR-4 |                                   |   |  |
|   |          |                  |   |             |           |            |                         |                         |   |   |                                   |   |  |
|   |          |                  |   |             |           |            |                         |                         |   |   |                                   |   |  |

MAHINDRA WORLD CITY, JAIPUR

Specifications for LT panels

Reference drawing ED-101 (A)

**MPR-HT**

**Protection**

Microprocessor based 2 - Overcurrent and 1 earth fault self powered relay with dedicated trip coil

**Note**

All panels are compartmentalize

**MPR-1**

**Protection**

Over Current 40%-100% with time setting  
 Selective Short Circuit 60%-1000% with time setting  
 Instantaneous Short Circuit 150%-1500%  
 Earth Fault with adjustable relay 20%-100%  
 Under Voltage 60%-95% with time setting  
 Over Voltage 105%-120% with time setting  
 Residual Voltage 10%-40% with time setting  
 Reverse Power

**Measurements**

Current - Phases, Neutral  
 Voltage - Phases, Neutral  
 Power - Active, Reactive  
 Energy - Active, Reactive  
 Power Factor  
 Frequency  
 Harmonics

**Connectivity**

MODBUS connectivity for ACB ON/OFF STATUS  
 Protection Parameters Set/Fault Trip Signals

**MPR-2**

**Protection**

Over Current 40%-100% with time setting  
 Selective Short Circuit 60%-1000% with time setting  
 Instantaneous Short Circuit 150%-1500%  
 Earth Fault with adjustable relay 20%-100%

**MPR-3**

**Protection**

Over Current 40%-100% with time setting  
 Instantaneous Short Circuit 150%-1500%

**Note :**

- 1 The Tenderer shall study the existing installation at site and take into consideration all site conditions at the time of submitting the offer. No extra payment shall be due on account of lack of knowledge of actual site condition
- 2 "Installation & Commissioning" rate shall be inclusive of transit insurance, unloading, storage, erection, installation, testing and commissioning of the equipment etc. as required
- 3 Transportation charges shall be reimbursed at actuals and estimated amount shall be indicated here under.

| Subhead XI Item 1 |   |          |   |   |                |                |                          |                   |   |           |  |  |  |  |
|-------------------|---|----------|---|---|----------------|----------------|--------------------------|-------------------|---|-----------|--|--|--|--|
| 1                 | 33 kV Extension Panel for Transformer outgoing feeder | Rating   | Material                                    | Current Density                                   | Configur ation | Neutral rating | Fault level              | Short Time rating |   |           |  |  |  |  |
|                   | Bus Bar   | 630 amps | Copper                                      | 1.6 amp per sq mm and/or to withstand fault level | TP             |                | 26 kA                    | 26 kA for 1 sec   |   |           |  |  |  |  |
|                   | Feeder  | Quantity | Switching Device                            | Current rating                                    | Fault level    | Voltage        | Mechanis m               | Configuration     | Current/ Transformers   | Potential | Metering   | Protection   | Indicating lamps   | Accessories  |
|                   | Outgoing  | 1 nos    | VCB/SF6 Circuit Breaker with earthing Truck | 3 Phase 400 amps                                  | 1500 MVA       | 33000 volts    | Manually spring operated | Triple Pole       | 3 - CI 1.0 & 5P10 dual core – 40/5 CT's, 3 - CI PS – 40/5 CT's 3 - 1 Phase fixed type cast resin line potential transformer ratio 33KV/sqrt3:110/sqrt3 volts, connected star/star with HV and LV connections, HV and LV fuses, isolating plugs for HV and LV connections. |           | 1 - Square Analog Ammeter of 96mm scaled 0-40 amps with 3 way and Off selector switch<br>1 - Energy Analyser 1.0 accuracy to measure voltage, current, power factor, frequency, kW/kVA, kWh, kVAh, Real time date with communication module for BMS connectivity | 1- Triple pole static I.D.M.T. over current and earth fault, short circuit protection microprocessor relay, with two outer elements connected for over current and the middle element for earth fault protection over current setting 50% - 200% Earth fault setting 20% -80% and with instantaneous element on all 3 pole settings 500-2000% on over current and 200-800% on earth fault (51, 50, 51N & 50N)<br><br>1 - Master trip relay (86)<br><br>1 - Anti pumping relay (94)<br>1- set of electro mechanical auxiliary relay for OLTC, fault trip/ alarm for the buchholz/oil surge relay<br>1- set auxiliary relay for transformer fault ALARM for differential, buchholz, oil temperature, MOLG with LLA winding temperature (63x)<br><br>1- set auxiliary relay for transformer fault TRIP for differential, buchholz, oil temperature, MOLG with LLA winding temperature (63x) | 1 - set of Red/Green Lamps Close/Open position<br>1 - Amber trip circuit healthy<br>1 - Mechanical Button ON/OFF/EARTH Indication<br>Live Cable indicating LED's | 1 NO + 1 NC Auxiliary Contacts<br>Emergency Trip Push Button<br>Cable Box suitable for termination of 1 No. 33kV 3 Core 300 Sqmm PILC/XLPE cable |

| Subhead V Item 5 |   |                 |                         |   |                       |                       |                              |                          |   |                  |   |   |   |   |
|------------------|---|-----------------|-------------------------|---|-----------------------|-----------------------|------------------------------|--------------------------|---|------------------|---|---|---|---|
| <b>A</b>         | <b>EXTENSION TO MAIN LT SWITCHBOARD</b>   |                 |                         |   |                       |                       |                              |                          |   |                  |   |   |   |   |
|                  | Necessary bus bar adaptor chamber if required for extension to existing LT Panel shall be included in offer and as per schematic drawing ED- 101( |                 |                         |   |                       |                       |                              |                          |   |                  |   |   |   |   |
|                  | <b>Bus Bar</b>  | <b>Rating</b>   | <b>Material</b>         | <b>Current Density</b>                          | <b>Configur ation</b> | <b>Neutral rating</b> | <b>Fault level</b>           | <b>Short Time rating</b> |   |                  |   |   |   |   |
|                  | <b>Bus Bars C</b>   | 4000 amps       | Aluminium               | 1 amp per sq mm and/or to withstand fault level | TPN                   | 50%                   | 65 kA                        | 65 kA for 1 sec          |   |                  |   |   |   |   |
|                  | <b>Feeder</b>   | <b>Quantity</b> | <b>Switching Device</b> | <b>Current rating</b>                           | <b>Fault level</b>    | <b>Voltage</b>        | <b>Mechanis m</b>            | <b>Configuration</b>     | <b>Current/ Transformers</b>                                      | <b>Potential</b> | <b>Metering</b>   | <b>Protection</b>   | <b>Indicating lamps</b>   | <b>accessories</b>  |
|                  | Incoming from ATS ATS3  | 1 nos           | ACB                     | 3200 amps                                       | 65 kA                 | 690 volts             | EDO                          | 3 Pole+N                 | 3 - CI 1.0 - 3200/5<br>1 - CI 'PS' REF CT for Transformer neutral |                  | 1 - Ammeter scaled 0-3200 amps with 3 way and OFF selector switch | Microprocessor based releases control unit for protection and metering MPR-1<br>1 - Restricted earth fault relay -87<br>1 - Set of auxiliary relays for transformer alarm conditions of winding temperature etc<br>1 - Set of auxiliary relays for transformer trip conditions of winding temperature etc | 1 - set of Red/Green On/OFF lamps<br>3 - white phase indicating lamps<br>1 - Amber trip circuit healthy | 1 - 24 volt DC shunt trip coil<br>1 - 230 volt Motor wound spring closing mechanism<br>1 - 230 volt closing coil<br>Adequate NO/NC contacts for control and monitoring and Terminals to receive 3200 amp TPN Aluminium Bus Duct |
|                  | Bus Couplers B2   | 1 nos           | ACB                     | 3200 amps                                       | 65 kA                 | 690 volts             | EDO                          | 4 Pole                   |   |                  |   |   | 1 - set of Red/Green On/OFF lamps   | 1 - 24 volt DC shunt trip coil<br>1 - 230 volt Motor wound spring closing mechanism<br>1 - 230 volt closing coil  |
|                  | <b>Outgoings Bus Section-C</b>  |                 |                         |   |                       |                       |                              |                          |   |                  |   |   |   |   |
|                  | HVAC-II(Standby)  | 1 no            | ACB                     | 1250 amps                                       | 65 kA                 | 690 volts             | MDO                          | 3 Pole + N               | 3 - CI 1.0 – 1250/5 CT's  |                  | Ammeter scaled 0-1250 amps with 3 way and OFF selector switch     | Microprocessor based releases control unit for protection MPR-2   | 1 - set of Red/Green On/OFF lamps   | 1 - 24 volt DC shunt trip coil<br>IMS closing mechanism   |
|                  | HVAC-III & IV(Working) for B1/B2 Block 600 TR Chiller   | 2 nos           | ACB                     | 1250 amps                                       | 65 kA                 | 690 volts             | MDO                          | 3 Pole + N               | 3 - CI 1.0 – 1250/5 CT's  |                  | Ammeter scaled 0-1250 amps with 3 way and OFF selector switch     | Microprocessor based releases control unit for protection MPR-2   | 1 - set of Red/Green On/OFF lamps   | 1 - 24 volt DC shunt trip coil<br>IMS closing mechanism   |
|                  | Block B1  | 1 no            | ACB                     | 1250 amps                                       | 65 kA                 | 690 volts             | MDO                          | 3 Pole + N               | 3 - CI 1.0 – 1250/5 CT's  |                  | Ammeter scaled 0-1250 amps with 3 way and OFF selector switch     | Microprocessor based releases control unit for protection MPR-2   | 1 - set of Red/Green On/OFF lamps   | 1 - 24 volt DC shunt trip coil<br>IMS closing mechanism   |
|                  | Block B2  | 1 no            | ACB                     | 1250 amps                                       | 65 kA                 | 690 volts             | MDO                          | 3 Pole + N               | 3 - CI 1.0 – 1250/5 CT's  |                  | Ammeter scaled 0-1250 amps with 3 way and OFF selector switch     | Microprocessor based releases control unit for protection MPR-2   | 1 - set of Red/Green On/OFF lamps   | 1 - 24 volt DC shunt trip coil<br>IMS closing mechanism   |
|                  | Fire pumps B1 & B2  | 1 no            | MCCB                    | 400 amps  | 65 kA                 | 690 volts             | Manual Spring Assisted Fixed | 3 Pole + N               | 3 - CI 1.0 – 400/5 CT's   |                  | Ammeter scaled 0-400 amps with 3 way and OFF selector switch      | Microprocessor based releases control unit for protection MPR-3   | 1 - set of Red/Green On/OFF lamps   |   |
|                  | Pumps feeder B1 & B2  | 1 no            | MCCB                    | 250 amps  | 65 kA                 | 690 volts             | Manual Spring Assisted Fixed | 3 Pole + N               | 3 - CI 1.0 – 250/5 CT's   |                  | Ammeter scaled 0-250 amps with 3 way and OFF selector switch      | Microprocessor based releases control unit for protection MPR-3   | 1 - set of Red/Green On/OFF lamps   |   |
|                  | Capacitor Feeder  | 1 no            | ACB                     | 1600amps  | 65 kA                 | 690 volts             | MDO                          | 3 Pole                   | 3 - CI 1.0 – 1600/5 CT's  |                  | Ammeter scaled 0-1600 amps with 3 way and OFF selector switch     | Microprocessor based releases control unit for protection MPR-2   | 1 - set of Red/Green On/OFF lamps   | IMS closing mechanism   |
|                  | External Lighting   | 1 nos           | MCCB                    | 250 amps  | 65 kA                 | 690 volts             | Manual Spring Assisted Fixed | 3 Pole + N               | 3 - CI 1.0 – 250/5 CT's   |                  | Ammeter scaled 0-250 amps with 3 way and OFF selector switch      | Microprocessor based releases control unit for protection MPR-3   | 1 - set of Red/Green On/OFF lamps   |   |
|                  | Spare   | 1 no            | ACB                     | 1250 amps                                       | 65 kA                 | 690 volts             | MDO                          | 3 Pole + N               | 3 - CI 1.0 – 1250/5 CT's  |                  | Ammeter scaled 0-1250 amps with 3 way and OFF selector switch     | Microprocessor based releases control unit for protection MPR-2   | 1 - set of Red/Green On/OFF lamps   | 1 - 24 volt DC shunt trip coil<br>IMS closing mechanism   |

|          |   |  |                         |   |                      |                       |                              |                          |                              |  |  |  |                                   |  |
|----------|---|--|-------------------------|---|----------------------|-----------------------|------------------------------|--------------------------|------------------------------|--|--|--|-----------------------------------|--|
|          | Spare   | 1 nos  | MCCB                    | 400 amps  | 65 kA                | 690 volts             | Manual Spring Assisted Fixed | 3 Pole + N               | 3 - CI 1.0 – 400/5 CT's      | Ammeter scaled 0-400 amps with 3 way and OFF selector switch | Microprocessor based releases control unit for protection MPR-3  | 1 - set of Red/Green On/OFF lamps  |                                   |  |
| <b>B</b> | <b>EXTENSION TO MAIN DIESEL GENERATOR PANEL</b>   |  |                         |   |                      |                       |                              |                          |                              |  |  |  |                                   |  |
|          | Necessary bus bar adaptor chamber if required for extension to existing DG Panel shall be included in offer and as per schematic drawing ED- 101(A) |  |                         |   |                      |                       |                              |                          |                              |  |  |  |                                   |  |
|          | <b>Bus Bar</b>  | <b>Rating</b>  | <b>Material</b>         | <b>Current Density</b>                          | <b>Configuration</b> | <b>Neutral rating</b> | <b>Fault level</b>           | <b>Short Time rating</b> |                              |  |  |  |                                   |  |
|          | <b>Bus Bars IV</b>  | 4000 amps  | Aluminium               | 1 amp per sq mm and/or to withstand fault level | TPN                  | 50%                   | 65 kA                        | 65 kA for 1 sec          |                              |  |  |  |                                   |  |
|          | <b>Feeder</b>   | <b>Quantity</b>  | <b>Switching Device</b> | <b>Current rating</b>                           | <b>Fault level</b>   | <b>Voltage</b>        | <b>Mechanism</b>             | <b>Configuration</b>     | <b>Current/ Transformers</b> | <b>Potential</b>   | <b>Metering</b>  | <b>Protection</b>  | <b>Indicating lamps</b>           | <b>accessories</b>   |
|          | Incoming from DG4   | 1 nos  | ACB                     | 3200 amps                                       | 65 kA                | 690 volts             | EDO                          | 4 Pole                   | 3 - CI 1.0 – 3200/5          |  | 1 - Ammeter scaled 0-3200 amps with 3 way and OFF selector switch<br>1 - Energy Analyser 1.0 accuracy to measure voltage, current, power factor, frequency, kW/kVA, kWh, kVAh, kVAh, Real time date with communication module for BMS connectivity | Isolator only  | 1 - set of Red/Green On/OFF lamps | 1 - 24 volt DC shunt trip coil<br>1 - 230 volt Motor wound spring closing mechanism<br>1 - 230 volt closing coil<br>Adequate NO/NC contacts for control and monitoring through PLC - I and<br>Terminals to receive 2500 amp TPN Aluminium Bus Duct   |
|          | Bus Couplers E8   | 1 nos  | ACB                     | 3200 amps                                       | 65 kA                | 690 volts             | EDO                          | 4 Pole                   |                              |  |  |  | 1 - set of Red/Green On/OFF lamps | 1 - 24 volt DC shunt trip coil<br>1 - 230 volt Motor wound spring closing mechanism<br>1 - 230 volt closing coil<br>Adequate NO/NC contacts for control and monitoring through PLC-I and additional contacts for interfacing with BMS with a minimum of 2 nos spare NO/NC contacts on each panel |
|          | <b>PLC-I</b>  | Necessary extension to existing Programmable Logic Control and synchronization panel suitable for Auto Load sensing, Auto Load Management, Auto Mains Failure, Auto Changeover, Auto Interlocking, starting/stopping of DG sets as required, open/close operation of incoming and bus section ACB's on the DG Main Panel for 1 no 2000 kVA DG set and bus coupler with manual over-ride, as per functions and sequence of operations shall be included in offer and as per schematic ED-101(A) |                         |   |                      |                       |                              |                          |                              |  |  |  |                                   |  |
|          | <b>Outgoings Bus Section-IV</b>   |  |                         |   |                      |                       |                              |                          |                              |  |  |  |                                   |  |
|          | E10 Feeder  | 1 nos  | ACB                     | 3200 amps                                       | 65 kA                | 690 volts             | EDO                          | 3 Pole+N                 | 3 - CI 1.0 – 3200/5          |  | 1 - Ammeter scaled 0-3200 amps with 3 way and OFF selector switch  | Microprocessor based releases control unit for protection and metering MPR-2 | 1 - set of Red/Green On/OFF lamps | 1 - 24 volt DC shunt trip coil<br>1 - 230 volt Motor wound spring closing mechanism<br>1 - 230 volt closing coil<br>Adequate NO/NC contacts for control and monitoring through PLC - I and<br>Terminals to receive 3200 amp TPN Aluminium Bus Duct   |
|          | DG Aux Panel  | 1 no   | MCCB                    | 400 amps  | 65 kA                | 690 volts             | Manual Spring Assisted Fixed | 3 Pole + N               | 3 - CI 1.0 – 400/5 CT's      | Ammeter scaled 0-400 amps with 3 way and OFF selector switch | Microprocessor based releases control unit for protection MPR-3  | 1 - set of Red/Green On/OFF lamps  |                                   |  |
| <b>C</b> | <b>CAPACITOR PANEL</b>  |  |                         |   |                      |                       |                              |                          |                              |  |  |  |                                   |  |

| Bus Bar   | Rating  | Material         | Current Density                                 | Configur ation | Neutral rating | Fault level | Short Time rating |                      |          |  |                  |   |  |
|-----------|---|------------------|---|----------------|----------------|-------------|-------------------|----------------------|----------|--|------------------|---|--|
| Bus Bars  | 1600 amps   | Aluminium        | 1 amp per sq mm and/or to withstand fault level | TP             | 50%            | 65 kA       | 65 kA for 1 sec   |                      |          |  |                  |   |  |
| Feeder    | Quantity  | Switching Device | Current rating                                  | Fault level    | Voltage        | Mechanism   | Configuration     | Current Transformers | Metering | Protection   | Indicating lamps | accessories   |  |
| Incoming  | Direct Bus duct connection to the bus bars<br>Three phase control transformer for single phase supplies |                  |   |                |                |             |                   |                      |          | 1 – 12 step Automatic Power Factor correction relay with associated relays and wiring. |                  |   |  |
| Outgoings | 4 nos   | MCCB             | 250 amps  |                | 690 volts      |             | 3 Pole            |                      |          |  |                  | 1 – 250 amp TP capacitor duty contactor for capacitor switching<br>1 set of On/Off push buttons<br>1 set of Red/Green On/Off indicating lamps<br>1 - 100 kvar hermetically sealed metallized polypropylene capacitor units with inbuilt protective device |  |
|           | 4 nos   | MCCB             | 160 amps  |                | 690 volts      |             | 3 Pole            |                      |          |  |                  | 1 – 160 amp TP capacitor duty contactor for capacitor switching<br>1 set of On/Off push buttons<br>1 set of Red/Green On/Off indicating lamps<br>1 - 50 kvar hermetically sealed metallized polypropylene capacitor units with inbuilt protective device  |  |
|           | 4 nos   | MCCB             | 100 amps  |                | 690 volts      |             | 3 Pole            |                      |          |  |                  | 1 – 80 amp TP contactor for capacitor switching<br>1 set of On/Off push buttons<br>1 set of Red/Green On/Off indicating lamps<br>1 - 25 kvar hermetically sealed metallized polypropylene capacitor units with inbuilt protective device                  |  |

## MAHINDRA WORLD CITY JAIPUR

## TENDER FOR ELECTRICAL WORKS - BLOCK B1

## SCHEDULE OF QUANTITIES

## Note :

- a) Please fill up rate both in figures and words in the Rate column by putting the rate figure first.  
b) Please total up Sub Head wise and carry forward to Summary of Costs

| Sl.No.                     | Description   | Qty | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|----------------------------|---|-----|------|--------------|----------------|
| <b>SUB HEAD I – WIRING</b> |   |     |      |              |                |
| 1                          | Wiring for Light Points   |     |      |              |                |
| 1.1                        | Switch Controlled Primary Light Points  |     |      |              |                |
|                            | Point wiring for switch controlled primary light points with 3 x 2.5 sq mm (P+N+E) FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires in IS embossed black enamelled minimum 25mm dia 16 SWG MS recessed and/or surface conduiting system including cost of providing saddles etc for surface conduiting and/or cost of cutting and filling chases for recessed conduiting and including the cost of supplying and fixing modular grid plate mounted flush mounted 240 volt 6 amp control switch of approved quality & colour housed in zinc chromate passivated MS boxes with moulded cover plate and including cost of circuit wiring (from DB to first switch in the sub circuit) complete as per specifications and as required.  | 22  | nos  |              |                |
| 1.2                        | DB Controlled Primary Light Points  |     |      |              |                |
|                            | Point wiring for DB controlled primary light points with 3 x 2.5 sq mm (P+N+E) FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires in IS embossed black enamelled minimum 25mm dia 16 SWG MS recessed and/or surface conduiting system including cost of providing saddles etc for surface conduiting and/or cost of cutting and filling chases for recessed conduiting complete as per specifications and as required (cost of MCB not included)  | 46  | nos  |              |                |
| 1.3                        | Secondary Light Points  |     |      |              |                |
|                            | Point wiring for Secondary light points with 3 x 2.5 sq mm (P+N+E) FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires in IS embossed black enamelled minimum 25mm dia 16 SWG MS recessed and/or surface conduiting system including cost of providing saddles etc for surface conduiting and/or cost of cutting and filling chases for recessed conduiting complete as per specifications and as required.  | 238 | nos  |              |                |
| 2                          | Point wiring for exhaust fan points with 3 x 2.5 sq mm(P+N+E) FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires in IS embossed black enameled minimum 25mm dia 16 SWG MS recessed and/or surface conduiting system including cost of providing saddles etc for surface conduiting and/or cost of cutting and filling chases for recessed conduiting in RCC slab/floor/walls including circuit wiring (from DB to first switch) with 3 x 2.5 sq mm(P+N+E) FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires and including the cost of supplying and fixing modular grid plate mounted flush mounted 240 volt 6 amp socket outlet of approved quality & colour housed in zinc chromate passivated MS boxes with moulded cover plate near the fan and supplying and fixing modular grid plate mounted flush mounted 240 volt 6 amp control switch of approved quality & colour housed in zinc chromate passivated MS boxes with moulded cover plate at separate location complete as per specifications and as required. | 2   | nos  |              |                |



| Sl.No. | Description  | Qty       | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|--------|--|-----------|------|--------------|----------------|
| 3      | Point wiring for ceiling fan points with 3 x 2.5 sq mm FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires in IS embossed black enameled minimum 25mm dia 16 SWG MS recessed and/or surface conduiting system including cost of providing saddles etc for surface conduiting and/or cost of cutting and filling chases for recessed conduiting in RCC slab/floor/walls including circuit wiring (from DB to first switch) with 3 x 2.5 sq mm (P+N+E) FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires and including the cost of supplying and fixing modular grid plate mounted flush mounted 240 volt 6 amp control switch of approved quality & colour housed in zinc chromate passivated MS boxes with moulded cover plate and fan hook box and including space provision for electronic speed regulator complete as per specifications and as required. | Rate only | nos  |              |                |
| 4      | Wiring for Socket Outlets  |           |      |              |                |
| 4.1    | Point wiring for 6 amp socket outlet with 3 x 2.5 sq mm (P+N+E) FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires in IS embossed black enameled minimum 25mm dia 16 SWG MS recessed and/or surface conduiting system including cost of providing saddles etc for surface conduiting and/or cost of cutting and filling chases for recessed conduiting in RCC slab/floor/walls including circuit wiring (from DB to first switch) with 3 x 2.5 sq mm (P+N+E) FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires and including the cost of supplying and fixing modular grid plate mounted flush mounted 240 volt 6 amp socket outlet with 6 amp control switch of approved quality & colour housed in zinc chromate passivated MS boxes with moulded cover plate complete as per specifications and as required.   | 20        | nos  |              |                |
| 4.2    | Point wiring for 16 amp socket outlet with 3 x 4 sq mm (P+N+E) FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires in IS embossed black enameled minimum 25mm dia 16 SWG MS recessed and/or surface conduiting system including cost of providing saddles etc for surface conduiting and/or cost of cutting and filling chases for recessed conduiting in RCC slab/floor/walls and including the cost of supplying and fixing modular grid plate mounted flush mounted 240 volt 16 amp socket outlet with 16 amp control switch of approved quality & colour housed in zinc chromate passivated MS boxes with moulded cover plate complete as per specifications and as required.   | 14        | nos  |              |                |
| 5      | Point Wiring for 20 amp Single phase socket outlets with 3 x 4 sqmm (P+N+E) FRLS PVC insulated 660/1100 volt grade stranded copper conductor wires in IS embossed black enameled minimum 25mm dia 16 SWG MS recessed and/or surface conduiting in RCC slab/floor/walls system including the cost of cutting/making good chases in brick work and including the cost of supplying and fixing 20 amp 10 kA SP MCB, industrial type metal clad outlet in IP 65 weather proof enclosure, metal clad plug top complete as per specifications and as required.   | 1         | nos  |              |                |
| 6      | Wiring for Aviation Light  |           |      |              |                |
|        | Wiring for Aviation light with 3 x 2.5 sq mm (P+N+E) FRLS PVC insulated 660 / 1100 volt grade flexible stranded copper conductor wire in IS embossed black enameled minimum 20 mm dia 16 SWG MS conduits including the cost of providing necessary staging / support structure upto the light fixture for doing the wiring work  | 10        | m    |              |                |

| <b>Sl.No.</b>                                   | <b>Description</b>   | <b>Qty</b> | <b>Unit</b> | <b>Rate<br/>Rs.P</b> | <b>Amount<br/>Rs.P</b> |
|---|--|------------|-------------|----------------------|------------------------|
| 7   | Supply and fixing IS embossed black enamelled MS recessed and/or surface conduiting system including cost of providing saddles,GI fish wires etc for surface conduiting and/or cost of cutting and filling chases for recessed conduiting complete as per specification, as required and as below. |            |             |                      |                        |
| a)  | 25mm dia 16 SWG  | 500        | m           |                      |                        |
| b)  | 32mm dia 16 SWG  | 50         | m           |                      |                        |
| <b>TOTAL SUB-HEAD I carried over to Summary</b> |  |            |             |                      |                        |

| Sl.No.   | Description   | Qty | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|--|---|-----|------|--------------|----------------|
| <b>SUB HEAD II – VOICE SYSTEM</b>                |   |     |      |              |                |
| 1  | Providing and fixing of a double telephone cord grid plate mounted outlet unit (RJ-11) with moulded cover plate and with shutters in recessed zinc chromate passivated MS box or in existing floor outlet box complete as required for telephone system.  | 5   | nos  |              |                |
| 2  | Wiring for telephone points with 2 pair 0.61 mm annealed tinned electrolytic copper conductor PVC insulated unshielded twisted wire in existing surface/concealed conduit upto central point complete as required for telephone system  | 90  | m    |              |                |
| 3  | Supply and fixing of the following sheet steel clad wall/recess/floor mounting telephone tag block of Krone make constructed from 14 SWG sheet steel, finished with red oxide coating of two coats of paint, with hinged gasketed door and complete with adequately rated and sized telephone terminal block to receive incoming and outgoing wires. The cost shall be complete with fixing arrangements, foundations etc as required |     |      |              |                |
| a)   | 10 Pair   | 1   | nos  |              |                |
| <b>TOTAL SUB-HEAD II carried over to Summary</b> |   |     |      |              |                |

| Sl.No.                                     | Description   | Qty   | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|--|---|-------|------|--------------|----------------|
| <b>SUB HEAD III – SUB-MAINS AND CABLES</b> |   |       |      |              |                |
| 1  | Wiring for submains with copper conductor wires in surface/recessed conduiting system including cost of providing saddles etc as required for surface conduiting and/or the cost of cutting and filling chases for recessed conduiting complete as per specifications, as required and as below.(End terminations with copper thimbles at both ends)  |       |      |              |                |
| a)   | 4 x 16 sq mm + 2 x 16 sq mm (for loop earthing) FRLS PVC insulated stranded copper conductor 660/1100 volt grade wires in 50 mm 14 SWG MS conduit   | 10    | m    |              |                |
| b)   | 4 x 10 sq mm + 2 x 10 sq mm (for loop earthing) FRLS PVC insulated stranded copper conductor 660/1100 volt grade wires in 40 mm 14 SWG MS conduit   | 10    | m    |              |                |
| c)   | 4 x 6 sq mm + 2 x 6 sq mm (for loop earthing) FRLS PVC insulated stranded copper conductor 660/1100 volt grade wires in 32 mm 14 SWG MS conduit   | 20    | m    |              |                |
| d)   | 2 x 6 sq mm + 1 x 6 sq mm (for loop earthing) FRLS PVC insulated stranded copper conductor 660/1100 volt grade wires in 25 mm 16 SWG MS conduit   | 30    | m    |              |                |
| 2  | Supply and laying in cable Tray/clamped to wall with suitable clamps saddles and fixing bolts/ in ground including the cost of digging and back filling with sand and brick protection as required and including testing and commissioning of the following 1100 volt grade armoured PVC/XLPE insulated and sheathed FRLS aluminium conductor armoured cable complete as required. The costs shall include for all cables to be provided with a 1D gap and shall be properly clamped with cable clamps and ties. Identification tags shall be provided for all cables and route markers for cables in ground. |       |      |              |                |
| a)   | 3.5 Core 300 Sqmm   | 150   | m    |              |                |
| b)   | 3.5 Core 240 Sqmm   | 2,210 | m    |              |                |
| c)   | 3.5 Core 150 Sqmm   | 100   | m    |              |                |
| d)   | 3.5 Core 120 Sqmm   | 100   | m    |              |                |
| e)   | 3.5 Core 95 Sqmm  | 160   | m    |              |                |
| f)   | 3.5 Core 50 Sqmm  | 110   | m    |              |                |
| g)   | 4 core 25 Sqmm  | 175   | m    |              |                |
| h)   | 4 core 10 Sqmm  | 30    | m    |              |                |
| i)   | 4 core 6 Sqmm   | 195   | m    |              |                |
| 3  | Cable termination of following XLPE cables as per item 2.1 above including the cost of crimping heavy duty aluminium lugs, nickel plated brass double compression glands, insulation tape and all requisite material for completion of termination complete as required and as below.   |       |      |              |                |
| a)   | 3.5 Core 300 Sqmm   | 12    | nos  |              |                |
| b)   | 3.5 Core 240 Sqmm   | 24    | nos  |              |                |
| c)   | 3.5 Core 150 Sqmm   | 4     | nos  |              |                |
| d)   | 3.5 Core 120 Sqmm   | 2     | nos  |              |                |
| e)   | 3.5 Core 95 Sqmm  | 22    | nos  |              |                |
| f)   | 3.5 Core 50 Sqmm  | 4     | nos  |              |                |
| g)   | 4 core 25 Sqmm  | 20    | nos  |              |                |
| h)   | 4 core 10 Sqmm  | 6     | nos  |              |                |
| i)   | 4 core 6 Sqmm   | 22    | nos  |              |                |

| Sl.No.  | Description   | Qty       | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|---|---|-----------|------|--------------|----------------|
| 4   | Perforated trays  |           |      |              |                |
| 4.1   | Supplying and fixing of following powder coated Perforated Type Cable Tray system including fittings and accessories on existing structural supports, fabricated from minimum 2 mm thick CRCA MS sheets including the cost of powder coating of approved shade of minimum 50 microns film thickness on MS surface cleaned and prepared with 7 tank process and including the cost of providing loop earthing with 2 nos. 25 mm x 6 mm Al earth strips complete as per specifications and including the cost of approved arrangement of cable tray hangers fabricated from galvanized MS angles/flats/rods including jointing the steel sections of the support arrangement with nuts & bolts / welding and including securing the support to the structural ceiling by dash fasteners etc. complete with spacing of 600mm for 900mm/1200mm and 750mm for lower sizes , as required, and as below. |           |      |              |                |
| a)  | 900 mm x 75 mm x 75 mm trays  | 200       | m    |              |                |
| b)  | 600 mm x 50 mm x 50 mm trays  | 30        | m    |              |                |
| c)  | 150 mm x 50 mm x 50 mm trays  | 150       | m    |              |                |
| 5   | Ladder type   |           |      |              |                |
| 5.1   | Supplying and fixing of following powder coated Ladder type cable trays fabricated from 2 mm thick sheet steel having 25 mm x 75 mm H x 25 mm channel type side runners and 15 mm x 35 mm H x 15 mm channel rungs spaced at interval of 250 mm with 2 nos channels provided at every alternate rung including the cost of fixing the tray on vertical wall by means of dash fasteners spaced maximum 750 mm apart and including the cost of powder coating of approved shade of minimum 50 microns film thickness on MS surface cleaned and prepared with 7 tank process and including the cost of providing loop earthing with 2 nos. 25 mm x 6 mm Al earth strips complete as per specifications, as required, and as below.  |           |      |              |                |
| a)  | 450 mm wide   | 40        | m    |              |                |
| b)  | 300 mm wide   | 40        | m    |              |                |
| 6   | Supply and laying of RCC Hume pipes for cable entry including the cost of excavation, sealing compound and refilling and including the cost of sealing the ends complete as required and as below.  |           |      |              |                |
| a)  | 250 mm dia  | Rate only | m    |              |                |
| b)  | 150 mm dia  | 20        | m    |              |                |
| <b>TOTAL SUB-HEAD III carried over to Summary</b> |   |           |      |              |                |

| Sl.No.   | Description  | Qty | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|--|--|-----|------|--------------|----------------|
| <b>SUB HEAD IV – RISING MAINS</b>                |  |     |      |              |                |
| 1  | Supply of the following totally enclosed, dust and vermin proof (IP 55 ingress protection) low impedance, compact Sandwich type Rising Main system with Aluminium Bus Bars rated for insulation voltage of 1000 volts and suitable to withstand a fault level of 35 kA for 1second, having provisions for tapping power as required and including the cost of all required accessories like clamps, elbows, end covers, flexible connections etc. and including the cost of providing 2 nos 25 x 6 mm Al earthing strips for body earthing and including the cost of support arrangement for fixing along walls and including the cost of expansion joints complete as per specifications, as required and as below. |     |      |              |                |
| a)   | 4 conductor ( 3P+N ) 800 amp   | 40  | m    |              |                |
| 2  | Supply, installation, testing and commissioning of the following plug in type Feeder Boxes suitable for use with rising mains as per item no. 1 above for receiving power supply to the rising mains through cables including provision for terminating the incoming supply cables as per schematic, bonding to earth etc. complete as per specifications as required and as below..   |     |      |              |                |
| a)   | 4 conductor ( 3P+N ) 800 amp   | 2   | nos  |              |                |
| 3  | Supply, installation, testing and commissioning of TPN/4P plug in type Tap-off Boxes suitable for use with 800 amp Rising Mains as per item no. 1 above, to feed power supply from the rising mains at Typical floor including 1 no. 690 volts 25 kA TPN / 4P MCCB and including provision to terminate outgoing cables as per schematic, bonding to earth etc. complete as per specifications as required and as below.   |     |      |              |                |
| a)   | 200 amp rating with 200 amp TPN MCCB and 3 phase 4 wire unbalanced load energy meter with requisite CT's   | 10  | nos  |              |                |
| b)   | 200 amp rating with 200 amp TPN MCCB   | 1   | nos  |              |                |
| <b>TOTAL SUB-HEAD IV carried over to Summary</b> |  |     |      |              |                |

| Sl.No.                                  | Description  | Qty | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|---|--|-----|------|--------------|----------------|
| <b>SUB HEAD V – DISTRIBUTION SYSTEM</b> |  |     |      |              |                |
| 1                                       | Supply, installation, testing and commissioning of factory fabricated and factory assembled, sheet steel clad powder coated, wall/recess mounting dust and vermin proof (IP-42 ingress protection) double door vertical type Distribution Boards fabricated from 16 SWG sheet steel provided with hinged gasketed door with padlocking facility and including suitably rated PVC insulated copper busbars with interconnections and neutral bar assembly, earthing terminals etc. complete as required, as below and as per. sample to be approved by architects.        |     |      |              |                |
|   | All MCB kA values indicated shall be lcs breaking capacity.  |     |      |              |                |
| a)                                      | 1 no. 40 amp DP 10 kA MCB with thermal magnetic protective releases incoming with 2 pole 40 amp HDHC tinned copper bus bar with coloured heat shrinkable PVC sleeves and 6 nos 6/10/16/20 amps SP 10 kA MCB with thermal magnetic protective releases out goings(DB stairs)  | 1   | nos  |              |                |
| b)                                      | 1 no. 40 amp DP 10 kA MCB with thermal magnetic protective releases incoming with 2 pole 40 amp HDHC tinned copper bus bar with coloured heat shrinkable PVC sleeves and 8 nos 6/10/16/20 amps SP 10 kA MCB with thermal magnetic protective releases out goings (Basement emergency lighting DB)  | 2   | nos  |              |                |
| c)                                      | 1 no. 32 amp 4P 10 kA MCB with thermal magnetic protective releases incoming with 4 pole 40 amp HDHC tinned copper bus bar with coloured heat shrinkable PVC sleeves and 3 single phase banks each comprising of 1 no. 32 amp DP 30mA ELCB incoming and 4 nos 6/10/16/20 amps SP 10 kA MCB with thermal magnetic protective releases out goings (lighting for lift M/C Rm)   | 1   | nos  |              |                |
| d)                                      | 1 no. 32 amp 4P 10 kA MCB with thermal magnetic protective releases incoming with 4 pole 40 amp HDHC tinned copper bus bar with coloured heat shrinkable PVC sleeves and 3 single phase banks each comprising of 1 no. 32 amp DP 30mA ELCB incoming and 6 nos 6/10/16/20 amps SP 10 kA MCB with thermal magnetic protective releases out goings (3rd to 4th floor CA lighting DB))   | 1   | nos  |              |                |
| e)                                      | 1 no. 40 amp 4P 10 kA MCB with thermal magnetic protective releases incoming with 4 pole 40 amp HDHC tinned copper bus bar with coloured heat shrinkable PVC sleeves and 3 single phase banks each comprising of 1 no. 40 amp DP 30mA ELCB incoming and 8 nos 6/10/16/20 amps SP 10 kA MCB with thermal magnetic protective releases out goings (Gnd to 2nd floor CA lighting DB))   | 1   | nos  |              |                |
| f)                                      | 1 no. 63 amp 4P 10 kA MCB with thermal magnetic protective releases incoming with 4 pole 63 amp HDHC tinned copper bus bar with coloured heat shrinkable PVC sleeves and 3 single phase banks each comprising of 1 no. 63 amp DP 30mA ELCB incoming (with two single phase incoming having Dual setting 24 hour calibrated time switch for automatic operation of the supply, 63 amp Contactor for operation of the outgoing supply through the Time Switch) and 12 nos 6/10/16/20 amps SP 10 kA MCB with thermal magnetic protective releases out goings (For Basement) | 1   | nos  |              |                |
| g)                                      | DB VTPN(Basement lighting TP DB))<br>1-63 amp TPN 15 kA MCCB with thermal magnetic protective releases incoming complete with 3 phase indicating lamps and 1 set of red/green ON/OFF indicating lamps and with 4 pole 100 amps HDHC tinned copper bus bar with coloured heat shrinkable PVC sleeves and 2 nos 63 amps TPN 10 kA MCB and 3 nos 40 amps SPN 10 kA MCB outgoing each with thermal magnetic protective releases  | 1   | nos  |              |                |

| Sl.No.   | Description   | Qty | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|----------|---|-----|------|--------------|----------------|
| h)       | DB VTPN(OFFICE TP DB)<br>1-100 amp TPN 15 kA MCCB with thermal magnetic protective releases incoming complete with 3 phase indicating lamps and 1 set of red/green ON/OFF indicating lamps and with 4 pole 100 amps HDHC tinned copper bus bar with coloured heat shrinkable PVC sleeves and 1 nos 63 amps TPN 10 kA MCB and 1 nos 40 amps TPN 10 kA MCB each with thermal magnetic protective releases out goings  | 10  | nos  |              |                |
| 2        | Design, fabrication, assembly, wiring and supply of front operated cubicle type compartmentalised as per Form 3B, front access free standing, dust and vermin proof (IP 42 ingress protection) main switchboards suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system suitable for fault level as specified for items below at 415 volts, fabricated from 2 mm thick CRCA MS sheets with hinged, gasketted (metal based neoprene) and lockable doors having structural reinforcement with suitable angle/channel/T/flat sections including 3 mm thick gland plates on top and bottom and including lifting hooks and including Al earth strip of required size with 2 nos earthing terminals and including powder coated paint finish of approved shade over metal surface cleaned and treated with seven tank process complete with interconnections etc as per specifications, as required and as below.<br><br>All Switchboards shall have provision for entry of cables/Bus duct from the top or bottom as required<br><br>All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The Busbars insulation shall be with heat shrinkable sleeves. SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be lockable in OFF position<br><br>Adequate VA burden of CT's shall be provided by the Contractor suitably backed up with calculations to be approved. The minimum burden is indicated below.<br><br>All kA values indicated shall be lcs breaking capacity.<br><br>GA drawings shall be got approved from Owners/Architects/Consultants before fabrication. |     |      |              |                |
| <b>A</b> | <b>MAIN LT SWITCHBOARD FOR BLOCK B1</b><br><br>Refer Annexure-I<br><br>The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required  | 1   | nos  |              |                |
| 3        | Design, manufacture, supplying fixing in position, testing and commissioning of the following front operated cubicle type, front access, dead back, 2mm thick steel enclosed free standing, dust and vermin proof, switchboard with IP42 protection with hinged and lockable doors complete with interconnections, tinned copper crimping lugs, bonding to earth and painting, suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system, and suitable for a fault level of 25 MVA symmetrical at 415 volts.<br><br>All switchboards shall be modular type and have provision for entry of cables from the top /bottom as required.<br><br>The cost shall include providing and fixing of 100 x 50 x 6 mm channels for switchboard support.<br><br>All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The Busbars insulation shall be with heat shrinkable sleeves. SMC/DMC shrouds and busbar supports shall be used.  |     |      |              |                |



| Sl.No.    | Description  | Qty | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|-----------|--|-----|------|--------------|----------------|
|           | All MCCB shall have phase barriers, rotary handles and extension terminal as required .  |     |      |              |                |
| <b>A.</b> | <b>Ground Floor Panel</b>  |     |      |              |                |
|           | Refer Annexure-I   |     |      |              |                |
|           | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required  | 1   | nos  |              |                |
| <b>B.</b> | <b>First Floor Panel</b>   |     |      |              |                |
|           | Refer Annexure-I   |     |      |              |                |
|           | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required  | 1   | nos  |              |                |
| <b>C.</b> | <b>Second Floor Panel</b>  |     |      |              |                |
|           | Refer Annexure-I   |     |      |              |                |
|           | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required  | 1   | nos  |              |                |
| <b>D.</b> | <b>Third Floor Panel</b>   |     |      |              |                |
|           | Refer Annexure-I   |     |      |              |                |
|           | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required  | 1   | nos  |              |                |
| <b>E.</b> | <b>Forth Floor Panel</b>   |     |      |              |                |
|           | Refer Annexure-I   |     |      |              |                |
|           | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required  | 1   | nos  |              |                |
| <b>F.</b> | <b>SWBD - Lift for Block B1</b>  |     |      |              |                |
|           | Refer Annexure-I   |     |      |              |                |
|           | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required  | 1   | nos  |              |                |
| 4         | Design, manufacture, supplying fixing in position, testing and commissioning of the following front operated cubicle type, front access, dead back, 2mm thick steel enclosed free standing, dust and vermin proof, switchboard with IP54 protection with hinged and lockable doors complete with interconnections, tinned copper crimping lugs, bonding to earth and painting, suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system, and suitable for a fault level of 25 MVA symmetrical at 415 volts. |     |      |              |                |
|           | All switchboards shall be modular type and have provision for entry of cables from the top /bottom as required.  |     |      |              |                |
|           | The cost shall include providing and fixing of 100 x 50 x 6 mm channels for switchboard support.   |     |      |              |                |
|           | All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The Busbars insulation shall be with heat shrinkable sleeves. SMC/DMC shrouds and busbar supports shall be used.  |     |      |              |                |
|           | All MCCB shall have phase barriers, rotary handles and extension terminal as required .  |     |      |              |                |

| <b>Sl.No.</b>                                   | <b>Description</b>  | <b>Qty</b> | <b>Unit</b> | <b>Rate<br/>Rs.P</b> | <b>Amount<br/>Rs.P</b> |
|---|---|------------|-------------|----------------------|------------------------|
| <b>A.</b>                                       | <b>SWBD – Pressurisation Panel</b>  |            |             |                      |                        |
|   | Refer Annexure-I  |            |             |                      |                        |
|   | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required   | 1          | nos         |                      |                        |
| 5   | Design manufacture, supply installation testing and commissioning of 1250 VA Inverter system for a constant secondary voltage of 240 volts at 50 Hz, single phase, batteries backup of minimum 4 hour duration including, batteries, battery chargers, rectifiers, transformers, controls, protection and instruments etc complete as required. | 2          | nos         |                      |                        |
| <b>TOTAL SUB HEAD V carried over to Summary</b> |   |            |             |                      |                        |

| Sl.No.   | Description  | Qty       | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|--|--|-----------|------|--------------|----------------|
| <b>SUB HEAD-VI : FIXTURES AND FITTING</b>        |  |           |      |              |                |
| 1  | Receiving, assembling, erection, connecting, testing and commissioning of the following light fixtures complete with housing, reflectors, all accessories i.e. copper wound ballast, HPF condensers, starters, holders etc. complete as required   |           |      |              |                |
| a)   | Bulk Head Fixtures   | 18        | nos  |              |                |
| b)   | Fluorescent fixture 1x36/2x36  | 99        | nos  |              |                |
| c)   | Compact Fluorescent fixture  | 189       | nos  |              |                |
| 2  | Supply, installation, testing and commissioning of aviation light, complete as per Wipro Cat WAN 20001 or Philips equivalent, complete with flasher etc as required complete as required.  | 1         | nos  |              |                |
| 3  | Supply, installation, testing and commissioning of the following 1500 rpm exhaust fans including louvered shutters etc. complete as required.  |           |      |              |                |
| a)   | 450 mm   | 2         | nos  |              |                |
| b)   | 300 mm   | Rate only | nos  |              |                |
| c)   | 225 mm   | Rate only | nos  |              |                |
| 4  | Supply, installation, testing and commissioning of 1400 mm sweep Ceiling fans suitable for single phase 240 volts 50 Hz AC supply complete with all standard accessories like downrod, canopy, blades, electronic speed regulators etc. complete as required.  | Rate only | nos  |              |                |
| 5  | Supply, installation, testing and commissioning of Wall mounting Self contained battery backed up Emergency Lights with 1 x 20 watts fluorescent lamp complete with batteries and charger suitable for 30 minutes operation and circuitry for automatic switch 'ON' on mains failure and standby 'OFF'. The unit shall be suitable for operation on single phase 240 volts 50 Hz AC supply complete as required. | 5         | nos  |              |                |
| <b>TOTAL SUB HEAD VI carried over to Summary</b> |  |           |      |              |                |

| Sl.No.   | Description   | Qty       | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|--|---|-----------|------|--------------|----------------|
| <b>SUB HEAD- VII : ADDRESSABLE FIRE DETECTION SYSTEM</b> |   |           |      |              |                |
| 1  | Supply, installation, testing and commissioning of plug-in type photoelectric addressable analogue Smoke detectors including the cost of base plate, 75 mm dia M.S. outlet box for fixing of the detector base, mounting accessories etc. complete as per specifications and as required.   | 132       | nos  |              |                |
| 2  | Supply, installation, testing and commissioning of plug-in type rate of rise cum fixed temperature addressable analogue Heat detectors including the cost of base plate, 75 mm dia M.S. outlet box for fixing of the detector base, mounting accessories etc. complete as per specifications and as required.   | 11        | nos  |              |                |
| 3  | Supply, installation, testing and commissioning of plug-in type fixed temperature addressable analogue Heat detectors including the cost of base plate, 75 mm dia M.S. outlet box for fixing of the detector base, mounting accessories etc. complete as per specifications and as required.  | Rate only | nos  |              |                |
| 4  | Supply, installation, testing and commissioning of wall or ceiling mounted 240 Volt AC illuminated Signs having on its front a white perspex sheet with the letters 'FIRE EXIT' painted in red including the cost of in-built rechargeable batteries with charger suitable for 30 minute operation and including the cost of accessories for surface or recessed or ceiling suspended mounting complete as required.  | 11        | nos  |              |                |
| 5  | Supply, installation, testing and commissioning of 4 Loops (Fire Alarm Capability: 4 Loops x 120/150 Devices) wall recess mounting microprocessor based expandable analogue addressable Fire Control Panel with minimum 8 character LCD display, along with LED Zonal Indicators, 4 access levels, 1000 events historical logging, flash E-PROM, 240 volts ac power supply, automatic battery charger, 24V sealed lead-acid battery suitable for 48 hour normal working & capable of operating the system for 30 minutes in emergency condition. The Panel shall be capable of being Integrated with the PA System and BMS System with suitable power amplifiers for hooter/strobes. The panel shall be complete as per specifications and as required. | 1         | nos  |              |                |
| 6  | Supply, installation, testing and commissioning of Repeater panels complete as per specifications and as required   | Rate only | nos  |              |                |
| 7  | Supply, installation, testing and commissioning of Wall mounting hooters complete as required   | 7         | nos  |              |                |
| 8  | Supply, installation, testing and commissioning of Wall mounting strobes complete as required   | 7         | nos  |              |                |
| 9  | Supply installation testing and commissioning of dust and vermin proof addressable analogue Manual Call Boxes (Pull stations) to initiate audio visual alarm complete as per specifications and as required.  | 7         | nos  |              |                |
| 10   | Supply, installation, testing and commissioning of addressable Control Module complete as per specifications and as required.   | 15        | nos  |              |                |
| 11   | Supply, installation, testing and commissioning of addressable Monitor Module complete as per specifications and as required.   | 7         | nos  |              |                |
| 12   | Supply, installation, testing and commissioning of addressable Fault Isolator complete as per specifications and as required.   | 13        | nos  |              |                |
| 13   | Supply, installation, testing and commissioning of addressable Beam detectors with a transmitter and receiver as per detailed specifications including the cost of mounting accessories complete as per specifications and as required.   | 1         | nos  |              |                |
| 14   | Supply, installation, testing and commissioning of two way Talk back handsets to initiate audio interface complete as required.   | 1         | nos  |              |                |

| Sl.No.  | Description  | Qty       | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|---|--|-----------|------|--------------|----------------|
| 15  | Supply installation testing and commissioning of addressable analogue Talk Back jacks with face plates for Fireman's Handsets to initiate audio conversation with Main Fire Alarm Panel including the cost of mounting accessories complete as per specifications and as required.   | 6         | nos  |              |                |
| 16  | Wiring with 2 core 1.5 sqmm standard copper conductor FRLS 1100 volts grade wires in 25mm dia 16 SWG concealed/surface MS conduit including cost of cutting and filling chases for concealed conduit/ cost of saddles etc. for surface conduit as required and including the cost of crimped termination's as required, complete   | 3,200     | m    |              |                |
| 17  | Supply and laying in cable Tray/clamped to wall with suitable clamps saddles and fixing bolts including the cost of testing and commissioning of the following 1100 volt grade PVC insulated and sheathed copper conductor armoured cables complete as required. The costs shall include for all cables to be provided with a 1D gap and shall be properly clamped with cable clamps and ties. |           |      |              |                |
| a)  | 6 core 1.5 sq mm copper conductor FRLS cable   | Rate only | m    |              |                |
| b)  | 4 core 1.5 sq mm copper conductor FRLS cable   | 100       | m    |              |                |
| 18  | Supply installation testing and commissioning of MS junction box suitable for looping of Detectors below false ceiling in offices from existing loop, as per approved samples by the architects/site engineer complete as required.  | 10        | nos  |              |                |
| <b>TOTAL SUB-HEAD VII carried over to Summary</b> |  |           |      |              |                |

| Sl.No.   | Description   | Qty | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|--|---|-----|------|--------------|----------------|
| <b>SUB HEAD VIII : LIGHTNING PROTECTIOI</b>                                      |   |     |      |              |                |
| Note: The lightening protection system shall confirm to IS 2309 latest amendment |   |     |      |              |                |
| 1  | Design,Supply,Erection, Testing and commissioning of advanced Piezoelectric Ceramic Based Lightning Protection system suitable for protection of buildings against direct lightening strike complete with Early streamer Emission( with Piezoelectric exciter device for corona effect), chromium plated copper lightning conductor air terminal, event Counter with sensitivity 1 KA to 100 kA for 8/20 micro second impulse without additional power supply requirements and complete as required | 1   | nos  |              |                |
| 2  | Design,Supply,Erection, Testing and commissioning of total maintenance free earthing terminal including Safe Earthing Electrode of Length 3 meters-80 mm diameter including excavation and back fill compound complete as required.   | 1   | nos  |              |                |
| 3  | Supply, Installtion,Testing and commissioning of Flexible Insulated 50 square cm Copper flat Down conductor including cost of saddles etc complete as required.   | 50  | m    |              |                |
| <b>TOTAL SUB HEAD VIII carried over to Summary</b>                               |   |     |      |              |                |

| Sl.No.                           | Description  | Qty       | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|----------------------------------|--|-----------|------|--------------|----------------|
| <b>SUB HEAD IX : CCTV SYSTEM</b> |  |           |      |              |                |
| 1                                | Supply, Installation, testing and commissioning of the CCTV system based on the following components including but not restricted to gold plated connecting leads, connectors, jumpers, nuts, screws, bolts, mounting plates/brackets, back boxes etc and as required to make the system complete and operational in all respects complete as per specifications and as required. (Detailed cut-sheets, catalogues, colours to be provided for Components being quoted alongwith the tender)   |           |      |              |                |
| a)                               | 1/3 inch interline CCD Colour Fixed Dome Cameras, 0.5 lux at F 1.4 minimum illumination sensitivity, 480 TV lines horizontal resolution, electronic shutter, switchable automatic gain control, auto white balance , back light compensation ,with varifocal 4 - 9 mm auto iris lens, including cost of suitable wall / ceiling camera mount with adjustable tilt table function and provision for cable feedthrough hole  | 6         | nos  |              |                |
| b)                               | 1/4 inch interline Colour CCD Variable speed Smoked / Clear Indoor PTZ Dome Surface / recessed mounting Camera, 0.1 lux at f1.4 35IRE minimum illumination sensitivity, 480 TV lines horizontal resolution, electronic shutter, 18x Optical Zoom and 12X digital, 360 Degrees continuous pan rotation, unobstructed 0 Degree to +90 Deg Tilt, Switchable automatic gain control, auto white balance, with 4.1-73.8mm optical auto-iris lens. The Camera system shall have minimum 256 presets, built in menu system for setup of programmable functions and shall be capable of rotating the dome 180 Degrees and repositioning itself for uninterrupted viewing of any object that passes directly beneath the dome and also of auto-sensing the communication protocol. The camera system shall be as a single integrated unit and shall be complete with all interconnections etc as required | 5         | nos  |              |                |
| c)                               | Rack/ Desk mountable Digital Video recorder suitable for 16 or more cameras with an embedded Windows based operating system, an in-built HDD for recording rate of 12.5 fps per channel for upto 30 days, 16 Alarm inputs, 4 relay outputs, 2 BNC (multiscreen/ spot screen) Analog monitor output, NTSC/PAL switchable, digital zoom and full PTZ control functioning, MPEG4 compression, 720x576 resolution, record rate of 25 FPS per channel, TCP/IP connectivity, real time display for 16 cameras and including cost of digital zoom and PTZ controller and keyboard complete as required.   | 1         | nos  |              |                |
| d)                               | Rack-mountable 21" Hi-resolution color monitor with 500TV lines with inbuilt NTSC/PAL auto switchable and with minimum 2 BNC inputs for video, 1 DIN input for s-video complete as per specifications and as required  | 1         | nos  |              |                |
| e)                               | 42" Plasma Screen with inbuilt NTSC/PAL auto switchable and with minimum 2 BNC inputs for video, 1 DIN input for s-video complete as per specifications and as required  | Rate only | no   |              |                |
| 2                                | Supplying, Laying, connecting, testing and commissioning of 4 Core 1.5 Sqmm PVC insulated and sheathed copper conductor cables in 32mm dia MS Conduit including the cost of crimped terminations complete as per specifications, complete as required for CCTV System  | 400       | m    |              |                |
| 3                                | Supplying, laying, connecting, testing and commissioning of RG-11 Co-axial armoured cable for video signal in ground/clamped to ceiling including the cost of clamping and crimped terminations complete as per specifications, complete as required for CCTV System   | 400       | m    |              |                |
| 4                                | Wiring with 3x 2.5 sqmm standard copper conductor HFFR PVC 1100 volts grade wires in 25mm dia 16 SWG concealed/surface MS conduit including cost of cutting and filling chases for concealed conduit/ cost of saddles etc. for surface conduit as required and including the cost of crimped termination's as required, complete   | 310       | m    |              |                |

| <b>Sl.No.</b>                                    | <b>Description</b>   | <b>Qty</b> | <b>Unit</b> | <b>Rate<br/>Rs.P</b> | <b>Amount<br/>Rs.P</b> |
|--|--|------------|-------------|----------------------|------------------------|
| 5  | Supply and installation of wall / floor mounted cabinet with drawer shelves and wiring channels to accommodate CCTV systems equipment and accessories as mentioned in the BOQ above and including all connections and terminations as required fabricated from minimum 2 mm thick CRCA sheet including powder coating after surface treatment complete as required (GA drawings of the drawer cabinet shall be submitted by the contractor before fabrication for Architect/Owners approval) | 1          | nos         |                      |                        |
| <b>TOTAL SUB HEAD IX carried over to Summary</b> |  |            |             |                      |                        |



| Sl.No.  | Description   | Qty       | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|---|---|-----------|------|--------------|----------------|
| <b>SUB HEAD X : EARTHING</b>                    |   |           |      |              |                |
| 1   | Providing & making earthing stations at locations as called for, including providing and laying 600 X 600 X 6.3mm thick GI plate electrode, 20mm dia medium class GI pipe, CI funnel with 18 gauge GI wire mesh, masonry chamber with concrete base, manhole, lockable cover with frame (300 X 300mm and bitumastic paint, packing of mixture of charcoal & common salt around plate electrode including test joint complete with digging earth and back filling required as per IS:3043(Depth as per site condition) | 2         | nos  |              |                |
| 2   | Supplying and laying of the following earthing clamped to wall with suitable clamps saddles and fixing bolts/ in ground including the cost of digging and back filling with sand and brick protection as required and complete as required to comply with IS 3043:1987  |           |      |              |                |
| a)  | 25 mm x 6 mm GI strip   | 50        | m    |              |                |
| b)  | 8 SWG GI Wire   | Rate only | m    |              |                |
| <b>TOTAL SUB HEAD X carried over to Summary</b> |   |           |      |              |                |

| Sl.No.                                      | Description  | Qty | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|---|--|-----|------|--------------|----------------|
| <b>SUB HEAD XI - 33/0.415 KV SUBSTATION</b> |  |     |      |              |                |
| <b>Note :</b>                               |  |     |      |              |                |
| 1   | The Tenderer shall study the existing installation at site and take into consideration all site conditions at the time of submitting the offer. No extra payment shall be due on account of lack of knowledge of actual site conditions  |     |      |              |                |
| 2   | “Installation & Commissioning” rate shall be inclusive of transit insurance, unloading, storage, erection, installation, testing and commissioning of the equipment etc. as required.  |     |      |              |                |
| 3   | Transportation charges shall be reimbursed at actuals and estimated amount shall be indicated here under.  |     |      |              |                |
| 1   | <b>33 kV Extension Panel for Transformer outgoing feeder</b>   |     |      |              |                |
|   | Supply, delivery, erection, testing and commissioning of a single panel totally enclosed sheet steel clad floor mounting, vermin proof, fully interlocked vertical isolation, extensible, horizontal draw out, air insulated, metal clad switchboard having double isolation features complete with circuits as detailed below. The switchboard would be complete with necessary PVC insulated copper busbars, small wiring, labels, cable eyes, cable termination to receive XLPE cables, foundation bolts and suitable for operation on 33 kV 3 phase, 50 cycle, earthed system with a rupturing capacity of 1500 MVA at 33 KV.The Panel shall be extension to existing 33 kV Panel at site and necessary busbar adaptor chamber if required shall be included in the price.   |     |      |              |                |
|   | All Incoming/outgoing feeders shall have fault trip auxilliary contacts for wiring to annunciation fault trip indication panel   |     |      |              |                |
|   | Refer Annexure-II  |     |      |              |                |
|   | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required  | 1   | nos  |              |                |
| 2   | Supply, installation, testing and commissioning of 2000 kVA 33000/433 volts Deta/Star, vector group DY11, indoor mounting, oil cooled, ONAN transformer with On Load Tap Changers (OLTC) having AVS relay and RTCC for automatic sensing of incoming voltage, automatic operation of OLTC and facility for remote manual operation of OLTC, suitable for incoming voltage variation of +5% to (-)17.5% in 16 steps to give a constant secondary voltage. The transformer shall be provided with fittings, accessories, protection, first filing of oil etc. including Buchholz oil temperature alarm/trip protection and space for mounting differential protection CT's in LV chamber complete as per specifications and as required. The transformer shall be provided with arrangement to terminate XLPE cable on HT side and to connect bus duct on LT side, complete as required. | 1   | nos  |              |                |
| 3   | S/L of the following 3 core XLPE 33 kV grade earthed type armoured cable (E) laid directly in ground / in cable tray/in trench as required including the cost of digging and back filling with sand and brick protection as required.The costs shall include for all cables to be provided with a 1D gap and shall be properly clamped with cable clamps and ties.   |     |      |              |                |
| a)  | 300 sq mm x 3 core   | 35  | m    |              |                |
| 4   | Cable termination with Rechyem make cable termination kit for the following 3 core aluminium 33000 volt grade earthed type, armoured cable complete as required and as below.  |     |      |              |                |
| a)  | 300 sq mm x 3 core (Indoor)  | 1   | nos  |              |                |
| b)  | 300 sq mm x 3 core (Outdoor)   | 1   | nos  |              |                |

| Sl.No.    | Description  | Qty | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|-----------|--|-----|------|--------------|----------------|
| 5         | Design, fabrication, assembly, wiring and supply of front operated dead front cubicle type compartmentalised as per Form 3B, rear access free standing,extensible, dust and vermin proof (IP 42 ingress protection) main switchboards suitable for use at 415 volts, 3 phase 4 wire 50 Hertz system suitable for a symmetrical fault level of 65 kA at 415 volts, fabricated from 2 mm thick CRCA MS sheets with hinged, gasketed (metal based neoprene) and lockable doors having structural reinforcement with suitable angle/channel/T/flat sections including 3 mm thick gland plates on top and bottom and including lifting hooks and including Aluminium earth strip of required size with 2 nos earthing terminals and including powder coated paint finish of approved shade over metal surface cleaned and treated with seven tank process complete with interconnections etc as per specifications, as required and as below. |     |      |              |                |
|           | NOTE : The CT burden shall be minimum 15 VA or more as required  |     |      |              |                |
|           | NOTE : The following provisions shall be required to be made in the switchboard detailed below   |     |      |              |                |
| a)        | The Switchboard shall have provision for entry of all PVCA cables/bus duct from the top / bottom as required.  |     |      |              |                |
| b)        | All live accessible parts shall be shrouded and all equipment shall be finger touch proof. The busbar insulation shall be with heat shrinkable sleeves. SMC/DMC shrouds and busbar supports shall be used. Padlocking facility shall be provided on all outgoing feeders doors and switch handles shall be lockable in OFF position.   |     |      |              |                |
| c)        | The cost shall include providing and fixing of 100 x 50 x 6 mm channels for switchboard support.   |     |      |              |                |
| d)        | Short Circuit capacity for MCCB's shall be Icu values and Ics values shall not be less than 75% Icu  |     |      |              |                |
| e)        | All incoming, Bus section and outgoing feeders shall have fault trip auxiliary contacts for wiring to annunciation fault trip indication panel.  |     |      |              |                |
| f)        | All Incomers and buscouplers shall be mechanically interlocked such that the incomers are not paralleled   |     |      |              |                |
| <b>A.</b> | <b>EXTENSION TO MAIN LT SWITCHBOARD</b>  |     |      |              |                |
|           | <b>Necessary bus bar adaptor chamber if required for extension to existing LT Panel shall be included in offer and as per schematic drawing ED- 101(A)</b>   |     |      |              |                |
|           | Refer Annexure-II  |     |      |              |                |
|           | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required  | 1   | nos  |              |                |
| <b>B.</b> | <b>EXTENSION TO MAIN DIESEL GENERATOR PANEL</b>  |     |      |              |                |
|           | <b>Necessary bus bar adaptor chamber if required for extension to existing DG Panel shall be included in offer and as per schematic drawing ED- 101(A)</b>   |     |      |              |                |
|           | Refer Annexure-II  |     |      |              |                |
|           | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required  | 1   | nos  |              |                |

| Sl.No.    | Description   | Qty | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|-----------|---|-----|------|--------------|----------------|
| <b>B1</b> | Necessary extension to existing Programmable Logic Control and synchronization panel suitable for Auto Load sensing, Auto Load Management, Auto Mains Failure, Auto Changeover, Auto Interlocking, starting/stopping of DG sets as required, open/close operation of incoming and bus section ACB's on the DG Main Panel for 1 no 2000 kVA DG set and bus coupler with manual over-ride, as per functions and sequence of operations shall be included in offer and as per schematic ED-101(A)  |     |      |              |                |
|           | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required   | 1   | nos  |              |                |
| <b>C.</b> | <b>CAPACITOR PANEL</b>  |     |      |              |                |
|           | Refer Annexure-II   |     |      |              |                |
|           | The switchboard shall be complete with all inter connections,risers,internal wiring,labels etc complete as required   | 1   | nos  |              |                |
| 6         | Supply erection testing and commissioning of triple pole and neutral, totally enclosed, dust and vermin proof with IP 42 ingress protection, indoor mounting, 14 SWG sheet steel clad Compact Sandwich type low Inductance Bus Duct with aluminium bus bars rated as under to withstand the stresses of a 65 kA symmetrical fault level at 415 volts including the cost of bends, expansionjoints and terminations at both ends with 2 nos 75 x 6 mm Cu strip for earthing, complete as per specification as required and as below  |     |      |              |                |
| a)        | 3200 amp TPN  | 73  | m    |              |                |
| b)        | 1600 amp TPN  | 26  | m    |              |                |
| 7         | Supply, erection, testing and commissioning of following triple pole and neutral flexible End connections suitable for busducts as in item 6 above complete as required.  |     |      |              |                |
| a)        | 3200 amp TPN  | 6   | sets |              |                |
| b)        | 1600 amp TPN  | 2   | sets |              |                |
| 8         | <b>AUTOMATIC TRANSFER SWITCH</b>  |     |      |              |                |
|           | Supply of 4 pole Automatic Source Changeover System (ASCS) comprising of 2 nos 4P 690 volts 65 kA ACBs, with stored energy motor mechanism with electronic trip unit of 40% to 100% current setting, protection against overload and short circuit. The ACBs shall have adjustable overload and short circuit current release. ASCS shall have electrical and mechanical interlocking through base plate for fail safe operation to ensure that 2 ACBs shall not be ON simultaneously. The controller unit of ASCS shall continuously monitor to the voltage of normal source. In case of power failure it shall switch OFF the normal source ACB and switch ON the alternate supply. When normal supply is restored the ACB's shall automatically with intentional time delay setting for various transitions if require to return to normal position. |     |      |              |                |
|           | The above function shall work without auxiliary power supply and external signal with fail-safe operation. ACBs shall have isolation function alongwith the fully rated 4th pole. The rated operation voltage of ASCS shall be 230 V AC.single phase shall be with tolerance of -20% to +10%  |     |      |              |                |
|           | The controller shall have a max. transfer time of 800 MS and shall have the following functions   |     |      |              |                |
| a)        | Auto-Manual Selector switch   |     |      |              |                |
| b)        | Forced operation of any of the two sources.   |     |      |              |                |
| c)        | Stop on both the sources  |     |      |              |                |
| d)        | All indications for all the operation viz. ON-OFF, TRIP   |     |      |              |                |
| e)        | Minimum electrical and mechanical operation 20000   |     |      |              |                |

| Sl.No. | Description   | Qty | Unit | Rate<br>Rs.P | Amount<br>Rs.P |
|--------|---|-----|------|--------------|----------------|
|        | The ACBs with motor mechanism shall be interconnected and mounted on a base plate having provision to be fixed in the box casing. Provision of cable termination shall exist in the ASCS and shall be complete with internal wiring, labels, interconnection etc as required and as below.  |     |      |              |                |
| a)     | 3200 amp rating   | 1   | nos  |              |                |
| 9      | Supply installation testing and commissioning of minimum 200 AH 24 volt SMF Battery including Float cum Boost Thyristor controlled battery charger suitable for operation at 240 volt AC 50 Hz supply, complete as per specifications and as required   | R.O | no   |              |                |
| 10     | Supply and laying control cabling with copper conductor FRLS PVC insulated and PVC sheathed armoured cables on existing tray including the cost of making connections, complete as required as below:   |     |      |              |                |
| a)     | 2 core 2.5 sq mm  | 50  | m    |              |                |
| b)     | 4 core 2.5 sq mm  | 50  | m    |              |                |
| c)     | 12 core 2.5 sq mm   | 50  | m    |              |                |
| 11     | Supplying, fixing, 22.5 Kg dry CO2 Fire extinguishers with wall mounting brackets first filling etc.  | 1   | m    |              |                |
| 12     | Supplying and fixing 1000 mm wide 15 mm thick rubber matting (complying with I.S.S.) and suitable to withstand 33 kV as required.   | 6   | m    |              |                |
| 13     | Supplying and fixing standard shock treatment charts in English & Hindi mounted on wooden frame with glass.   | 2   | nos  |              |                |
| 14     | Supplying and fixing of danger plate as per approved sample written in English & Hindi for MV   | 1   | nos  |              |                |
| 15     | Supplying First Aid Box for HV complete as approved by St. John ambulance or Indian Red Cross.  | 1   | nos  |              |                |
| 16     | Supplying and fixing fire buckets each painted red with fire written out complete with sand filling, floor/wall mounting brackets complete.   | 1   | nos  |              |                |
| 17     | Supplying rubber gloves ( 33 kV rating )  | 1   | sets |              |                |
| 18     | EARTHING  |     |      |              |                |
| 18.1   | Providing and making earthpits including the cost of 600 mm x 600 mm x 3 mm thick copper plate electrodes, 50 mm dia pipe, CI funnel with wiremesh charcoal, salt, all earth work, masonry enclosure with CI frame & cover plate having locking arrangement complete as per IS 3043:1987 for transformers/DG neutral and as per specifications, complete. | 4   | nos  |              |                |
| 18.2   | Providing and making earthpits including the cost of 600 mm x 600 mm x 6 mm GI plate electrode 50 mm dia GI pipe, CI funnel with wiremesh charcoal, salt, all earth work, masonry enclosure with CI frame & cover plate having locking arrangement complete as per IS 3043:1987 for body earth and as per specifications, complete.                       | 4   | nos  |              |                |
| 18.3   | Supplying and laying of 50 mm x 6 mm GI strip in ground including the cost of digging and back filling with sand and brick protection as required and complete as required to comply with IS 3043:1987 for equipotential connection between all earth pits and as per specifications, complete.   | 100 | m    |              |                |
| 18.4   | Supplying and laying of 75 mm x 6 mm copper strip in ground including the cost of digging and back filling with sand and brick protection as required and complete as required to comply with IS 3043:1987 for equipotential connection between all earth pits and as per specifications, complete.   | 100 | m    |              |                |

| <b>Sl.No.</b>                                    | <b>Description</b> | <b>Qty</b> | <b>Unit</b> | <b>Rate<br/>Rs.P</b> | <b>Amount<br/>Rs.P</b> |
|--|--------------------|------------|-------------|----------------------|------------------------|
| <b>TOTAL SUB HEAD IX carried over to Summary</b> |                    |            |             |                      |                        |

**MAHINDRA WORLD CITY, JAIPUR**  
**TENDER FOR INTERNAL ELECTRICAL WORKS - BLOCK B1**  
**SCHEDULE OF QUANTITIES**  
**SUMMARY**

| <b>SNO</b>   | <b>DESCRIPTION</b>                | <b>AMOUNT</b> |
|--------------|-----------------------------------|---------------|
| I            | Wiring                            | Rs.           |
| II           | Voice System                      | Rs.           |
| III          | Submains and Cables               | Rs.           |
| IV           | Rising Mains                      | Rs.           |
| V            | Distribution System               | Rs.           |
| VI           | Fixtures and Fittings             | Rs.           |
| VII          | Addressable Fire Detection System | Rs.           |
| VIII         | Lightning Protection              | Rs.           |
| IX           | CCTV System                       | Rs.           |
| X            | Earthing                          | Rs.           |
| XI           | 33/0.415 KV Substation            | Rs.           |
| <b>TOTAL</b> |                                   | <b>Rs.</b>    |