

# MAHINDRA WORLD CITY AT JAIPUR

## Tender for Supply and Installation of Lifts

(MTP Block -B1)

**General Conditions**  
**Special Conditions**  
**Technical Specifications**  
**Schedule of Quantities**

ARCHITECT



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16th April 2010

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

### **BID FOR SUPPLY & INSTALLATION OF LIFTS AT MAHINDRA TECHNOLOGY PARK WITHIN THE IT/ITES SEZ**

**Bid No** : **MWCJL/MTP/B-1/T-05**

**Date of Issue** : **16.04. 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

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

**Bid No : MWCJL/MTP/B-1/T-05**

**(ELEVATOR WORKS)**

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

**PERIOD OF ISSUE OF BIDDING DOCUMENT : FROM: 16.04.2010 to 20.04.2010.  
TIME:-10:00 HOURS TO 17:00 HOURS**

**LAST DATE AND TIME : Date: 30.04.2010. (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: - 16.04.2010**

**Bid No : MWCJL/MTP/B-1/T-05**

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. 1000.00 only upto 20.04.2010.

**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 30.04.2010** 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>Supply &amp; Installation of Lifts at Mahindra Technology Park Block B1</b>	Rs 50000/-	Rs 1000/-	Four (04) Months

**Seal of office**

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

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

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## **1A. General Instructions**

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

- 1.1 **Mahindra World City (Jaipur) Limited** ("MWCJL"), (hereinafter referred to as "**Employer**") invite Bids for the **Elevator 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.	Special Conditions, 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 Elevator 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 Elevator 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 30.04.2010. 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 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 **ELEVATOR 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 **ELEVATOR WORKS AT MAHINDRA TECHNOLOGY PARK IN BLOCK B1 WITHIN THE IT/ITES SEZ** (Bid No. MWCJ/ (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 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, 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 Office 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: a) Third Party	By Contractor
	b) For Contractor's Employee	By Contractor 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. 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 Minimum cover Rs. 10 Lacs.

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

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 24 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 along with 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 Contarctor'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 Elevator 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 Manger 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 15 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 / warrantees 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 As per Contract	(1)
Less (-)	<b>Deductions :</b>	
	Retention 5% on '1' subject to a maximum of 5% on Contract Value	(a)
	Previous Payments made (Payment made till date including Advance/ Adhoc 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 etc.	(d)
	<b>Total Deductions (c+d)</b>	<b>( 2 )</b>
	Net Value of This Bills (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) 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 or 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 over-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**

Manufacturer'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 Towers, Bhawani Singh Marg, C-Scheme, Jaipur-302021. (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/IT\_ITES/\_\_\_\_\_** 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 Towers, 1, Bhawani Singh Marg, C-Scheme, Jaipur-302021. (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 an 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-



**SPECIAL CONDITIONS, TECHNICAL SPECIFICATIONS  
BILL OF QUANTITIES**

## **MAHINDRA WORLD CITY AT JAIPUR**

### **TENDER FOR ELEVATOR AT MAHINDRA TECHNOLOGY PARK**

#### **SPECIAL CONDITIONS OF CONTRACT**

#### **1 WORK TO BE EXECUTED AS PER TENDER AND STATUTORY REGULATIONS ETC.**

##### **1.1 Tender Document**

This tender document, comprising of Notice Inviting Tender, Special Conditions of Contract, Technical Specifications, Schedule of Quantities and tender drawings shall form part of the contract Agreement after award of contract. Work under this contract shall be executed at contract rates as per conditions and specifications stipulated in this tender document excepting in respect of deviations specifically agreed to before the award of the contract and incorporated in the contract Agreement. In addition, components/materials, which may not be specifically stipulated in the tender document, but which are necessary for satisfactory installation and/or operation of any portion of the work, shall also be provided within the contract rates without any extra cost. Contractor shall carry out and complete the work in all respects to the satisfaction of Owners as per the contract Agreement and as directed by Owners/Architects and as required.

##### **1.2 Tender Conditions, Specifications and Schedule**

- Special Conditions of Contract (SCC) shall be read in conjunction with Technical Specifications, Schedule of Quantities, Tender Drawings and any other document forming part of this contract Agreement
- For any discrepancy between Technical Specifications and Schedule of Quantities, provision of Schedule of Quantities shall prevail.
- Any item shown in Schedule of Quantities and not called for in the Specifications or vice versa, shall be provided as if called for in both.
- Wherever it is mentioned that the Contractor shall perform certain work or provide certain facilities, it is understood that the Contractor shall do so at his cost.
- Where the Technical Specifications stipulate requirements in addition to those contained in the applicable Indian Standard Specifications/Codes, these additional requirements shall also be satisfied.

##### **1.3 Departures**

No deviation/departure from tender conditions shall be acceptable.

##### **1.4 Authorities**

The work shall conform to all the provisions of the relevant Government Legislation, Regulations and Bye-laws of the Central/Local Authorities and of the concerned Electricity Supply Authority. The Contractor shall also be responsible for giving all notices required under the said Acts/Regulations/Bye-laws.

##### **1.5 Electrical Licence**

The tenderers shall be a licenced Electrical Contractor possessing a valid Contractor's licence of appropriate class in the state, employing licenced supervisors and skilled workers having valid permits as per the regulations of Indian Electricity Rules and local

Electrical Inspectors requirements. Copy of Contractor's Electrical Licence shall be furnished along with the tender.

## **2.0 INTENT OF SPECIFICATIONS**

It is not the intent of Technical Specifications to completely specify **all** aspects of design/construction features of equipments and **all** details of work to be carried out. Nevertheless the intent of the Technical Specification is to ensure that the equipments and the work shall fully comply with and conform to the relevant Bureau of Indian Standard Specifications, Codes of Practice, Indian Electricity Act, Indian Electricity Rules and other Statutory Regulations, and other standards as may be applicable and to the best available standards of engineering, design and workmanship. The equipment and work shall perform in manner acceptable to Owners who shall interpret meaning of the applicable Specifications/Codes and shall have the right to reject any equipment or work, which, in their assessment, is not complete to meet the Standard/Code.

## **3.0 SITE OF WORK**

### **3.1 Brief description of site**

Works covered in this contract is required for Mahindra World City at Jaipur. Tenderers are advised to visit the site after taking prior permission from Owners/Architects for familiarizing themselves with working conditions available at site as also with the statutory levies and their prevailing quantum payable at site. Contractors shall not be entitled to claim any extra payment on account of lack of such knowledge after award of contract.

### **3.2 Power Supply System**

Entire work shall be suitable for use on 415 volt 3 phase 4 wire supply system with transformer neutral grounded. The rated frequency of the supply system shall be 50 cycles per second.

### **3.3 Ambient Conditions**

All equipments components and materials used in the work shall be suitable for continuous operation/use at rated output with permissible overload at the following extremes of ambient conditions likely to be encountered at site.

Temperature from minimum 0° C to maximum 48° C

Related humidity from minimum 10% RH to maximum 100% RH

### **3.4 OWNER TO PROVIDE**

Owner's scope of contract shall be restricted to providing the following items free of cost to the Contractor.

- a) Hoistway (with structural openings for doors), Pit and Machine Room.
- b) Hook in machine room ceiling slab over the hoist way for hoisting lift equipment
- c) Space only for Contractor's site office/stores for the duration of the contract at location and of size considered suitable and sparable by Owners. Owners reserve the right to provide alternative space for the purpose, if so necessary, during the tenure of the contract.

## **4.0 SCOPE OF CONTRACT**

Contractor's scope of the contract shall comprise of providing equipments, components, materials, labour, supervisory staff with infrastructure, T&P, scaffolding, consumables, testing equipment, etc. required for completion of the work as per the contract Agreement **and Free Comprehensive Maintenance for Two years after completion. Contract Rates shall be deemed to be inclusive of all direct and indirect expenses required to be incurred as per this scope including but not restricted to the costs of the following.**

#### **4.1 Items of Work**

Design, manufacture, supply, installation, testing and commissioning of Lifts as per Schedule of Quantities including minor and incidental work to ensure complete and satisfactory completion.

#### **4.2 Statutory Levies**

Rates shall be inclusive of statutory levies as applicable as below.

- Central Sales tax without issue of C-form by Owners.
- Excise duty/custom duty.
- Work contract tax
- Octroi
- Service Tax
- Any other levies.

**The Mahindra Technology Park being situated in Special economic zone, the price quotes should mention basic price separately and taxes/duties separately.**

#### **4.3 Testing**

Testing for the various items of equipment shall be performed at the contractor's cost and test certificate to be furnished by the contractor (for Motor, Machine Break-tests Controller & Steelwire Ropes). If required by the Engineer, the Contractor shall permit the Owner's authorized representative to be present during any of the tests. After notification to the Owner that the installation has been completed the contractor shall make under the direction and in the presence of the Engineer such test and inspections as have been specified or as the Engineer shall consider necessary to determine whether or not the full intent of the requirements of the plans and specifications have been fulfilled. In case the work does not meet the full intent of the specifications and further tests shall be considered necessary the contractor shall bear all the expenses thereof.

#### **4.4 Transportation, Storage, insurance etc.**

- Loading, transportation and unloading.
- Protection of stored materials/installed work against damage due to dirt, sun and rain including providing tarpaulin/ PVC sheet covers as required.
- Providing security arrangements/watch and ward for stored materials and installed works to guard against pilferage/damage.
- Comprehensive insurance with Owners as beneficiaries against pilferage/damage during transportation/storage/installation valid till handing over.
- Third party insurance of adequate amount

#### **4.5 Name plates**

Providing engraved anodized aluminium or approved equivalent name plates of suitable sizes on switchboards/panels/equipments etc.

#### **4.6 Civil works, cleaning and painting**

##### **4.6.1 Civil Works**

- All steel items required for installation and operation of Lift System in Pits, Hoistways and Machine Rooms.
- Minor civil work items required for the work like making chases in walls/ceilings, making holes and openings, providing inserts, grouting etc including making good and painting the civil works.

4.6.2 Housekeeping  
Housekeeping and clearing of work area during the tenure of contract.

4.6.3 Final Painting  
Providing final paint coat to all exposed fabricated steel work and providing matching paint in approved manner over portions of factory painted equipment if damaged during transportation/storage/installation before handing over.

4.6.4 Site Clearance  
Demobilization and clearing of all temporary works/ facilities after completion of work at site and cleaning work are before handing over.

#### **4.7 Statutory approval**

- Obtaining approval from Lift inspector and NOC from Jaipur Fire Service for satisfactory installation of the lift system as also for clearance to put the lift into regular use.
- Obtaining any other statutory permission/clearance/approval from concerned authority as required.
- Pay any licencing fee/submission fee/inspection fee payable to statutory authorities for obtaining above approvals.
- All actual fees payable in this regard will be reimbursed against receipt / documentary proof on completion of work.

#### **4.8 Compliance of statutory observation.**

Complying with observations, if any, of Lift/Electrical Inspector and/or any other Statutory Authority after completion of work in order to obtain a categorical clearance to start beneficial use.

#### **4.9 Manuals, drawings etc.**

##### **4.9.1 Along with the tender**

Technical Parameters enclosed as Annexure-I duly filled in by the Tenderers alongwith technical catalogue etc. of the equipment offered.

##### **4.9.2 Shop drawings on award of work before commencement**

The Contractor shall submit GA drawings of Lift System to Architects/Owners for approval before commencement of work at site/fabrication/ manufacture.

##### **4.9.3 Operation and maintenance manuals**

Three sets of operation and maintenance manual with support drawings shall be submitted to the Owners after completion of work.

##### **4.9.4 Training**

Training of Owners personnel in operation, handling and maintenance of equipment.

##### **4.9.5 The Contractor shall submit following documents**

3 sets of operation and maintenance manual with support drawings shall be submitted to the owner after completion of work.

3 sets of test results of pre-commissioning test carried out at site.

3 sets of as built GA drawings.

## **5.0 COMPLETION TIME & TIME DELAY PENALTY**

### **5.1 Completion Time**

The entire work shall be completed within **4 months** from the date of order. The Contractor shall submit a bar chart along with the tender and a detailed time schedule of completing salient activities of the contract to achieve overall completion for approval of Architects/Owners. The Contractor shall ensure supply and erection of sill angles and door frames within 3 months of issue of letter of intent or within two weeks of handing over of lift shaft whichever is earlier, to enable coordinated completion of items like Architraves, fascia returns in stone etc. by other agencies. If the completion of work is delayed beyond the period stipulated in the original contract agreement due to reasons considered by Owners to be beyond the control of Contractor, extension of time for the completion of the work shall be granted by the Owners without the levy of the time delay penalty. The extension of time shall however not entitle the Contractor to claim any extra payment and/or compensation on this account.

Completion of work shall include supply, installation, testing, commissioning, obtaining the required statutory approvals. The work shall not be demand to be completed till all these items are completed by the Contractor to the satisfaction of the Owners.

### **5.2 Time Delay Penalty**

#### **5.2.1 Delay in final completion.**

If the completion of the work is delayed beyond the completion period (as defined in para 6.1 above) stipulated in the contract agreement due to reasons considered by Owners to be **within** the Contractor's control, Owners reserves the right to impose Time Delay Penalty on the contractor @ 1.0% per week subject to a maximum of 10% of the **total** contract value.

## **6.0 FREE MAINTENANCE PERIOD**

### **6.1 Maintenance**

**Quoted rates shall be deemed to be inclusive of, free comprehensive maintenance (including spares) of lifts for a period of Two year from the accepted date of completion of the contract.**

## **7.0 TERMS OF PAYMENT**

15% of Contract value as an advance along with the order against submission of equivalent amount of Bank Guarantee from the Nationalized/Scheduled Bank of Owner approved format.

10% of Contract value upon approval of drawings.

55% of Contract value upon delivery of materials at site. Bank Guarantee will be released after receipt of complete materials at site.

10% of Contract value after erection/physical completion of Lift Installation.

Balance 10% of Contract value on commissioning and handing over of the lifts.

The terms of payment shall apply independently to each lift on prorata basis.

The above are only stages of payment & payments shall be released only after necessary submission/checking of bills.

Income tax & sales tax shall be deducted from Contractors bills as per the rules prevailing during the currency of the contract.

## **8.0 PERFORMANCE GUARANTEE**

Immediately after the award of work the contractor shall submit a performance guarantee equivalent to 5% of contract value from a Nationalized/Scheduled bank on our approved proforma.

The performance guarantee shall be effective from the date of commencement of the work until the date of commissioning & handing over.

## **9.0 TAXES/DUTIES**

All sales tax/excise duty, service tax or any other taxes or levies including sales tax on works contract payable to any authorities shall be borne by Contractor and Employer/Consultants accept no responsibility or liability whatsoever on any account. Component of excise duty and sales tax shall be indicated separately. Any fresh taxes levied during the currency of the contract shall be payable by the employer, for which documentary evidence will have to be provided otherwise it will not be paid.

**The Mahindra Technology Park being situated in Special economic zone, the price quotes should mention basic price separately and taxes/duties separately.**

## **10.0 TAX DEDUCTION AT SOURCE**

Income tax and sales tax shall be deducted from your running account bills as per statutory requirements.

It is specific requirement that the Contractor/supplier shall be registered with Rajasthan Sales Tax Authorities, PF commissioner, Labour Deptt. etc. and shall submit a certified copy of same to Owners.

## **11.0 FINAL BILL**

The payment of final bill duly certified by the Employer's Engineer shall be made as per GCC.

## **12.0 WATER AND ELECTRICITY**

The Contractor shall make his own arrangements for electricity and water at site. Nothing extra shall be payable for this.

## **13.0 GODOWN/WORKER ACCOMMODATION**

The accommodation for workers shall be arranged by the Contractor. No labour hutments shall be allowed within the site premises. Storage space shall be arranged by the Owners. Contractor shall construct the stores at his cost and he shall be responsible for watch and ward of his materials/installations.

## **14.0 MINOR CIVIL WORKS**

Minor Civil works such as cutting holes and making good for hall buttons, indicators including laying of sill in position and providing dash fasteners for fixing Car and counter weight, rail brackets shall be borne by the Contractors at his own cost.

All scaffolding work required for erection/installation of lifts in the pit and the hoistway shall be arranged by the Contractor at his own cost. All structural work including plates, bolts, rag bolts, nuts, channels, angles, beams, shall also be arranged by the Contractor at his own cost.

## 15.0 CONTRACT PRICE

**The contract price shall remain firm during the currency of the contract & any extension thereof.**

Rates quoted shall hold good for any increase/decrease in the quantities. Any of the items may be deleted as per directions of Owner/Architect. In respect of any additional item rendered to be executed, the rates payable shall be derived from market rates, supporting vouchers plus 10% will be added there on for Contractors profit and overhead

## 16.0 TENDER ACCEPTANCE

The Owner reserve the right to award the contract to any bidder other than the lowest without assigning any reasons what so ever.

## 17.0 SAFETY REGULATIONS

- **The Contractors shall, at their own expense, arrange for safety provisions as per safety codes of Indian Standards Institution, Indian Electricity Act and such other Rules, Regulations and Laws as may be applicable, as indicated below, in respect of all labour, directly or indirectly employed in the work for performance of the Contractors' part of this agreement.**
- No inflammable materials shall be stored in places other than the rooms specially constructed for this purposes in accordance with the provisions of Indian Explosives Act. If such storage is unavoidable, it should be allowed only for a short period and in addition, special precautions, such as cutting off the supply to such places at normal items, storing materials away from wiring and switch boards, giving electric supply for a temporary period with due permission of Engineer-in-charge shall be taken.
- Protective and safety equipment such as rubber gauntlets or gloves, earthing rods, line men's belt, portable artificial respiration apparatus etc. should be provided in easily identifiable locations. Where electric welding or such other nature of work is undertaken, goggles shall also be provided.
- All necessary personal safety equipment such as Helmets, Protective footwear protective goggles/eye shields, Lift Jacket, Gas masks etc. as considered adequate by the Engineer-in-charge shall be available for use of persons employed on the site and maintained in a conditions suitable for immediate use and the contractor shall take adequate steps to ensure proper use of equipment by those concerned.
- Safety means of access shall be provided to all working platforms and other working places. Every ladder shall be securely fixed. Adequate precautions shall be taken to prevent danger from electrical equipment.
- The Contractor shall provide all necessary fencing and lights to protect public from accidents and shall be bound to bear expenses of defence of every suit, action or other proceedings at law that may be brought by any person for injury sustained owing to neglect of the above precautions and to pay any damages and costs which may be awarded in any such suit, action or proceedings to any such person or which may with the consent of the Contractor be paid to compromise any claim by any such person.
- Motor gearing, transmission, electric wiring and other dangerous parts of hoisting appliances shall be provided with efficient safe guards; hoisting appliance shall be provided with such means as will reduce to the minimum risk of accidental descend of load. Adequate precautions shall be taken to reduce to the minimum risk of any part of a suspended load becoming accidentally displaced.



- All scaffolds, ladders, First Aid Equipments/medicines and other safety devices shall be maintained in a safe condition and no scaffold, ladder or equipment shall be altered or removed while it is in use. Adequate washing facilities shall be provided at or near place of work. Necessary warning sign boards in Red/White paint, with proper lighting arrangements for nights are to be provided at prominent locations.
- Necessary number of caution board such as “Man on Line, Don’t switch on” should be readily available in easily identifiable locations.
- Standard first aid boxes containing materials as prescribed by the St. John Ambulance Brigade or Indian Red Cross should be provided in easily identifiable locations and should be readily available. Periodical examination of the first aid facilities and protective and safety equipment provided shall be undertaken and proper records shall be maintained for their adequacy and effectiveness.
- Charts (one in English and one in regional language ) displaying methods of living artificial respiration to a recipient of electrical shock shall be prominently displayed at appropriate places.
- A chart containing the names, addresses and telephone numbers of nearest authorized medical practitioners, hospitals, Fire Brigade and also of the officers in charge shall be displayed prominently alongwith the First Aid Box.
- Steps to train supervisory and authorized persons of the Engineering staff in the First Aid Practices, including various methods of artificial respiration with the help of local authorities such as Fire Brigade, St. John’s Ambulance Brigade, Indian Red Cross or other recognized institutions equipped to impart such training shall be taken, as prompt rendering of artificial respiration can save life at time of electric shock.
- No work shall be undertaken on live installations, or on installations which could be energized unless one another person is present to immediately isolate the electric supply in case of any accident and to render first aid, if necessary.

#### **18.0 COMPLETION CERTIFICATE**

On completion of the electrical installation a certificate shall be furnished by the Contractor countersigned by the Licenced Supervisor, under whose direct supervision the installation was carried out. This certificate shall be in the prescribed form as required by the local supply authority. The Contractor shall be responsible for getting the electrical installation inspected and approved by the local and statutory authorities concerned and expenses if any shall be borne by the contractor.

#### **19.0 WORKMANSHIP**

Good workmanship is an essential prerequisite to be complied for this work. Entire work shall be carried out in the most workmanlike manner by skilled workers under competent supervision.

**MAHINDRA WORLD CITY AT JAIPUR**

**TENDER FOR ELEVATOR AT MAHINDRA TECHNOLOGY PARK**

**TECHNICAL SPECIFICATIONS**

**LIFTS**

**GENERAL**

**1. STANDARDS**

The following Indian Standard Specifications and Codes of Practice, currently applicable and updated as of date irrespective of dates given below, shall apply to the equipments and the work covered by this contract. In addition the relevant clauses of the Indian Electricity Act 1910 and Indian Electricity Rules 1956 as amended upto date shall also apply. Wherever appropriate Indian Standards are not available, relevant British and/or IEC Standards shall be applicable

1.	Code of Practice for installation, operation and maintenance of electric passenger & goods lifts.	IS-14665 (Part 2) Sec-1 : 2000
2.	Code of practice for installation, operation and maintenance of electric service lift.	IS-14665 (Part 2) Sec-2 : 2000
3.	Safety Rules Section-1 Passenger and Good lifts	IS-14665 (Part 3) Sec-1 : 2000
4.	Safety Rules Section-2 – Service Lifts	IS-14665 (Part 3) Sec-2 : 2000
5.	Outline dimension for electric lifts.	IS-14665 (Part-1) : 2000
6.	Inspection Manual for Electric Lifts	IS-14665 (Part 5) : 1999
7.	Electric Traction Lifts – Components	IS-14665 (Part 4) Sec-1 to 9 : 2001
8.	Installation And Maintenance of Lifts For Handicapped Persons (Code of Practice)	IS 15330 :2003
9.	Specification for lifts cables.	IS-4289 (Par-1) : 1984 Reaffirmed 1991
10.	Specification for hot rolled and slit steel tee bars.	IS-1173-1978 Reaffirmed 1987
11.	Method of loading rating of worm gear.	IS-7443-1974 Reaffirmed 1991
12.	Code of practice for selection of standard worn and helical gear box.	IS-7403-1974 Reaffirmed 1991
13.	Isometrics screw threads.	IS-4218-(Part-II)1976 Reaffirmed 1996
14.	Degree of protection provided by enclosure for low voltage switchgear and control gear.	IS-2147-1962
15.	Classification of insulating materials for electrical machinery and apparatus in relation to their thermal stability in service.	IS-1271-1985 Reaffirmed 1990
16.	Code of practice for earthing.	IS-3043-1987
17.	Electrical installation Fire Safety of Building.	IS-1646-1997
18.	PVC insulated electric cable for working voltage upto and including 1100 volts.	IS-694-1990
19.	Code of practice for electrical wiring and installation	IS-732-1989
20.	PVC insulated (Heavy Duty) electric cables for working voltage upto and including 1100 volts.	IS-1554-1988 (Part-1)
21.	Flexible steel conduits	IS-3480-1966
22.	Accessories for rigid steel conduit for electrical wiring	IS-3837-1976
23.	Boxes for the enclosure of electrical accessories	IS-5133-1969 (Part 1)
24.	Guide for safety procedures and practices in electrical work.	IS-5216-1982 (Part-1)
25.	Conductors for insulated electric cables and flexible cordes	IS-8130-1984

26.	Miniature Circuit Breakers	IS-8828-1996
27.	Rigid steel conduits for electrical wiring (Second revisions)	IS-9537-1981
28	Methods of test for cables	IS-10810-1998
29.	Earth Leakage Circuit Breakers.	IS-12640-1988
30.	Moulded Case Circuit Breakers	IS-13947-1993
31.	General requirement for switchgear and control gear for voltage not exceeding 1000 volts.	IS-13947-1993
32.	1100 volt grade XLPE insulated armoured cables	IS 7098
33.	Specifications for hoistway door-locks	IS 7754-1975
34.	Rules for design, installation, testing and operation of lifts, escalators and moving parts.	IS 1735-1975

In addition the relevant clauses of the following, as amended upto date shall apply.

- The Indian Electricity Rules 1956
- The Indian Electricity Act 1910
- Bombay Lift Act 1939
- Delhi Lift Rules
- Fire safety regulations pertaining to lifts

The tenderers shall also take into account local and State regulations as in vogue for the design and installation of lifts.

Wherever appropriate Indian Standards are not available, relevant British and/or IEC Standards shall be applicable. BIS certified equipment shall be used as a part of the Contract.

## **2. ELECTRIC SUPPLY**

The available system of electric supply is 415 volts +10% -20%, -3 phase 4 wire AC 50 Hz system and 240 volts between phase and neutral. Any equipment /component operating at other than the above mentioned power supply shall be provided with necessary transformers/voltage stabilizers. The amount of power required for lifts shall be indicated in the tender. Power shall be provided at one point to be indicated by the tenderer. All subsequent electrical systems shall be deemed to be included in the scope of this contract.

## **3. TECHNICAL PARAMETERS**

Technical parameters given in Appendix-I give requirement of passenger, Service & Goods lifts. Tenderers shall fill in their itemwise confirmation/comments in the column provided for the purpose in this annexure. Deviations, if any, from tender requirements shall be clearly brought out in this annexure, failing which it shall be presumed that the offer conforms to the tender requirements fully. Tenders in which Appendix-I is not duly filled in by the tenderers are liable to be summarily rejected.

## **TECHNICAL SPECIFICATIONS**

### **MACHINE ROOM LIFTS**

#### **LIFT MACHINE AND CONTROLLER**

##### **1. GENERAL REQUIREMENTS**

The Elevators shall include all elements conforming to specifications or as amended herein. Elevators covered by these specifications shall be provided, installed, tested, commissioned, certified and approved as per statutory requirements of Lift Inspectorate.

Each Elevator shall have its own driving machine. The method of drive shall be Electric Traction with Gear less motor having VVVF Control.

The design of the Elevators shall take into consideration fire prevention, elimination of dust and dirt traps, and easy accessibility for cleaning and routine maintenance.

##### **2. ELECTRIC TRACTION DRIVE SYSTEM**

###### **2.1 Traction Machine**

The construction of all Elevator machines shall conform with IS-14665

###### **2.2 Brake**

- a) The Electro-magnetic brake with non-asbestos lining shall be spring applied and electrically released type having noiseless operation.
- b) The brake shall be capable of stopping and holding the Elevator car in its downward travel to rest with 125% of its rated load from the maximum governor tripping speed. In this condition the retardation of the Car shall not exceed that resulting from the operation of the Safety gear or stopping on the buffer.
- c) Springs used to apply the brake shoes (two nos.) shall be in compression and adequately supported.
- d) Brake linings shall be of renewable incombustible materials and shall be secured to the brake shoes such that normal wear shall not weaken their fixings. Band brakes shall not be used.
- e) No earth fault, short circuit or residual magnetism shall prevent the brake from being applied in the event of loss of power supply to the Elevator motor and control circuit.
- f) A means of adjusting the brake plunger stroke and releasing the brake in emergency shall be provided.
- g) The Elevator machine shall be fitted with a manual emergency device capable of having the brake released by hand and requiring a constant effort to keep the brake open.
- h) The fail safe break shall incorporate an approved design of brake switch i.e. pick up, hold, discharge. Brake coil shall be wired in series & their respective switches in parallel. The operation of brake shall be thyrestor controlled from solid state drive in order to effect minimum pick up time and synchronized start.

###### **2.3. Driving Mechanism**

###### **2.3.1 Lift Machine**

The lift machine shall be suitable for 415 volt 3 phase 50 Hz AC supply with a voltage variation of +10% and -20% and shall be placed directly above the hoist way on steel beams resting on machine room floor slab.

The lift machine shall have high efficiency and low power consumption and shall be designed to withstand peak currents in lift duties.

Means for manual operation of the lift car shall be made by providing winding wheel suitably marked to indicate the direction of the movement to enable the lift car to be brought to the nearest landing. There shall be a warning display for switching off electrical supply before the manual operations.

## 2.4 Driving Sheaves

- a) The sheaves shall be manufactured in steel or SG iron and fitted with sealed for life lubricated bearings.
- b) The sheaves shall have machined rope grooves that can be reworked for future wear.
- c) Adequate provision shall be made to prevent any suspension ropes leaving groove due to rope slack or introduction of foreign objects.

## 2.5 Alignment

- a) The brake plunger, collar, sleeve, motor, sheaves and all bearings shall be mounted and assembled so that proper alignment of these parts is maintained.
- b) The assembly shall be reviewed and rectified when excessive noise is emitted during operation.

## 2.6 Gearless Machines

The gearless machine shall consist of a motor traction sheave and brake drum or brake disc completely aligned on a single shaft. Gearless machine shall be AC gearless with VVVF drive.

## 2.7 Anti-Vibration Supports

The whole traction machine shall be mounted on appropriate anti-vibration supports to minimize noise and vibration.

## 3. CONTROL SYSTEMS

### 3.1 Description

The Lifts shall have state of art microprocessor based AC variable voltage variable frequency (ACVVVF) drive. Single lifts shall be provided with directional collective control for one car, two cars and 5 cars (also called simplex, collective control). Some of the technical parameters required are innumerate below.

a)	Starting current	1.2 - 1.5 times full load running current
b)	Power saving	50 - 55%
c)	Leveling accuracy	± 3 mm (passenger/service lifts) & ± 5mm(Freight lift)
d)	Acceptable voltage fluctuation	+10 to - 20%
e)	Rate of acceleration/deceleration (M/S <sup>2</sup> )	0.6 - 1.5 (Adjustable at site)
f)	Maximum jerk (M/S <sup>3</sup> )	0.7 - 1.5 (Adjustable at site)
g)	Maximum vibration in car horizontal/ vertical	20/18 dBA
h)	Maximum noise level in car during travel	45 dBA
i)	Maximum door noise level while closing and opening at a distance of 1 mtr from car door	52dBA

The controller shall be mounted on the side of the top of lift shaft, vertical, totally enclosed cubicle type with hinged doors on the front provide easy access to all components in the controller. Cubicle shall be well ventilated such that the temperature inside never exceeds the safe limits of the components at ambient room conditions.

The controller shall operate within the supply voltage variation of plus 10% to minus 10% of the nominal voltage.

The Controller shall include protection against the following abnormalities and shall cut off the power supply, apply the brake and bring the car to a rest in the event of any of the abnormalities occurring.

- a) Over current
- b) Under voltage
- c) Overvoltage
- d) Single phasing
- e) Phase reversal
- f) Earth leakage

### 3.2 Features

Control system features are detailed as below.

- **Attendant Operation**

All lifts shall be provided with attendant control facilities.

A key switch for change of operation mode shall be provided in a lockable recess panel on the car operation panel. After gaining control on the lift, the attendant can direct the car to stop at any storey. The attendant can also by pass the landing calls (but not cancel them) or reverse the direction of traveling.

- **Automatic By-pass**

Load weighing devices located either on car top or under the car cage shall be provided for all lifts. Whenever the load exceed 60-70% of the capacity load of the lifts, the lifts shall ignore all landing calls and only respond to car calls.

- **Over load device**

A load weighing devices shall operate when the load in the car exceeds the rated capacity. The operation of the device shall activate buzzer sound and flashing 'overload' signals. At the same time the car doors shall be prevented from closing. When the excess load has been removed form the car, the buzzer alarm shall be muted automatically and the car shall function normally. The sensitivity shall be 30 kg for Passenger lifts and 5% of the contract load for service lifts.

- **Automatic self-leveling**

All lifts shall be provided with automatic self-leveling feature that shall bring the lift car level to within  $\pm 3$  mm for passenger/service elevators and  $\pm 5$ mm for freight elevators of the landing floor regardless of load or direction of travel. The automatic self leveling feature shall correct for over travel and rope stretch.

- **Possible future requirement of access control and BMS integration of the controller.**

- **TECHNICAL SPECIFICATIONS**

**LIFTS**

**LIFT CAR, DOORS AND SAFETY DEVICES**

**1 CAR ENCLOSURES**

**1.1 General Requirements**

- **Frame**

Every lift car body shall be carried in a steel car frame assembly which shall have sufficient mechanical strength to resist the forces applied by the safety gear or impact of the car on the buffers. The deflection of the steel members carrying the platform shall not exceed 1/1000 of their span under static conditions when the rated load is evenly distributed on the platform

At least four renewable guide shoes or shoes with renewable linings or sets of guides rollers shall be provided two at the top and two at the top and two at the bottom of the car frame assembly.

- **Enclosure finishes**

The car enclosure, doors etc. shall be as per Annexure-I enclosed. The following are to be provided.

- Alarm System : An emergency alarm buzzer, including wiring shall be provided and connected to a plainly marked push button in the car operating panel. The alarm bell shall be located in central security room. The alarm unit shall be solid-state siren type, to give a waxing and waning siren when the alarm button in the car is pressed momentarily. Built in 3 way intercom system with telephone instrument in the car, reception and security, (as directed by Owners/Architect) including wiring telephone instrument and associated EPABX shall be provided.
- Sealed Maintenance Free Nickel Cadmium Batteries capable of maintaining the following in each lift for 2 hrs after mains failure.
  - Emergency light of adequate illumination in car
  - Car Ventilation
  - Intercommunication System
  - Alarm bell
- One no. 16 amp switch socket outlet to IP 54 and a permanent weatherproof type luminaries to IP54 (with lighting switch ) adequately protected shall be provided on the top of the lift car for maintenance
- One no. 16 amp switch socket outlet to IP 54 at bottom of lift car for maintenance

**1.2 Operation Panel**

A full length car operating panel incorporating following control/indications shall be provided in each lift on the return panel

- LCD Illuminated touch push buttons of micro pressure type corresponding to the floors served at Ground floor and Inside Car. For Other floors LED Illuminated touch push buttons of micro pressure type to be provided.
- Door open and door close button
- Emergency stop button with Alarm
- Two position key operated switch for 'with attendant' and 'without attendant' operation.
- Ventilation fan ON/OFF switch with auto OFF when there is no call after 120 seconds (Two Speed & concealed vents).

- Built in intercom of the hands free type as well as space for providing EPABX telephone instrument and 5 pair telephone trailing cable to communicate from car to Two Locations i.e. Operator's Room (at remote location) & Security Guard Room and vice-versa.
- Dynamic car direction display
- Car position indicator (digital)
- Audio/Visual overload warning indicator
- **In order to have at least one device of communication functioning at all the times, as an alternative arrangement, it is recommended that the provision of both i.e. telephone with minimum connections-one at the operator's room and other at guard room and the emergency signal with re-chargeable batteries as source of supply be made in the lift cars.**
- **The device used for emergency signals should incorporate a feature that gives a immediate feed back to the car passengers that the device has worked properly and the signal has been passed on to the intended agency.**
- Digital voice synthesizer (Optional) for announcing special messages with background music.

### 1.3 Landing fixture

The landing fixtures shall be recess mounted on a base junction box in the wall by the side or on top of landing doors as required.

Each landing fixtures shall consist of micro touch type landing call buttons with illuminated call acknowledge signal and illuminated digital type car position indicators on separate stainless steel face panels with hairline finish. Alternatives as available with bidders shall be indicated in tender for owners approval.

The following landing fixtures shall be provided for each lift.

- a) Lowest floor
  - Up call button
  - Digital car position indicators
  - Travel direction indicators
  - "In use" indicator to signify the lift door is opened for delivery at a certain landing
- b) All floors other than lowest and top most floor
  - Button up and down call buttons
  - Travel direction indicators
  - Digital car position indicators with Gong (Optional)
  - "In use" indicators to signify the lift door is opened for delivery at a certain landing
  - Manual by pass key switch for lift landings.
- c) The top most floor
  - Down call button
  - Travel direction indicators
  - Digital car position indicators with Gong (Optional)
  - "In use" indicators to signify the lift door is opened for delivery at a certain landing
  - Manual by pass key switch for lift landings.

12 V 20 W tungsten halogen spotlights shall be supplied and installed on the underside of the hall lanterns. The spot lights on a particular floor shall be lit up to signify the arrival of the corresponding lifts. These spotlights shall be switched off after the corresponding lifts have left that particular floor. For passenger cars, the spotlights on the parking floor shall be turned off after a present period adjustable from 15 to 150 sec. Should a call from the parking floor be registered, spotlight of the assigned



parking car shall be switched on again together with the opening of the landing doors to attend the call

## **2. CAR AND LANDING DOORS**

### **2.1 General requirements**

All car doors shall extend to the full height and width of landing opening unless otherwise specified and shall be operated with variable frequency door operator. A similar imperforate door shall be provided for every landing opening in the lift hoistway enclosure. The top track of the landing and car doors shall not obstruct the entrance to the lift cars. All car and landing doors shall have a fire resistance of not less than 1 hours.

In addition, all the car and landing doors shall meet the following general requirements.

- a) **Car door locking devices**  
Every car door shall be provided with an electrical switch to prevent the lift car from being started or kept in motion unless the car door is closed. A mechanical locking device shall also be provided to prevent door opening from inside the car whilst the car is in motion.
- b) **Landing door locking devices**  
Every landing door shall be provided with a mechanical locking device to prevent opening of the door from the landing side in normal cases unless the lift car is in that particular landing zone.
- c) **Projections and recesses**  
Sliding car and landing doors shall be guided on door tracks and sills for the full travel of the doors. The distance between the cars and the landing sills shall not exceed 35 mm.
- d) **Door locking devices**  
All doors locking devices, door switches and associated actuating rods, levers or contracts, shall be inaccessible from the landing or the car.
- e) **Protective devices**  
Protective devices shall be fitted to the leading edges of both car door panels. It shall automatically initiate reopening of the door in the event of a passenger being struck (or about to be struck) by the door in crossing the entrance during the closing movement. The obstruction of either leading edge when closing shall actuate the protective device to function.
- f) **“Door open” alarm**  
“Door open” alarm shall be provided in the car to initiate alarm and a continuous buzzer if a car or landing door has been mechanically kept open for a present period. The period shall be adjustable from 0-10 minute.
- g) **Emergency landing door unlocking devices and key**
  - Every landing door shall be provided with an emergency landing door unlocking device. When operated by an authorized person with the aid of a key to fit the unlocking triangle, the landing door shall be unlocked irrespective of the position of the lift car for rescue purpose. When there is no “unlocking” action, the key shall only be able to stay in the locked position.
  - In the case of coupled car and landing doors, the landing doors shall be automatically closed by means of weight or springs when the car is outside the unlocking zone.

**2.2 Door Hangers and Tracks**

The car and the landing doors shall be provided with two point suspension sheave type hangers complete with tracks. Sheaves and rollers shall be steel with moulded nylon collar and shall include shielded ball bearings. Tracks shall be of suitable steel section with smooth surface. The landing doors shall be complete with headers, sills, frames etc. as required.

**2.3 Lift Door Protection**

Multiple-Infra red door protection and mechanical shoes shall be provided for all lift to control door movement which shall cover the entire door opening effectively.

**2.4 Protective Hand Rail in the Car (Optional as this will depend on interior design)****2.5 CABIN FAN**

**A noiseless pressure fan shall be provided in the lift cabin.**

**3. HOIST ROPES**

Hoist way material shall be non-flammable (02 hrs fire rated) except travelling cables which shall be flame resistant.

**Lift Ropes – IS 14665 (Part 4 / Sec 8)-2001**

Round strand steel wires ropes made from steel wire ropes having a tensile strength not less than 12.5 tonnes/cm<sup>2</sup> and of good flexibility shall be used for lift. Lubrications between the strands shall be achieved by providing impregnated hemp core. The lift ropes shall conform to IS 14665-(Part-4-Sec. 8):2001 and the following factor of safety shall be adhered to. The minimum diameter of rope for cars and counter weight of passenger and goods lift shall be 8mm.

Rope speed of Passenger & Passenger cum Goods Lifts (Service Lift) (m/s)	Factor of safeties
0.5 or less	8
exceeding 0.5 to 1.0	8.6
exceeding 1.0 to 2.0	10
exceeding 2.0 to 3.5	11
exceeding 3.5	12

**Rope fastenings**

The ends of lift ropes shall be properly secured to the car and counter weight hitch plates as the case may be with adjustable rope shackles having individual tapers babbit sockets, or any other suitable arrangement. Each lift rope shackle shall be fitted with a suitable shackle spring, seat washer, shackle nut & lock & shackle nut split pin.

**Guards for Lift Ropes**

Where lift ropes run round a sheave or sheaves on the car and/ or counterweight of geared/ gearless machine suitable guards shall be provided to prevent injury to maintenance personnel.

**Number & Size of Ropes**

The contractor must indicate the number and size of lift ropes and governor ropes proposed to be used, their origin, type, ultimate strength and factor of safety. The

contractor should furnish certificate or ropes from the rope manufacturers issued by competent authority.

#### **4. COUNTER WEIGHT**

The counter weight for lift cars shall be in accordance with clause 6 of IS 14665 (Part 4-Sec-3) : 2001 and shall be designed to balance the weight of empty lift car plus approximately 50 percent of the rated load. It shall consist of cast sections firmly secured in relative movement by at least two numbers steel tie rods having lock nuts/split pins at each end and passing through each section and Housed in a rigid steel frame work. Cracked and broken sub weights shall not be accepted. Counter weight for passenger lifts should be able to accommodate suitable weight Interior finishes. In case interior finishes material exceeds this provision, then the elevator contractor shall adjust the Counter Weight accordingly, however this will be decided and intimated much before the delivery of the elevators.

##### **Counter Weight Guards**

Guards of wire metal / mesh shall be provided in the lift pit to a suitable height above the pit floor to eliminate the possibility of injuries to the maintenance personnel.

#### **5. GUIDES / Guide Rails**

Car and counterweight guide shall be machined T section as per relevant Indian Standards IS-14665 of 2000 revised up to date. The guides shall be capable of withstanding forces resulting from the application of the car or counter weight safety devices The guide rails shall be minimum 16mm Tongued & Grooved type.

#### **6. TRAILING CABLES**

A single trailing cable for lighting control and signal circuit is permitted, if all the conductors of this trailing cables are insulated for maximum voltage running through any one conductor of this cable. The lengths of the cables shall be adequate to prevent any strain due to movement of the car. All cables shall be properly tagged by metallic / plastic tags for identification. Cable jacket should be suitable for immersion in water, salt water & oil etc.

Trailing cables shall run from a junction box on the top of the car to a junction box located in the shaft bear mid point of travel and from these junction boxes conductors shall be run to the various locations.

Trailing cables exceeding 30 meters in length shall run so that the strain on individual cable conductors will be reduced to a minimum and the cables are free from contact with the car counterweight, shaft walls or other equipment.

Trailing cables exceeding 30 meters in length shall have steel supporting fillers and shall be suspended directly by them without rubbing over other supports.

Cables less than 30 meters in length shall have no – metallic fillers and shall be suspended by looping cables around supports of porcelain spools type or equivalent.

5 percent of the total capacity subject to a minimum of 5 wires shall be available unutilised in the trailing cable everywhere suitable distributed between various functions.

#### **7. SAFETY DEVICES**

Safety devices shall be capable of operating only in the downward direction and stopping fully loaded car, at the tripping speed of the over speed governor, even if the suspension devices break, by gripping the guides, and holding the car there. Governor

sheeve in elevator pit shall be enclosed in a wire cage to a height of 2.40 mtr. All safety devices statutorily required by Lift Inspector, including but not restricted to the following shall be provided.

- **Terminal slow down switches**

These shall be provided and installed to slow down the lift car when approaching the top and bottom landings. The slow down switches shall act independently from the normal car operating device.

- **Over travel limit switches**

These shall be provided and installed to stop the car within the top and bottom clearance, independent of the normal car operating device. The bottom over travel limit switch shall become operative when the bottom of the car touches the buffer.

When the over travel limit switches are operative, it shall be impossible to operate the car until the car has been hand would to a position within the normal travel limits.

- **Pit Switch**

An emergency stop switch shall be located in the pit which when operated shall stop the car regardless of the position of hoist way.

- **Terminal Buffers**

Suitable spring buffers mounted on RCC foundation blocks shall be provided in the pit in compliance with ANSI/ASME/CENEN-81 /JIS codes for stopping the car in case of mal-operation. Dowels for the purpose shall be left while casting the pit floor alternatively floor reinforcement could be exposed by chipping for welding additional reinforcement for Dowels. However clearance from underside of the car resting on a fully compressed buffer shall not be less than 1.20 mtr. Buffers shall be designed for a design speed + 15%. Oil buffers shall be provided for the passenger elevators for speed of more than 1.75 mps and spring buffers for lower speed.

- **Interlocking**

Adequate interlocking is to be provided so that the car shall not move if the landing doors are even partially open and also the lift is overloaded.

- **Over speed governor**

Over speed governor shall be of centrifugal type and shall operate the safety gear at a speed at least equal to 115% of the rate speed and less than the over speed governors shall be driven by flexible wire ropes with the following requirements.

- The breaking load of ropes shall be related to the force required to operate the safety gear by the safety factor of at least 8
- The nominal rope diameter shall be at least 7 mm
- The ratio between the pitch diameter of the over speed governor pulley and the nominal rope diameter shall be at least 30

The over speed governors shall be sealed after setting the tripping speed.

The breaking or slackening of the governor rope shall cause the motor to stop by an electric safety device.

- **Alarm bells**

A Concealed 200 mm diameter alarm bell shall be installed in the main security area. The alarm bell shall sound when the alarm bell button in the car operating panel is

pressed. The bell shall mute when the pressure on the alarm bell button is released.

- **Emergency Stop Switches**

An emergency stop for use by maintenance personal shall be provided in each lift car.

## **8 FIREMAN SWITCH**

Each Lift shall have a Fireman switch with glass front for access by the Firemen. The operation of this switch shall cancel all calls to this lift and shall stop at the next nearest landing if traveling upwards. The doors shall not open at this landing and the lift shall return to the ground floor. In case the lift is traveling downwards when the fireman's switch is operated it shall go straight to the ground floor bypassing all calls enroute. The emergency stop button inside the car shall be rendered inoperative.

The fireman's switch shall be located adjacent to the lift opening at the terminal floor and shall be at a height of approximately 2 m above the floor level. For easy identification of firemens lift which confirm to the local authorities requirements, a red and white diagonal striped backing shall be provided behind the glass of the firemen's switch.

A permanent notice of prominent size indicating the floors served shall be provided and displayed adjacent to the firemen's lift at the terminal floor. The notice shall be made of laminated plastic sheet or other approved materials with red letters on white background. Details of the notice shall be submitted to the Engineer-in-Charge for approval prior to fabrication.

## **9. CONTROL OF NOISE AND VIBRATION**

### **9.1 General**

The whole of the lift assembly, including the opening and closing of the car and landing doors shall be quiet in operation and shall be free of rattling or squeaking noises. Lift doors operation shall be smooth to avoid the transmission of impact noise to the surrounding structure.

Noise level resulting from the operation of the lifts, including direct sound transmission, breakout noise and re-radiation of structure borne noise, shall not exceed the specified noise criteria of the adjacent spaces. Vibration resulting from operation of lifts of escalators shall not be perceptible in any occupied areas.

### **9.2 Car construction**

All elements of the lift car construction shall be sufficiently rigid to avoid generation of noise by panel excitation as a result of movement. The total noise level in a moving lift car shall not exceed 45 dBA with the ventilation system operating.

### **9.3 Machinery**

The gearless traction machine and compact PM motor are installed within the hoist way and the slim control panel is located on the shaft side wall. Provision shall be made for the control vibration isolation measures employed to ensure that structure borne noise resulting from the operation of the lift machinery is not audible in any occupied area.

Lift machinery noise levels under normal operating conditions shall not exceed 70 dBA at 1 m from the equipment in free field.

#### **9.4 Arrival chimes**

Noise from arrival chimes shall not exceed 60 dBA.

The above levels shall be measured at 3 m from the arrival chimes using a noise meter set to 'fast' response. Chimes with adjustable loudness shall be provided.

#### **10. FIRE SAFETY REQUIREMENTS**

General requirements of lifts shall be as follows :

- 10.1 Landing doors in lift enclosures shall have a fire resistance of not less than one hour.
- 10.2 Lift car door shall have a fire resistance rating of one hour.
- 10.3 Grounding switch (es), at ground floor level, shall be provided on all the lifts to enable the fire services to ground the lifts.

## TECHNICAL SPECIFICATIONS

### LIFTS

#### ASSOCIATED WORKS

#### 1. ASSOCIATED ELECTRICAL WORKS

##### 1.1 Scope

Based on power requirements of lifts furnished by the lift contractor, power supply for the lifts machines, terminating in a Switchboard located at a desired location, shall be provided by Engineer-in-charge. The earth bar provided on this Switchboards shall be connected to the building earthing system also by Engineer-in-charge. All cabling / wiring/loop earthing beyond this Switchboard for interconnection with the lift controllers / motors/ indicators / push buttons / safety devices etc. shall be provided by the lift contractor and its cost shall be deemed to be included in the quoted rates.

##### 1.2 Cabling

Cabling between switchboard and the controller /lift motor shall be with XLPE insulated HR PVC sheathed 1100 volt grade aluminium conductor armoured cables conforming to IS 7098 or PVC insulated, PVC sheathed, 1100 volt grade al conductor armoured cables conforming to IS 1554. Cables shall be terminated in glands fitted with armour clamps the gland body shall be provide with an internal conical sating to receive the armour clamping cone and clamping nuts which shall secure the armour wires. A PVC shroud shall be fitted to cover the gland body and exposed armour wires

Trailing cables for the lifts shall be EPR insulated stranded copper conductor flexible cables conforming to IS 9968

Control cabling shall be with multi core stranded copper conductor PVC insulated and sheathed 1100 volt grade cables conforming to IS 8130. Minimum size of the cable shall be 2.5 sq mm.

Where cables pass through walls or floor slabs, pieces of GI sleeves shall be provided for cast into the wall / floor and cable shall be drawn therein. Annular space around the cable in the sleeve shall be sealed with fire proof sealant supplied by Engineer-in-charge.

##### 1.3 Wiring

All wiring shall be carried out with FRLS PVC insulated 1100 volt grade stranded copper conductor wires conforming to IS 694 drawn in MS rigid / flexible conduiting system and / or MS raceways. Minimum 2.5 sq mm size wires shall be used. Wires shall be cut only at terminations. Intermediate jointing shall not be permitted. Drawing, cutting and terminating of the wires shall comply with the relevant Indian standard specifications and shall be carried out in the most workman like manner as per standard practice. All normal care like cutting the insulation with a pencil edge, taking care not to cut the strands and proper tightening of terminal connector screws to avoid loose connection or breaking of conductors etc. shall be taken.

Heavy gauge black enameled screw type ISI embossed MS conduits with superior quality accessories approved by Engineer-in-Charge shall be used in the work. Conduits could either be recessed in floors / walls or fixed on surface with saddles and clamps. Final connections to vibrating the equipment shall be made with metal flexible conduits. Entire work shall be carried out in work man like manner as per standard practice

#### **1.4 Earthing**

Metal enclosures of all electrical equipment and devices including frames of motors, controllers, switchgear, conduits and raceways etc. shall be properly earthed so as to form an equi-potential zone. Loop earthing of vibrating equipment shall be done with flexible copper earthing braid or flexible cables. The lift motor frame shall be connected to the building earthing system termination at the switchboard by duplicate loop earthing conductors of appropriate size.

#### **2. ASSOCIATED CIVIL & STRUCTURAL ITEMS**

All civil and structural items of work associated with erection and operation of lifts shall be provided by the Contractor at his cost including (but not restricted to) the following.

- Hook for lifting lift equipments in the top of shaft.
- Temporary scaffoldings and safety barricades during lift installation in and around lift Lift wells
- Sill angels
- Bearing plates
- Buffer supports
- Checqured plates
- Fascia plates
- Ladders in pits (MS)
- Safety railing on car top
- Separator /stretcher beams if required .
- Dowels for terminal buffers in pit floor during casting.

The Contractor shall ensure erection and fixing of steel work in such a manner that no RCC wall or any other structural member is damaged.



## TECHNICAL SPECIFICATIONS

### LIFTS

#### MAINTENANCE SERVICES

#### 1. SCOPE

The Contractor shall provide Free Comprehensive Maintenance service for a period on **two years** from the date of handing over of the lift to Engineer-in-Charge. After expiry of this free comprehensive maintenance period, Engineer-in-charge reserve right to enter into annual maintenance contract with the contractor as per rates finalized in the contract

The maintenance services rendered by the contractor (free maintenance for two years after handing over and as per AMC if entered into for subsequent years) shall include routine and preventive maintenance as also breakdown maintenance if and when required. Maintenance services shall be provided with 24 hour emergency call out service.

#### 2. ROUTINE AND PREVENTIVE MAINTENANCE

Program of routine and preventive maintenance during the free (2 year) maintenance period as also during the tenure of annual maintenance contract shall comply with minimum requirements as below.

##### 2.1 Fortnightly

- To check all bearing oils, oil rings, oil chains, etc. All machines should be carefully checked and repaired for abnormal temperature rise.
- To check and repair all relays and contacts as wells as their movements and repair as necessary
- To clean traction machines, relays panels, control panel, starter panels, selectors, governors, car top, car gates, sills and pits
- To check brake action and adjust if necessary
- To check and repair movement of door switches, gate switches and emergency stop switches
- To check and repair indicator lamps and indicator
- To check and repair annunciator lights, buzzer and car lights
- To check and adjust leveling differences, brake slippage, acceleration, deceleration and riding comfort.
- To check and repair movements of car control buttons, switches and the like.
- To check and repair operation of weighting devices.

##### 2.2 Monthly

- To turn grease cups for speed governors and compensating pulleys
- To check and oil selectors
- To top up rail lubricators
- To clean ropes oil if necessary
- To clean PM motor and inspect controller box etc.
- To oil electric brake pins
- To oil all pins of door operation and door opening mechanisms
- To clean hoist way, beams slow down cams, outside cages, rails and counterweight rails
- To clean, oil and adjust door closer and levers
- To clean main sheave, secondary sheaves and rope sheaves on car top and counterweigh top
- To clean and repair brake wheels and shoes

- To oil compensating rope tensioning pulleys.

### **2.3 Every Two months**

- To clean and oil door hangers, door rails, interior of hanger case. If necessary adjust acentric rollers, car door hangers, door connecting ropes and chains
- To check and repair door shoe
- To clean and oil safety fears
- To clean and oil car and counterweight guide shoes. Adjust if necessary
- To clean and oil interior of terminal limit switches and position switches. Check rubber rollers of terminal limit switches.
- To check oil clean and repair interior of door switches, gate switches. Replace worn parts if necessary
- To check and repair flexible cable
- To check and repair movement of limit switches
- To clean and oil interior of car control switches.
- To clean and check push buttons of care control panels
- To check, clean and repair the sleeve and plungers of the electromagnetic brakes.

### **2.4 Every three months**

- To check and repair the operation of terminal limit switches and final limit switches.
- To check and repair the governor switches.
- To clean the brush holders and commutators of the door motors.
- To check and repair the traction ropes for broken wire, wear elongation and even tension. Adjust if necessary.
- To remove the dust inside the traction machines and controls panels using electric blower
- To clean and repair the indicator lamps
- To check the voltage of rectifiers and thyristors

### **2.5 Half yearly**

- To check and repair the operation of safety gears
- To check oil for oil buffers
- To check and clean the hall buttons and contacts
- To check and repair the compensating chains or ropes
- To check and oil the bearing of door motors
- To grease the secondary sheaves, car top sheaves and counterweights.
- To check the wear of guide shoes of cars and counterweights

### **2.6 Annual**

- To clean the wire connection box of every landing and car cages. Tighten all screws and check the conditions of cables at conduit inlets and outlets
- To check and tighten screws of control panels, starters panels and relay panels
- To remove the dust inside the landing indicator switches by electric blower
- To test all safety devices
- To dismantle, clean and adjust the electro magnetic brake of gearless machines
- To charge motor oil
- To check and tighten screws and foundation bolts of traction machine, secondary sheaves, exterior of lift frame, guide rail, guide rail clamps and bracket etc.
- To test the over current relays

- To provide all labour, materials, tools and transport to carry out annual inspection and load test according to the requirement of the employer

All the scheduled maintenance services described above shall be properly programmed and agreed with the Engineer-in-charge in order not to affect operation of the lift systems

### **3. BREAK DOWN MAINTENANCE**

The Contractor shall also undertake to provide a comprehensive breakdown service whereby qualified technicians shall attend to each breakdown as soon as practicable after a breakdown is reported and carry out immediate remedial work at a reasonable speed according to the nature of the breakdown. Any faulty equipment or components shall be quickly replaced.

In circumstance such that the Contractor fails to attend the breakdown within four normal working hours after notification of the breakdown and where remedial work is interrupted during normal working hours for purposes other than obtaining replacement parts, the employer reserves the right to order such action as may be necessary to expedite completion of remedial work which shall be at the Contractors expense without abrogation of the Contractors responsibilities

### **4. GENERAL**

The Contractor shall keep sufficient spare parts during the maintenance period to ensure that replacement work for defect can be carried out immediately

A competent engineer shall be provided to investigate the fundamental cause of a fault temporary quick fix solution will not be accepted.

The employer shall at his discretion, take action to recover all losses incurred arising from the failure of the contract to perform the duties either wholly or in part as detailed in this section.

## **TECHNICAL SPECIFICATIONS**

### **LIFTS**

#### **SAFETY ASPECTS & PROCEDURE**

1. Since lift installation consists of a number of electrical and mechanical components having linear/ rotary motions, utmost caution should be exercised while working and all safety precautions shall be rigorously followed.
2. Only authorized persons shall be allowed to work on lift installations and officer empowered for such authorization shall keep proper recorded thereof during the test, inspection and maintenance except where necessary.
3. If during erection any safety or protection devices is inoperative, special care must be taken to avoid accidents on this account.
4. Supply at main incoming iron clad switch or circuit breaker shall be switched off before examining any part of the equipment. Whether during periodical inspection, or while carrying out any work on the equipments (including using the winding handle at times of mains failures) unless power is particularly required for particular operation or tests on the lifts. The breaker located in OFF position.
5. The landing and car buttons shall be keep out of circuit by switching on the 'Maintenance Switch' located on the top of the lift car during maintenance operators. Whenever maintenance switch is not proved emergency stop switch inside car and or attendant control switch should be used.
6. Before carrying out any repair work it shall be ensured that none of the electro-mechanical door locks are short circuited either from the controller or at the landings
7. As a general precaution, facia plate between the door headers and the corresponding upper landing sill on each floor must be provided.

## TECHNICAL SPECIFICATIONS

### LIFTS

#### **PROVISION FOR THE DISABLED AND HANDICAPPED**

- 1 All the Passenger Elevator shall be provided with following features:
  - a) Elevator control buttons at locations and height specified in IS 15330 - 2003
  - b) Hall call buttons at locations and height specified in IS 15330 - 2003
  - c) Hand rails shall be provided on the side walls of the Elevator at height & locations specified in IS:15330 - 2003. An international symbol of access of the disabled shall be permanently and conspicuously displayed at each and every Elevator landing next to the Elevator entrance (to be provided by signage contractor). Braille notations indicating the floor levels shall be incorporated next to each button at the handicap COP and handicap hall call buttons.
  - d) A digital voice system for announcing the car position, opening/closing of doors, direction of travel and messages shall be provided as per IS:15330 - 2003
  - e) A laminated safety glass type mirror of at least half of the size shall be installed on rear panel at appropriate position as per IS : 15330 - 2003

## TECHNICAL SPECIFICATIONS

### LIFTS

#### TESTING OF LIFT INSTALLATION

#### 1.0 TESTS AT SITE:

#### 1.1 a) Levelling Test:

Accuracy of the floor levelling shall be tested with the lift empty, fully loaded. The lift shall be run to each floor while travelling both in upward and downward directions and the actual distance of car floor above/ below landing floor shall be measured. In each case there shall not be any appreciable difference in these measurements for levelling at the floors when the car is empty and when it is fully loaded. The tolerances for levelling shall be as  $\pm 5$ mm accuracy.

#### b) Safety Gear Test:

Instantaneous safety gear controlled by a governor, should be tested with contract load and a contract speed, governor being operated by hand. Two tests should be made, however, with wedge clamps or flexible clamp safeties, one with contract load in the car and the other with 68 kg (equivalent to one person) in the car. The stopping distance obtained should be compared with specified figures and the guides, car platform, and safety gear should be carefully examined afterwards for signs of permanent distortion.

Counterweight safety gear should be tripped by the counterweight governor and the stopping distance noted. In this case, however the governor tripping speed should exceed that of the car safety governor but by not more than 10 percent.

During the safety gear test, car speed (from the governor or the main sheave) should be determined at the instant or tripping speed with that stated in I.S. The governor jaws and rope should be examined for any undue wear.

#### c) Contract Speed:

This should be measured with contract load in the car, with half load with no load, and should not vary from the contract speed by more than 10 percent. The convenient method is by counting the number of revolutions, made by the sheave or drum in a known time. Chalk mark on the sheave or drum and a stop switch will facilitate timing but care must be exercised to ensure that no acceleration or retardation periods are included. If the roping is 2 to 1 the sheave speed is twice the car speed. Alternatively, the speed can be measured by a tachometer applied directly to shaft immediately below the sheave.

#### d) Lift Balance:

After the above test, some of the weight shall be removed until the remaining weights represent the figures specified by the tenderer. With this condition car at half way travel the effort required to move the lift car in either direction with the help of winding wheel shall be as nearly as can be judge by the same.

e) **Car and landing doors interlocks:**

The lift shall not move with any door open. The car door relay contact and the retiring release cam must be tested. The working of the door operation and the safety edges and light equipment if any provided shall also be examined.

f) **Controllers:**

The operation of the contactors and interlocks shall be examined and it shall be ascertained whether all requirements laid down in the specifications have been met.

g) **Normal Terminal Stopping Switches:**

This shall be tested by letting the car run to each terminal landing in turn, first with no load and then with contract load and by taking measurements, top and bottom over travels can be ascertained.

h) **Final Terminal Stopping Switches:**

The normal terminal stopping switches shall be disconnected for this test. It shall be ensured that these switches operate before the buffers are engaged.

i) **Insulation Resistance:**

This shall be measured (after removing the electronic PCB's and their connection) between power and control lines and earth and shall not be less than 5 mega-ohms when measured with D.C. voltage of 500 volts. The test shall be carried out with contactors so connected together as to ensure that all parts of every circuit are simultaneously tested.

j) **Earthing:**

All conduits, switches, casing and similar metal work shall have earthing continuity.

k) **Ropes:**

The size, number construction and fastenings of the ropes should be carefully examined and recorded.

l) **Buffers:**

The car should be run on to its buffers at contract speed and with contract load in the car to test whether there is any permanent distortion of the car or buffers. The counterweight buffers should be tested similarly.

1.2 **Tests at Manufacturer's Works:**

a) **High Voltage Test:**

The dielectric or electric apparatus (excluding motors, generators and instruments which are tested in accordance with the appropriate Indian Standards wherever they exist) shall be capable of withstanding a test voltage of ten times the working voltage with a maximum of 2000 Volts when applied.

- i) between the live parts and case of frame with all circuits completed.
- ii) between main terminals or equivalent parts with all circuits open, and
- iii) between the lift parts of independent circuits.

Note : Owing to the impracticability of applying tests (ii), (iii) mentioned above on controllers and similar apparatus after controller wiring has been completed, these tests may be made at convenient stages of manufacturer.

**b) i) Method of Applying High Voltage:**

The test shall be made with alternating voltage of any convenient frequency, preferably between 49 to 60 cycles per second. The test voltage shall be approximately sine-wave form and during the application of voltage with peak value, as would be determined by spark gap by oscillograph or by any other approved method shall not be more than 1.45 times the rms value. The rms values of the applied voltage shall be measured by means of a volt meter used with a suitably calibrated potential transformer or by means of voltmeter used in connection with a special calibrated voltmeter winding or testing transformer by any other suitable voltmeter connected to the output side of the testing transformer.

**ii) Duration of High Voltage Test:**

The test shall be commenced at a voltage of about one third of the test voltage which shall be increased to the full test voltage as rapidly as is consistent with the value being indicated by the measuring instrument. The full test voltage shall be maintained for one minute. At the end of this period, the test voltage shall be rapidly diminished to one third of its full value before switching off.

The oil buffers are examined after the above tests have been made to determine if there has been any oil leakage or distortion and to ensure that the buffers return to their normal positions.

**c) Buffer Test:**

A copy of the test report shall be intimated after testing at works.

**1.3 Performance Test:**

This test is meant for passenger lifts and is conducted to watch the performance of lift installation in terms of passenger handling capacity and waiting interval as obtained at site vis-a-vis design, data and conducted as below :

i) Waiting interval : (T)- This can be worked out by taking the average of several round trip times as observed physically and then dividing it by the number of lifts in that bank.

ii) Handling capacity H = 
$$\frac{300 \times Q \times 100}{T \times P}$$

Where

H = Handling capacity as the percentage of the peak population handled during 5 minutes.

P = Total population to be handled during peak morning/ evening period. (It is related to the area for which particular bank of lifts serves).

Q = Average number of passenger carried in a car.

T = Waiting interval.

**iii) Service Temperature Test :**

A continuous run of one hour should be made with number of starts and stops to reproduce as nearly as practical the anticipate duty in service. (The standard duty cycle is for 90 to 180 start per hour). It is very difficult in



practice to carry out this test with alternate starts at full load and no load and it is necessary therefore to simulate these cycles. A suitable test for all motors except squirrel cage motors is to run the car up from the bottom landing with contract load and stop at each floor. From the top floor a non stop run is made to the lowest floor and the upward journey with stop is then repeated. The time intervals between stops and starts at the floors should be uniform and such as to give about 180 starts in one hour. At the end of this run the temperatures of the armatures and fields of the motor and generator are recorded. The temperature rise should, be with in prescribed limit.

**MAHINDRA WORLD CITY AT JAIPUR**

**TENDER FOR ELEVATOR AT MAHINDRA TECHNOLOGY PARK**

**TECHNICAL PARAMETERS**

**Note :-**

Tenderers to give item wise confirmation/ comment against each parameter. Deviations if any shall be clearly brought out in this Performa. Tenderers shall fill in the Performa and enclose it along with the tender.

SI No	Items	Requirement as per tender	Item wise confirmation/ comment to be filled in by tenderers
<b>A</b>	<b>PASSENGER LIFTS</b>	Gearless	
	General		
1.1	Number of Lifts	3	
1.2	Capacity	16 passenger / 1088 kg	
1.3	Speed	1.5 mps	
1.4	Number of Landings	6 (1 <sup>st</sup> basement + ground floor to 4 <sup>th</sup> floor)	
1.5	Number of openings	6 on the same side	
1.6	Travel	21000 mm	
	<b>Machine, Hoistway and Pit</b>		
1.7	Machine room location	Machine room at the top of lift shaft	
1.8	Machine details		
-	Control	AC VVVF	
-	Operation	Triplex Collective Selective	
1.9	Hoistway dimensions	2500 mm W x 2100 mm D	
1.10	Head room above last landing	4750 mm	
1.11	Pit depth	1800 mm approx	
1.12	Sill projection	6 mm MS angle	
	<b>Car</b>		
1.13	Car Enclosure	Bare elevators	
1.14	Car ceiling	Suitable to receive Interior Designer work	
1.15	Car floor	25 mm recessed to be provided in the floor for stone finish by the customer	
1.16	Car and landing doors	Automatic power operated Centre opening, 1000 mm W x 2400 mm H MS painted. (Inside car 2700 mm H)	
1.17	Car size	To be furnished by tenderer (shall not be less than as specified in ISI)	
1.18	Car Operating Panel	Stainless Steel hairline / mirror finish Car Operating Panel inside at both sides of car. (2 COP)	

1.19	Car interior load	Counter weight should be able to accommodate approx 500 kg weight for interior finish.	
<b>B</b>	<b>PARAMETERS COMMON TO ALL LIFTS</b>		
1.0	Machine		
1.1	Power Supply	415V/240V, 50 Hz	
1.2	Acceptable voltage fluctuation	+10 to - 20%	
1.3	Rate of acceleration / deceleration (m/sec <sup>2</sup> )	0.6 - 1.5 (adjustable at site)	
1.4	Jerk (m/sec <sup>2</sup> )	0.7 - 1.5 (adjustable at site)	
1.5	Vibrations in car horizontal/vertical	20/18 MG maximum	
1.6	Noise level in car	45 dBA maximum	
1.7	Noise level in machine room at 1 mtr from machine	52 dBA maximum	
1.8	Door noise level while closing and opening at a distance of 1 mtr from car door and 1.5 mtr from floor level	52dBA maximum	
<b>2.0</b>	<b>Fixtures / signals inside car</b>		
2.1	Normal lighting	CFL recessed type	
2.2	Emergency light and alarm bell (to security room)	With SMF battery operated with charger rated for 30 minute	
2.3	Ventilation	Blower Fan(Two speed and concealed vents)	
2.4	Operating buttons and indications	Stainless steel operating panel with following buttons and indications.	
		LCD Illuminated touch push buttons of micro pressure type corresponding to the floors served at Ground floor. For Other floors LED Illuminated touch push buttons of micro pressure type to be provided.	
		"Door open" and "Door close" button with arrow indicators	
		Emergency stop button	
		Emergency alarm button	
		Two position key operated switch for 'with attendant' and 'without attendant' operation.	
		Ventilation fan ON/OFF switch with auto OFF when there is no call after 120 seconds.	
		Built in 3 way intercom system with telephone instrument in the car, machine room and reception /security (as directed by Engineer-in-charge) including wiring telephone instrument and EPABX.	
		Dynamic car direction display	
		Digital position indicators	

		Audio/Visual overload warning indicator	
2.5	Display inside car	LCD display in side car	
2.6	Voice synthesizer	To be provided	
2.7	Is neutral wire available for control circuits	Yes	
2.8	Music(Music Speaker)	Trailing cable	
<b>3.0</b>	<b>Provisions for use of lift by Handicapped persons in Passenger Elevators</b>		
3.1	Hand rail	A hand rail not less than 600 mm long at 900 mm above floor level shall be fixed adjacent to the control panel.	
3.2	Car operating panel	Inscription in Braille also to be provided. Level to be lower than the normal so as to be accessible by a person sitting on wheel chair	
3.3	Hall buttons	Inscription in Braille also to be provided. Level to be lower than the normal so as to be accessible by a person sitting on wheel chair	
3.4	Car position indicator	The interior of the cage shall be provided with a device that audibly indicate the floor, the cage has reached and indicate that the door of the cage for entrance / exit is either open or close.	
3.5	Hall lantern	To be provided along with an audible chime.	
3.6	Any other feature	The time of an automatically closing door should be minimum 5 second and closing speed should not exceed 0.25 m/sec.	
<b>4.0</b>	<b>Landing signals</b>		
4.1	Hall buttons	Self illuminating micro-push type in hair line stainless steel facia plates	
4.2	Car Position	Digital position indicators along with direction of travel (with audible signal in each elevator lobby)	
4.3	Hall gong	Up/down indicator with single stroke gong/chime at all landing	
<b>5.0</b>	<b>Safety features</b>		
5.1	Door safety	Multiple infra red device to cover the total height and width of the door and with protective leading edge device to operate in case of failure of infra red protection.	
5.2	Buffer	Spring Buffer to be provided	

5.3	Overload protection	<ul style="list-style-type: none"> <li>➤ Overload protective device</li> <li>➤ Overload non starter.</li> </ul>	
5.4	Over travel protection	Terminal and final limit switches to be provided	
5.5	Motor protection	Trip devices for : <ul style="list-style-type: none"> <li>➤ Over current</li> <li>➤ Under voltage</li> <li>➤ Over voltage</li> <li>➤ Single phasing</li> <li>➤ Earth leakage</li> <li>➤ Phase reversal</li> </ul>	
5.6	Interlocking of car and hoistway doors	To be provided as per specifications.	
5.7	<b>Automatic Rescue Device (ARD)</b>	<b>To be provided</b>	
6.0	<b>Associated Civil and structural items</b>	All civil and structural items of work associated with erection and operation of lifts shall be provided by the Contractor at his cost including (but not restricted to ) the following.	
		Temporary Scaffolding and safety barricades for erection in and around lift hoist ways	
		Bearing plates	
		Buffer supports	
		Facia plates	
		Ladder in pits	
		Safety railing on top of car	
		Channels, separators, stretchers etc.	
7.0	<b>Fireman's switch</b>	To be provided at GF/ Lobby level	
8.0	<b>Free Comprehensive Maintenance Period</b>	<b>TWO YEARS</b> after completion of work and handing over of the Lifts in satisfactory operating condition.	

**SPECIAL DATA TO BE FURNISHED BY TENDERERS**

<b>SI No</b>	<b>Data to be filled in by tenderers</b>	<b>Passenger lifts</b>
<b>A</b>	<b>Equipment details</b>	
1	Machine type (Geared/Gearless)	
2	Reduction gear unit ratio	
3	Drive motor data	
i)	kW	
ii)	Starting current (Amp)	
iii)	F.L. Rated current (Amp)	
iv)	Max. no. of starts per hour.	
v)	Insulation class	
4	Hoist/Governor ropes (no. and size)	
5	Max. temperature tolerance during peak summer months	
6	Heat release data for machine room equipment	
<b>B</b>	<b>Special features</b>	
	Tenders to confirm Included /Not included in respect of the following	Included/Not Included
1	Auto fan off switch	
2	Fan inside the Car	
3	Over load warning indicator	
4	Ni-Cd batteries with charging circuit.	
5	Doors safety	
6	Additional weight permitted inside the car for interiors.	
<b>C</b>	<b>Performance parameters</b>	
1	Leveling accuracy	
2	Governor tripping speed.	
<b>D</b>	<b>Traffic Analysis for Lift considering 275 Persons per floor</b>	

**MAHINDRA WORLD CITY AT JAIPUR**  
**TENDER FOR ELEVATOR AT MAHINDRA TECHNOLOGY PARK**  
**SCHEDULE OF QUANTITIES**  
**SUMMARY OF COSTS**

<b>Sub Head</b>	<b>Description</b>	<b>Value Rs</b>
I	Elevator	Rs.
II	AMC	Rs.
<b>TOTAL VALUE</b>		<b>Rs</b>

**Rupees (in words) .....**  
.....  
.....  
.....  
.....**Only**

**Signature of Tenderer**

**Note :-**

- 1. Bidders to quote strictly as per the BOQ enclosed herewith in tender document**
- 2. Complete tender document with all technical details only filled in the format provided in the tender shall be returned with just as annexure as terms / conditions if any required.**
- 3. Failure to comply with above shall lead to disqualification of bidders.**
- 4. The Mahindra Technology Park being situated in Special economic zone, The price quotes should mention basic price separately and taxes/duties separately.**

**MAHINDRA WORLD CITY AT JAIPUR**  
**TENDER FOR ELEVATOR AT MAHINDRA TECHNOLOGY PARK**  
**SCHEDULE OF QUANTITIES**

SNO.	DESCRIPTION	QTY	UNIT	RATE RS. P.	AMOUNT RS. P.
<b>SUBHEAD - I : ELEVATORS</b>					
1.0	Design, manufacture, supply, installation, testing, commissioning and handing over in satisfactory working condition of Lifts including the cost of providing free comprehensive maintenance for two year after handing over complete as per specifications, as required and as below.				
1.1	Passenger Lifts with 16 passenger /1088 kg capacity, 1.5 mps speed, ACVVVF control, Triplex Collective Selective control Operation				
a)	6 stops (First basement + Ground floor to 4 <sup>th</sup> floor) all on same side, travel 21000 mm approx.	3	No.		
<b>TOTAL SUB-HEAD I carried over to Summary</b>			<b>Rs</b>		
2.	Optional Items				
2.1	Providing following features complete as per specifications, as required				
a)	Voice synthesizer	3	No.		



**SUB HEAD-II : AMC**

- 1 Projected yearly Annual comprehensive Maintenance Charges (AMC) for lifts for 5 year after expiry of free 2 (two) years free maintenance period.

1st year  
2nd year  
3rd year  
4th year  
5th year

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**TOTAL SUB-HEAD II carried over to Summary**

**Rs.**

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