



# **Jinnah Sindh Medical University Karachi**

**SUPPLY, INSTALLATION, TESTING & COMMISSIONING &  
MAINTENANCE OF 2 NO'S PASSENGER LIFT (630KG) IN  
EXISTING LIFT SHAFT AT JSMU, KARACHI.**

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## **LIFT Work**

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*BIDDING AND CONTRACT DOCUMENTS*

**INSTRUCTIONS TO BIDDERS & BIDDING DATA  
FORM OF BID & SCHEDULES TO BID  
CONDITIONS OF CONTRACT & CONTRACT DATA  
STANDARD FORM  
BILL OF QUANTITIES  
SPECIFICATIONS  
DRAWINGS OF EXISTING LIFT SHAFT**

**April 2019**

Jinnah Sindh Medical University Rafique H.J Shaheed Road Karachi

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**INSTRUCTIONS  
TO BIDDERS  
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# INSTRUCTIONS TO BIDDERS

(Note: These Instructions to Bidders (IB) alongwith Bidding Data will not be part of Contract and will cease to have effect once the Contract is signed).

## A. GENERAL

### IB.1 Scope of Bid & Source of Funds

#### 1.1 Scope of Bid

The Employer as defined in the Bidding Data (hereinafter called “the Employer”) wishes to receive Bids for the Works summarized in the Bidding Data (hereinafter referred to as “the Works”).

Bidders must quote for the complete scope of work. Any Bid covering partial scope of work will be rejected as non-responsive.

#### 1.2 Source of Funds

The Employer has arranged funds from its own sources.

### IB.2 Eligible Bidders

2.1 Bidding is open to all firms and persons meeting the following requirements:

- a) Duly licensed by the Pakistan Engineering Council (PEC) in the appropriate category for value of Works.
- b) Duly Qualified bidders in Technical Evaluation as per given Eligibility Criteria.

### IB.3 Cost of Bidding

3.1 The bidder shall bear all costs associated with the preparation and submission of its bid and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

## B. BIDDING DOCUMENTS

### IB.4 Contents of Bidding Documents

4.1 In addition to Invitation for Bids, the Bidding Documents are those stated below, and should be read in conjunction with any Addendum issued in accordance with Sub-Clause IB.6.1.

1. Instructions to Bidders & Bidding Data
2. Form of Bid & Schedules to Bid

Schedules to Bid comprise the following:

- (i) Schedule A: Schedule of Prices
- (ii) Schedule B: Specific Works Data
- (iii) Schedule C: Works to be Performed by Subcontractors
- (iv) Schedule D: Proposed Programme of Works

- (v) Schedule E: Method of Performing Works
- (vi) Schedule F: Integrity Pact

3. Conditions of Contract & Contract Data

4. Standard Forms:

- (i) Form of Bid Security
- (ii) Form of Performance Security
- (iii) Form of Contract Agreement
- (iv) Form of Bank Guarantee for Advance Payment

5. Specifications

6. Drawings, if any

#### **IB.5 Clarification of Bidding Documents**

5.1 A prospective bidder requiring any clarification(s) in respect of the Bidding Documents may notify the Engineer/Employer at the Employer's/Engineer's address indicated in the Bidding Data.

5.2 The Engineer/Employer will respond to any request for clarification which it receives earlier than ten (10) days prior to the deadline for the submission of Bids. Copies of the Engineer/Employer's response will be forwarded to all prospective bidders, at least five (5) days prior to dead line for submission of Bids, who have received the Bidding Documents including a description of the enquiry but without identifying its source.

#### **IB.6 Amendment of Bidding Documents**

6.1 At any time prior to the deadline for submission of Bids, the Employer may, for any reason, whether at his own initiative or in response to a clarification requested by a prospective bidder, modify the Bidding Documents by issuing addendum.

6.2 Any addendum thus issued shall be part of the Bidding Documents pursuant to Sub-Clause 6.1 hereof, and shall be communicated in writing to all purchasers of the Bidding Documents. Prospective bidders shall acknowledge receipt of each addendum in writing to the Employer.

6.3 To afford prospective bidders reasonable time in which to take an addendum into account in preparing their Bids, the Employer may at its discretion extend the deadline for submission of Bids.

## **C. PREPARATION OF BIDS**

### **IB.7 Language of Bid**

7.1 The bid prepared by the bidder and all correspondence and documents relating to the Bid, exchanged by the bidder and the Employer shall be written in the English language, provided that any printed literature furnished by the bidder may be written in another language so long as accompanied by an English translation of its pertinent passages in which case, for purposes of interpretation of the Bid, the English translation shall govern.

### **IB.8 Documents Comprising the Bid**

8.1 The bid prepared by the bidder shall comprise the following components:

- (a) Covering Letter
- (c) Form of Bid duly filled, signed and sealed, in accordance with Sub-Clause IB.14.3.
- (c) Schedules (A to F) to Bid duly filled and initialed, in accordance with the instructions contained therein & in accordance with Sub-Clause IB14.3.
- (d) Bid Security furnished in accordance with Clause IB.13.
- (e) Power of Attorney in accordance with Sub-Clause IB 14.5.
- (f) Documentary evidence in accordance with Clause IB.11
- (g) Documentary evidence in accordance with Clause IB.12.

### **IB.9 Sufficiency of Bid**

9.1 Each bidder shall satisfy himself before Bidding as to the correctness and sufficiency of his Bid and of the rates and prices entered in the Schedule of Prices, which rates and prices shall except in so far as it is otherwise expressly provided in the Contract, cover all his obligations under the Contract and all matters and things necessary for the proper completion of the Works.

9.2 The bidder is advised to obtain for himself at his own cost and responsibility all information that may be necessary for preparing the bid and entering into a Contract for execution of the Works.

### **IB.10 Bid Prices, Currency of Bid and Payment**

10.1 The bidder shall fill up the Schedule of Prices (Schedule A to Bid) indicating the unit rates and prices of the Works to be performed under the Contract. Prices in the Schedule of Prices shall be entered keeping in view the instructions contained in the Preamble to Schedule of Prices.

10.2 Unless otherwise stipulated in the Conditions of Contract, prices quoted by the bidder shall remain fixed during the bidder's performance of the Contract and not subject to variation on any account.

10.3 The unit rates and prices in the Schedule of Prices shall be quoted by the bidder in the currency as stipulated in Bidding Data.

#### **IB.11 Documents Establishing Bidder's Eligibility and Qualifications**

11.1 Pursuant to Clause IB.8, the bidder shall furnish, as part of its bid, documents establishing the bidder's eligibility to bid and its qualifications to perform the Contract if its bid is accepted.

11.2 Bidder/Manufacturer must possess and provide evidence of its capability and the experience as stipulated in Bidding Data and the Qualification Criteria stipulated in the Bidding Documents.

#### **IB.12 Documents Establishing Works' Conformity to Bidding Documents**

12.1 The documentary evidence of the Works' conformity to the Bidding Documents may be in the form of literature, drawings and data and the bidder shall furnish documentation as set out in Bidding Data.

12.2 The bidder shall note that standards for workmanship, material and equipment, and references to brand names or catalogue numbers, if any, designated by the Employer in the Technical Provisions are intended to be descriptive only and not restrictive.

#### **IB.13 Bid Security**

13.1 Each bidder shall furnish, as part of his bid, at the option of the bidder, a Bid Security in the amount stipulated in Bidding Data in Pak. Rupees in the form of Pay Order issued by a Scheduled Bank in Pakistan in favour of **JINNAH SINDH MEDICAL UNIVERSITY** valid for a period up to twenty eight (28) days beyond the bid validity date.

13.2 Any bid not accompanied by an acceptable Bid Security shall be rejected by the Employer as non-responsive.

13.3 The bid securities of unsuccessful bidders will be returned upon award of contract to the successful bidder or on the expiry of validity of Bid Security whichever is earlier.

13.4 The Bid Security of the successful bidder will be returned when the bidder has furnished the required Performance Security, pursuant to Clause IB.21 and signed the Contract Agreement, pursuant to Sub-Clauses IB.20.2 & 20.3.

13.5 The Bid Security may be forfeited:

(a) if a bidder withdraws his bid during the period of bid validity; or

(b) if a bidder does not accept the correction of his Bid Price, pursuant to Sub-Clause 16.4 hereof; or

(c) in the case of a successful bidder, if he fails to:

(i) furnish the required Performance Security in accordance with Clause IB.21, or

(ii) sign the Contract Agreement, in accordance with Sub-Clauses IB.20.2 & 20.3.

#### **IB.14 Validity of Bids, Format, Signing and Submission of Bid**

- 14.1 Bids shall remain valid for the period stipulated in the Bidding Data after the date of bid opening.
- 14.2 All Schedules to Bid are to be properly completed and signed.
- 14.3 No alteration is to be made in the Form of Bid except in filling up the blanks as directed. If any alteration be made or if these instructions be not fully complied with, the bid may be rejected.
- 14.4 Each bidder shall prepare Original and number of copies specified in the Bidding Data of the documents comprising the bid as described in Clause IB.8 and clearly mark them "ORIGINAL" and "COPY" as appropriate. In the event of discrepancy between them, the original shall prevail.
- 14.5 The original and all copies of the bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign (in the case of copies, Photostats are also acceptable). This shall be indicated by submitting a written Power of Attorney authorising the signatory of the bidder to act for and on behalf of the bidder. All pages of the bid shall be initialed and official seal be affixed by the person or persons signing the bid.
- 14.6 The Bid shall be delivered in person or sent by registered mail at the address to Employer as given in Bidding Data.

### **D. SUBMISSION OF BID**

#### **IB.15 Deadline for Submission, Modification & Withdrawal of Bids**

- 15.1 Bids must be received by the Employer at the address/provided in Bidding Data not later than the time and date stipulated therein.
- 15.2 Bids submitted through telegraph, telex, fax or e-mail shall not be considered.
- 15.3 Any bid received by the Employer after the deadline for submission prescribed in Bidding Data will be returned unopened to such bidder.
- 15.4 Any bidder may modify or withdraw his bid after bid submission provided that the modification or written notice of withdrawal is received by the Employer prior to the deadline for submission of bids.
- 15.5 Withdrawal of a bid during the interval between the deadline for submission of bids and the expiration of the period of bid validity specified in the Form of Bid may result in forfeiture of the Bid Security pursuant to Sub-Clause IB.13.5 (a).

### **E. BID OPENING AND EVALUATION**

#### **IB.16 Bid Opening, Clarification and Evaluation**

- 16.1 The Employer will open the bids, in the presence of bidders' representatives who choose to attend, at the time, date and location stipulated in the Bidding Data.

16.2 The bidder's name, Bid Prices, any discount, the presence or absence of Bid Security, and such other details as the Employer at its discretion may consider appropriate, will be announced by the Employer at the bid opening. The Employer will record the minutes of the bid opening. Representatives of the bidders who choose to attend shall sign the attendance sheet.

Any Bid Price or discount which is not read out and recorded at bid opening will not be taken into account in the evaluation of bid.

16.3 To assist in the examination, evaluation and comparison of Bids the Engineer/Employer may, at its discretion, ask the bidder for a clarification of its Bid. The request for clarification and the response shall be in writing and no change in the price or substance of the Bid shall be sought, offered or permitted.

16.4 (a) Prior to the detailed evaluation, pursuant to Sub-Clauses IB.16.7 to 16.9, the Engineer/Employer will determine the substantial responsiveness of each bid to the Bidding Documents. For purpose of these Clauses, a substantially responsive bid is one which conforms to all the terms and conditions of the Bidding Documents without material deviations. It will include to determine the requirements listed in Bidding Data.

(b) Arithmetical errors will be rectified on the following basis:

If there is a discrepancy between the unit price and total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail and the total price shall be corrected. If there is a discrepancy between the words and figures the amount in words shall prevail. If there is a discrepancy between the Total Bid price entered in Form of Bid and the total shown in Schedule of Prices-Summary, the amount stated in the Form of Bid will be corrected by the Employer in accordance with the Corrected Schedule of Prices.

If the bidder does not accept the corrected amount of Bid, his Bid will be rejected and his Bid Security forfeited.

16.5 A Bid determined as substantially non-responsive will be rejected and will not subsequently be made responsive by the bidder by correction of the non-conformity.

16.6 Any minor informality or non-conformity or irregularity in a Bid which does not constitute a material deviation may be waived by Employer, provided such waiver does not prejudice or affect the relative ranking of any other bidders.

16.7 The Engineer/Employer will evaluate and compare only the bids previously determined to be substantially responsive pursuant to Sub-Clauses IB.16.4 to 16.6 as per requirements given hereunder. Bids will be evaluated for complete scope of works. The prices will be compared on the basis of the Evaluated Bid Price pursuant to Sub-Clause 16.8 herein below.

(a) Technical Evaluation

It will be examined in detail whether the Works offered by the bidder complies data submitted with the bid in Schedule B to Bid will be compared with technical features/criteria of the Works detailed in the Technical Provisions. Other technical information submitted with the bid regarding the Scope of Work will also be reviewed.

(b) Commercial Evaluation

It will be examined in detail whether the bids comply with the commercial/contractual conditions of the Bidding Documents. It is expected that no material deviation/stipulation shall be taken by the bidders.

16.8 Evaluated Bid Price

In evaluating the bids, the Engineer/Employer will determine for each bid in addition to the Bid Price, the following factors (adjustments) in the manner and to the extent indicated below to determine the Evaluated Bid Price:

- (i) making any correction for arithmetic errors pursuant to Sub-Clause 16.4 hereof.
- (ii) making an appropriate price adjustment for any other acceptable variation or deviation.
- (iii) making an appropriate price adjustment for Deviations in terms of Payments (if any and acceptable to the Employer).
- (iv) discount, if any, offered by the bidders as also read out and recorded at the time of bid opening.

16.9 Evaluation Methods

Pursuant to Sub-Clause 16.8, Para (ii), and (iii) following evaluation methods for price adjustments will be followed:

(i) Price Adjustment for Technical Compliance

The cost of making good any deficiency resulting from technical non compliance will be added to the Corrected Total Bid Price for comparison purposes only. The adjustments will be applied taking the highest price quoted by other bidders being evaluated in detail in their original Bids for corresponding item. In case of non availability of price from other bidders, the price will be estimated by the Engineer/Employer.

(ii) Price Adjustment for Commercial Compliance

The cost of making good any deficiency resulting from any quantifiable variations and deviations from the Bid Schedules and Conditions of Contract, as determined by the Engineer/Employer will be added to the Corrected Total Bid Price for comparison purpose only. Adjustment for commercial compliance will be added to the Corrected Total Bid Prices.

(iii) Price Adjustment for Deviation in Terms of Payments

Refer to Bidding Data

**IB.17 Process to be Confidential**

- 17.1 Subject to Sub-Clause IB.16.3 heretofore, no bidder shall contact Engineer/Employer on any matter relating to its Bid from the time of the Bid opening to the time the bid evaluation result is announced by the Employer. The evaluation result shall be announced at least ten (10) days prior to award of Contract. The announcement to all bidders will include table(s) comprising read out prices, discounted prices, price adjustments made, final evaluated prices and recommendations against all the bids evaluated.
- 17.2 Any effort by a bidder to influence Engineer/Employer in the Bid evaluation, Bid comparison or Contract Award decisions may result in the rejection of his Bid. Whereas, any bidder feeling aggrieved may lodge a written complaint not later than fifteen (15) days after the announcement of the bid evaluation result, however, mere fact of lodging a complaint shall not warrant suspension of procurement process.

## **F. AWARD OF CONTRACT**

### **IB.18. Post Qualification**

- 18.1 The Employer, at any stage of the bid evaluation, having credible reasons for or primacie evidence of any defect in supplier's or contractor's capacities, may require the suppliers or contractors to provide information concerning their professional, technical, financial, legal or managerial competence whether already pre-qualified or not:

Provided that such qualification shall only be laid down after recording reasons therefor in writing. They shall form part of the records of that bid evaluation report.

- 18.2 The determination will take into account the bidder's financial and technical capabilities. It will be based upon an examination of the documentary evidence of the bidders' qualifications submitted under Clause IB.11, as well as such other information required in the Bidding Documents.

### **IB.19 Award Criteria & Employer's Right**

- 19.1 Subject to Sub-Clause IB.19.2, the Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the Bidding Documents and who has offered the lowest evaluated Bid Price, provided that such bidder has been determined to be qualified to satisfactory perform the Contract in accordance with the provisions of Clause IB.18.
- 19.2 Not with standing Sub-Clause IB.19.1, the Employer reserves the right to accept or reject any bid, and to annul the bidding process and reject all bids, at any time prior to award of Contract, without thereby incurring any liability to the affected bidders or any obligation to inform the affected bidders of the grounds for the Employer's action except that the grounds for its rejection of all bids shall upon request be communicated, to any bidder who submitted a bid, without justification of the grounds. Notice of the rejection of all the bids shall be given promptly to all the bidders.

### **IB.20 Notification of Award & Signing of Contract Agreement**

- 20.1 Prior to expiration of the period of bid validity prescribed by the Employer, the Employer will notify the successful bidder in writing ("Letter of Acceptance") that his bid has been accepted.
- 20.2 Within seven (7) days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the Employer will send the successful bidder the Form

of Contract Agreement provided in the Bidding Documents, incorporating all agreements between the parties.

- 20.3 The formal Agreement between the Employer and the successful bidder shall be executed within seven (7) days of the receipt of Form of Contract Agreement by the successful bidder from the Employer.

**IB.21 Performance Security**

- 21.1 The successful bidder shall furnish to the Employer a Performance Security of in the form and the amount stipulated in the Conditions of Contract within a period of fourteen (14) days after the receipt of Letter of Acceptance.

- 21.2 Failure of the successful bidder to comply with the requirements of Sub-Clauses IB.20.2 & 20.3 or 21.1 or Clause IB.22 shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security.

**IB.22 Integrity Pact**

The Bidder shall sign and stamp the Form of Integrity Pact provided at Schedule-F to Bid in the Bidding Document for all Federal Government procurement contracts exceeding Rupees ten (10) million. Failure to provide such Integrity Pact shall make the bid non-responsive.

# BIDDING DATA

The following specific data for the Works to be tendered shall complement, amend, or supplement the provisions in the Instructions to Bidders. Wherever there is a conflict, the provisions herein shall prevail over those in the Instructions to Bidders.

Instructions to Bidders

Clause Reference

## 1.1 Name of Employer

Jinnah Sindh Medical University, Karachi.

## Brief Description of Works

Supply, Installation, Testing & Commissioning & Maintenance of 2 No's Passenger Lift (630kg) in existing lift shaft at JSMU, Karachi.

### 5.1 (a) Employer's address:

#### **In charge Procurement,**

Procurement Department, Jinnah Sindh Medical University, Karachi,  
Rafiqi H. J. Shaheed Road,  
Karachi-75510.

### (b) Engineer's address:

#### **In charge Works & Services,**

Planning & Development Department, Jinnah Sindh Medical University, Karachi,  
Rafiqi H. J. Shaheed Road,  
Karachi-75510.

10.3 Bid shall be quoted entirely in Pak. Rupees. The payment shall be made in Pak. Rupees. (No price Escalation is due to Currency Exchange Rate)

11.2 The bidder/manufacturer should provide documentary evidence to show that they have the financial, technical and production capability necessary to perform the Contract. Details of past experience of similar works should be provided as per given Eligibility Criteria for Technical Evaluation.

12.1 (a) A detailed description of the Works, essential technical and performance characteristics.

(b) Complete set of technical information, description data, literature and drawings as per given Technical Specification, Specific Works Data. This will include but not be limited to a sufficient number of drawings, photographs, catalogues, illustrations and such other information as is necessary to illustrate clearly the significant characteristics such as general construction dimensions and other relevant information about the works to be performed.

## 13.1 Bid Security

02% of Bid Amount

Shape: Bank Guarantee / Bank Draft/Pay order

### **13.2 Amount of Retention Money**

Total 05% of Bid Amount

### **13.3 Performance Security / Guarantee**

05% of Bid Amount in shape Pay order/ Bank Guarantee (validity till defect liability period)

### **14.1 Period of Bid Validity**

The period of the bid validity shall be 90 days after the deadline for Submission of bid.

### **14.4 Number of Copies of the Bid to be Submitted**

One original plus one copy.

#### **14.6 (a) Employer's Address for the Purpose of Bid Submission**

**In charge Procurement,**  
Procurement Department, Jinnah Sindh Medical University, Karachi,  
Rafiqi H. J. Shaheed Road,  
Karachi-75510.

#### **15.1 Deadline for Submission of Bids**

As notified in Notice to Invite Bids.

#### **16.1 Venue, Time, and Date of Bid Opening**

Venue: As notified in Notice to Invite Bids.  
Time: As notified in Notice to Invite Bids.  
Date: As notified in Notice to Invite Bids.

### **16.4 Responsiveness of Bids**

- (i) the Bid is accompanied by the required Bid Security;
- (ii) the Bid is valid till required period,
- (iii) the Bid prices are firm during currency of contract (if it is a fixed price bid)
- (iv) completion period offered is within specified limits,
- (v) the Bidder/Manufacturer is eligible to Bid and possesses the requisite experience, capability and qualification.
- (vi) the Bid does not deviate from basic technical requirements and
- (vii) the Bids are generally in order, etc.

### **16.9 Price Adjustment:**

- (iii) Price Adjustment for Deviations in Terms of Payment

**Not Used.**

## 22 Integrity Pact:

This clause is deleted in its entirety.

### **Eligibility Criteria**

- *Bidder must possess valid PEC registration in category C-6 with specialization code ME-03.*
- *Must be active tax payer in Income Tax and GST and other applicable taxes if any.*
- *Proposed Lift Manufacturer must be in lift / elevators manufacturing business for last 15-20 years internationally (Documentary Evidence must be attached).*
- *Lift Supplier/Bidder must be selling the proposed manufacture's lift and proposed lift model for at least 5-7 year. (Documentary Evidence must be attached).*
- *Bidder/Supplier must have 10-years of lift supply, installation, testing, commissioning & maintenance experience (Proof of Experience & satisfactory Maintenance certificate must be attached).*
- *Must have Average Financial Turnover of 15-Million in last 3-years.*
- *Supplier/Bidder must be authorized from Manufacturer to sell/supply proposed lift brand (letter of authorization from manufacturer must be attached).*

**FORM OF BID AND SCHEDULES TO BID**

# FORM OF BID

(LETTER OF OFFER)

Bid Reference No.

## **Supply, Installation, Testing & Commissioning & Maintenance of 2 No's Passenger Lift (630kg) in existing lift shaft at JSMU, Karachi.**

To:

**In charge Procurement,**  
Procurement Department, Jinnah Sindh Medical University, Karachi,  
Rafiqi H. J. Shaheed Road,  
Karachi-75510.

Gentlemen,

1. Having examined the Bidding Documents including Instructions to Bidders, Bidding Data, Conditions of Contract, Contract Data, Specifications, Drawings, if any, Schedule of Prices and Addenda Nos. \_\_\_\_\_ for the execution of the above-named Works, we, the undersigned, being a company doing business under the name of and address \_\_\_\_\_ and being duly incorporated under the laws of Pakistan hereby offer to execute and complete such Works and remedy any defects therein in conformity with the said Documents including Addenda thereto for the Total Bid Price of Rs \_\_\_\_\_ (Rupees \_\_\_\_\_) or such other sum as may be ascertained in accordance with the said Documents.
2. We understand that all the Schedules attached hereto form part of this Bid.
3. As security for due performance of the undertakings and obligations of this Bid, we submit herewith a Bid Security in the amount of \_\_\_\_\_ drawn in your favour or made payable to you and valid for a period of twenty eight (28) days beyond the period of validity of Bid.
4. We undertake, if our Bid is accepted, to commence the Works and to deliver and complete the Works comprised in the Contract within the time(s) stated in Contract Data.
5. We agree to abide by this Bid for the period of \_\_\_\_\_ days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.
6. Unless and until a formal Agreement is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
7. We undertake, if our Bid is accepted, to execute the Performance Security referred to in Conditions of Contract for the due performance of the Contract.
8. We understand that you are not bound to accept the lowest or any bid you may receive.
9. We do hereby declare that the Bid is made without any collusion, comparison of figures or arrangement with any other person or persons making a bid for the Works.

Dated this \_\_\_\_\_ day of \_\_\_\_\_, 20

Signature \_\_\_\_\_

in the capacity of \_\_\_\_\_ duly authorized to sign bid for and on behalf of \_\_\_\_\_

\_\_\_\_\_  
(Name of Bidder in Block Capitals)  
(Seal)

Address \_\_\_\_\_  
\_\_\_\_\_  
\_\_\_\_\_

Witness:

(Signature) \_\_\_\_\_

Name: \_\_\_\_\_

Address: \_\_\_\_\_  
\_\_\_\_\_

**SCHEDULES TO BID INCLUDE THE FOLLOWING:**

- Schedule A to Bid: Schedule of Prices
- Schedule B to Bid: Specific Works Data
- Schedule C to Bid: Works to be Performed by Subcontractors
- Schedule D to Bid: Proposed Programme of Works
- Schedule E to Bid: Method of Performing Works

SCHEDULE OF PRICES / BILL OF QUANTITIES

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# **PREAMBLE TO SCHEDULE OF PRICES/BILL OF QUANTITIES**

## **1. General**

- 1.1 The Schedule of Prices shall be read in conjunction with the Conditions of Contract, Contract Data together with the Specifications and Drawings, if any.
- 1.2 The Contract shall be for the whole of the Works as described in these Bidding Documents. Bids must be for the complete scope of works.

## **2. Description**

- 2.1 The general directions and descriptions of works and materials are not necessarily repeated nor summarized in the Schedule of Prices. References to the relevant sections of the Bidding Documents shall be made before entering prices against each item in the Schedule of Prices.

## **3. Units & Abbreviations**

- 3.1 Units of measurement, symbols and abbreviations expressed in the Bidding Documents shall comply with the SI system.

## **4. Rates and Prices**

- 4.1 Except as otherwise expressly provided under the Conditions of Contract, the rates and amounts entered in the Schedule of Prices shall be the rates at which the Contractor shall be paid and shall be the full inclusive value of the works set forth or implied in the Contract; except for the amounts reimbursable, if any to the Contractor under the Contract.
- 4.2 Unless otherwise stipulated in the Contract Data, the rates and prices entered by the bidder shall not be subject to adjustment during the performance of the Contract.
- 4.3 All duties, taxes and other levies payable by the Contractor shall be included in the rates and prices.
- 4.4 The whole cost of complying with the provisions of the Contract shall be included in the items provided in the Schedule of Prices, and where no items are provided, the cost shall be deemed to be distributed among the rates and prices entered for the related items of the Works and no separate payment will be made for those items.

The rates, prices and amounts shall be entered against each item in the Schedule of Prices. Any item against which no rate or price is entered by the bidder will not be paid for by the Employer when executed and shall be deemed covered by the rates and prices for other items in the Schedule of Prices.

- 4.5 (a) The bidder shall be deemed to have obtained all information as to and all requirements related thereto which may affect the bid price.
- (b) The Contractor shall be responsible to make complete arrangements for the transportation of the Plant to the Site.

- 4.6 The Contractor shall provide for all parts of the Works to be completed in every respect. Notwithstanding that any details, accessories, etc. required for the complete installation and satisfactory operation of the Works, are not specifically mentioned in the Specifications, such details shall be considered as included in the Contract Price.
- 4.7 The cost of imported items(C&F value) shall be paid by the Contractor through Letter of Credit(L/C) established in the name of manufacturer. Marine insurance, Custom duties & taxes, port charges etc. payable on import of equipment under L/C established by the Contractor shall be paid by the Contractor directly to the concerned agencies.
- 4.8 The cost of local items includes all cost of local material, clearing & forwarding, Port charges, duties and taxes, transportation from port to site, loading, unloading, local insurance, inspection of material at manufacturer's factory (if applicable/required), installation, testing & commissioning and maintenance during Period of remedying defects.

## **5. Bid Prices**

### **5.1 Break-up of Bid Prices**

The various elements of Bid Prices shall be quoted as detailed by the Employer in the format of Schedule of Prices.

The bidder shall recognize such elements of the costs which he expects to incur the performance of the Works and shall include all such costs in the rates and amounts entered in the Schedule of Prices.

### **5.2 Total Bid Price**

The total of bid prices in the Schedule of Prices shall be entered in the Summary of Bid Prices.

## **6. Provisional Sums**

- 6.1 Provisional Sums included and so designated in the Schedule of Prices if any, shall be expended in whole or in part at the direction and discretion of the Engineer/Employer. The Contractor will only receive payment in respect of Provisional Sums if he has been instructed by the Engineer/Employer to utilize such sums.

## SCHEDULE - B TO BID

### SPECIFIC WORKS DATA

Not Used.

## SCHEDULE – C TO BID

### WORKS TO BE PERFORMED BY SUBCONTRACTORS

The bidder will do the work with his own forces except the work listed below which he intends to sub-contract.

Items of Works to be Sub-Contracted	Name and address of Sub-Contractors	Statement of similar works previously Executed (attach Evidence)
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**Note:**

1. No change of Sub-Contractors shall be made by the bidder without prior approval of the Employer.
2. The truthfulness and accuracy of the statement as to the experience of Sub-Contractors is guaranteed by the bidder. The Employer's judgment shall be final as to the evaluation of the experience of Sub-Contractors submitted by the bidder.
3. Statement of similar works shall include description, location & value of works, year completed and name & address of the clients.

### **PROPOSED PROGRAMME OF WORKS**

Bidder shall provide a programme in a bar-chart showing the sequence of work items by which he proposes to complete the Works of the entire Contract. The programme should indicate the sequence of work items and the period of time during which he proposes to complete the Works including the activities like designing, schedule of submittal of drawings, ordering and procurement of materials, manufacturing, delivering, construction of civil works, erection, testing and commissioning of Works to be supplied under the Contract.

## **SCHEDULE – E TO BID**

### **METHOD OF PERFORMING WORKS**

The bidder is required to submit a narrative outlining the method of performing the Works. The narrative should indicate in detail and include but not be limited to:

- The sequence and methods in which he proposes to carry out the Works, including the number of shifts per day and hours per shift, he expects to work.
- A list of all major items of constructional and erectional plant, tools and vehicles proposed to be used in delivering/carrying out the Works at Site
- The procedure for installation of equipment and transportation of equipment and materials to the site.
- Organization chart indicating head office & field office personnel involved in management, supervision and engineering of the Works to be done under the Contract.

## **CONDITIONS OF CONTRACT & CONTRACT DATA**

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## CONDITIONS OF CONTRACT

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# CONDITIONS OF CONTRACT

## 1. GENERAL PROVISIONS

### 1.1 Definitions

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

#### **The Contract**

- 1.1.1 “Contract” means the Contract Agreement and the other documents listed in the Contract Data.
- 1.1.2 “Specifications” means the document as listed in the Contract Data, including Employer’s requirements in respect of design to be carried out by the Contractor (if any), and any Variation to such document.
- 1.1.3 “Drawings” means the Employer’s drawings of the Works as listed in the Contract Data, and any Variation to such drawings.

#### **Persons**

- 1.1.4 “Employer” means the person named in the Contract Data and the legal successors in title to this person, but not (except with the consent of the Contractor) any assignee.
- 1.1.5 “Contractor” means the person named in the Contract Data and the legal successors in title to this person, but not (except with the consent of the Employer) any assignee.
- 1.1.6 “Party” means either the Employer or the Contractor.

#### **Dates, Times and Periods**

- 1.1.7 “Commencement Date” means the date fourteen (14) days after the date the Contract comes into effect or any other date named in the Contract Data.
- 1.1.8 “Day” means a calendar day
- 1.1.9 “Time for Completion” means the time for completing the Works as stated in the Contract Data (or as extended under Sub-Clause 7.3), calculated from the Commencement Date.

#### **Money and Payments**

- 1.1.10 “Cost” means all expenditure properly incurred (or to be incurred) by the Contractor, whether on or off the Site, including overheads and similar charges but does not include any allowance for profit.

#### **Other Definitions**

- 1.1.11 “Contractor’s Equipment” means all machinery, apparatus and other things required for the execution of the Works but does not include Materials or Plant intended to form part of the Works.
- 1.1.12 “Country” means the Islamic Republic of Pakistan.
- 1.1.13 “Employer’s Risks” means those matters listed in Sub-Clause 6.1.
- 1.1.14 “Force Majeure” means an event or circumstance which makes performance of a Party’s obligations illegal or impracticable and which is beyond that Party’s reasonable control.
- 1.1.15 “Materials” means things of all kinds (other than Plant) to be supplied and incorporated in the Works by the Contractor.
- 1.1.16 “Plant” means the machinery and apparatus intended to form or forming part of the Works.
- 1.1.17 “Site” means the places provided by the Employer where the Works are to be executed, and any other places specified in the Contract as forming part of the Site.
- 1.1.18 “Variation” means a change which is instructed by the Engineer/Employer under Sub-Clause 10.1.
- 1.1.19 “Works” means any or all the works whether Supply, Installation, Construction etc. and design (if any) to be performed by the Contractor including temporary works and any variation thereof.
- 1.1.20 “Engineer” means the person notified by the Employer to act as Engineer for the purpose of the Contract and named as such in Contract Data.

## **1.2 Interpretation**

Words importing persons or parties shall include firms and organisations. Words importing singular or one gender shall include plural or the other gender where the context requires.

## **1.3 Priority of Documents**

The documents forming the Contract are to be taken as mutually explanatory of one another. If an ambiguity or discrepancy is found in the documents, the priority of the documents shall be in accordance with the order as listed in the Contract Data.

## **1.4 Law**

The law of the Contract is the relevant Law of Islamic Republic of Pakistan.

## **1.5 Communications**

All Communications related to the Contract shall be in English language.

## **1.6 Statutory Obligations**

The Contractor shall comply with the Laws of Islamic Republic of Pakistan and shall give all notices and pay all fees and other charges in respect of the Works.

## **2. THE EMPLOYER**

### **2.1 Provision of Site**

The Employer shall provide the Site and right of access thereto at the times stated in the Contract Data.

### **2.2 Permits etc.**

The Employer shall, if requested by the Contractor, assist him in applying for permits, licenses or approvals which are required for the Works.

### **2.3 Engineer's/Employer's Instructions**

The Contractor shall comply with all instructions given by the Employer or the Engineer, if notified by the Employer, in respect of the Works including the suspension of all or part of the Works.

### **2.4 Approvals**

No approval or consent or absence of comment by the Engineer/Employer shall affect the Contractor's obligations.

## **3. ENGINEER'S/EMPLOYER'S REPRESENTATIVES**

### **3.1 Authorized Person**

The Employer shall appoint a duly authorized person to act for him and on his behalf for the purposes of this Contract. Such authorized person shall be duly identified in the Contract Data or otherwise notified in writing to the Contractor as soon as he is so appointed. In either case the Employer shall notify the Contractor, in writing, the precise scope of the authority of such authorized person at the time of his appointment.

### **3.2 Engineer's/Employer's Representative**

The name and address of Engineer's/Employer's Representative is given in Contract Data. However the Contractor shall be notified by the Engineer/Employer, the delegated duties and authority before the Commencement of Works.

## **4. THE CONTRACTOR**

### **4.1 General Obligations**

The Contractor shall carry out the Works properly and in accordance with the Contract. The Contractor shall provide all supervision, labour, Materials, Plant and Contractor's Equipment which may be required.

### **4.2 Contractor's Representative**

The Contractor shall appoint a representative at site on full time basis to supervise the execution of work and to receive instructions on behalf of the Contractor but only after obtaining the consent of the Employer for such appointment which consent shall not be unreasonable withheld by the Employer. Such authorized representative may be substituted/replaced by the Contractor at any time during the Contract Period but only after obtaining the consent of the Employer as aforesaid.

### **4.3 Subcontracting**

The Contractor shall not subcontract the whole of the Works. The Contractor shall not subcontract any part of the Works without the consent of the Employer.

### **4.4 Performance Security**

The Contractor shall furnish to the Employer within fourteen (14) days after receipt of Letter of Acceptance a Performance Security at the option of the bidder, in the form of Bank Draft or Bank Guarantee or a bond from an insurance company having at least AA rating from PACRA/JCR for the amount and validity specified in Contract Data.

## **5. DESIGN BY CONTRACTOR**

### **5.1 Contractor's Design**

The Contractor shall carry out design to the extent specified, as referred to in the Contract Data. The Contractor shall promptly submit to the Engineer/Employer all designs prepared by him. Within fourteen (14) days of receipt the Engineer/Employer shall notify any comments or, if the design submitted is not in accordance with the Contract, shall reject it stating the reasons. The Contractor shall not construct any element of the Works designed by him within fourteen (14) days after the design has been submitted to the Engineer/Employer or which has been rejected. Design that has been rejected shall be promptly amended and resubmitted. The Contractor shall resubmit all designs commented on taking these comments into account as necessary.

### **5.2 Responsibility for Design**

The Contractor shall remain responsible for his bided design and the design under this Clause, both of which shall be fit for the intended purposes defined in the Contract and he shall also remain responsible for any infringement of any patent or copyright in respect of the same. The Engineer/Employer shall be responsible for the Specifications and Drawings.

## **6. EMPLOYER'S RISKS**

### **6.1 The Employer's Risks**

The Employer's Risks are:-

- a) war, hostilities (whether war be declared or not), invasion, act of foreign enemies, within the Country;
- b) rebellion, terrorism, revolution, insurrection, military or usurped power, or civil war, within the Country;
- c) riot, commotion or disorder by persons other than the Contractor's personnel and other employees including the personnel and employees of Sub-Contractors, affecting the Site and/or the Works;
- d) ionising radiations, or contamination by radio-activity from any nuclear fuel, or from any nuclear waste from the combustion of nuclear fuel, radio-active toxic explosive, or other hazardous properties of any explosive nuclear assembly or nuclear component of such an assembly, except to the extent to which the

Contractor/Sub-Contractors may be responsible for the use of any radio-active material;

- e) Pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds;
- f) use or occupation by the Employer of any part of the Works, except as may be specified in the Contract;
- g) late handing over of sites, anomalies in drawings, late delivery of designs and drawings of any part of the Works by the Employer's personnel or by others for whom the Employer is responsible;
- h) a suspension under Sub-Clause 2.3 unless it is attributable to the Contractor's failure; and
- i) physical obstructions or physical conditions other than climatic conditions, encountered on the Site during the performance of the Works, for which the Contractor immediately notified to the Employer and accepted by the Employer.

## **7. TIME FOR COMPLETION**

### **7.1 Execution of the Works**

The Contractor shall commence the Works on the Commencement Date and shall proceed expeditiously and without delay and shall complete the Works, subject to Sub-Clause 7.3 below, within the Time for Completion.

### **7.2 Programme**

Within the time stated in the Contract Data, the Contractor shall submit to the Engineer/Employer a programme for the Works in the form stated in the Contract Data.

### **7.3 Extension of Time**

The Contractor shall, within be reasonable such time as may under the circumstances, notify the Employer/Engineer of any event(s) falling within the scope of Sub-Clause 6.1 or 10.3 of these Conditions of Contract and request the Employer/Engineer for a reasonable extension in the time for the completion of Works. Subject to the aforesaid, the Employer/Engineer shall determine such reasonable extension in the time for the completion of Works as may be justified in the light of the details/particulars supplied by the Contractor in connection with the such determination by the Employer/Engineer within such period as may be prescribed by the Employer/Engineer for the same; and the Employer shall extend the Time for Completion as determined.

### **7.4 Late Completion**

If the Contractor fails to complete the Works within the Time for Completion, the Contractor's only liability to the Employer for such failure shall be to pay the amount stated in the Contract Data for each day for which he fails to complete the Works.

## **8. TAKING-OVER**

### **8.1 Completion**

The Contractor may notify the Engineer/Employer when he considers that the Works are complete.

## **8.2 Taking-Over Notice**

Within fourteen (14) days of the receipt of the said notice of completion from the Contractor the Employer/Engineer shall either takeover the completed Works and issue a Certificate of Completion to that effect or shall notify the Contractor his reasons for not taking-over the Works. While issuing the Certificate of Completion as aforesaid, the Employer/Engineer may identify any outstanding items of work which the Contractor shall undertake during the Maintenance Period.

## **9. REMEDYING DEFECTS**

### **9.1 Remedying Defects**

The Contractor shall for a period stated in the Contract Data from the date of issue of the Certificate of Completion carry out, at no cost to the Employer, repair and rectification work which is necessitated by the earlier execution of poor quality of work or use of below specifications material in the execution of Works and which is so identified by the Employer/Engineer in writing within the said period. Upon expiry of the said period, and subject to the Contractor's faithfully performing his aforesaid obligations, the Employer/Engineer shall issue a Maintenance Certificate whereupon all obligations of the Contractor under this Contract shall come to an end.

Failure to remedy any such defects or complete outstanding work within a reasonable time shall entitle the Employer to carry out all necessary works at the Contractor's cost. However, the cost of remedying defects not attributable to the Contractor shall be valued as a Variation.

### **9.2 Uncovering and Testing**

The Engineer/Employer may give instruction as to the uncovering and/or testing of any work. Unless as a result of an uncovering and/or testing it is established that the Contractor's design, Materials, Plant or workmanship are not in accordance with the Contract, the Contractor shall be paid for such uncovering and/or testing as a Variation in accordance with Sub-Clause 10.2.

## **10. VARIATIONS AND CLAIMS**

### **10.1 Right to Vary**

The Employer/Engineer may issue Variation Order(s) in writing. Where for any reason it has not been possible for the Employer/Engineer to issue such Variations Order(s), the Contractor may confirm any verbal orders given by the Employer/Engineer in writing and if the same are not refuted/denied by the Employer/Engineer within seven (7) days of the receipt of such confirmation the same shall be deemed to be a Variation Orders for the purposes of this Sub-Clause.

### **10.2 Valuation of Variations**

Variations shall be valued as follows:

- a) at a lump sum price agreed between the Parties, or
- b) where appropriate, at rates in the Contract, or
- c) in the absence of appropriate rates, the rates in the Contract shall be used as the basis for valuation, or failing which
- d) at appropriate new rates, as may be agreed or which the Engineer/Employer considers appropriate, or
- e) if the Engineer/Employer so instructs, at day work rates set out in the Contract Data for which the Contractor shall keep records of hours of labour and Contractor's Equipment, and of Materials, used.

### 10.3 **Early Warning**

The Contractor shall notify the Engineer/Employer in writing as soon as he is aware of any circumstance which may delay or disrupt the Works, or which may give rise to a claim for additional payment.

To the extent of the Contractor's failure to notify, which results to the Engineer/Employer being unable to keep all relevant records or not taking steps to minimize any delay, disruption, or Cost, or the value of any Variation, the Contractor's entitlement to extension of the Time for Completion or additional payment shall be reduced/rejected.

### 10.4. **Valuation of Claims**

If the Contractor incurs Cost as a result of any of the Employer's Risks, the Contractor shall be entitled to the amount of such Cost. If as a result of any Employer's Risk, it is necessary to change the Works, this shall be dealt with as a Variation subject to Contractor's notification for intention of claim to the Engineer/Employer within fourteen (14) days of the occurrence of cause.

### 10.5 **Variation and Claim Procedure**

The Contractor shall submit to the Engineer/Employer an itemised make-up of the value of variations and claims within twenty eight (28) days of the instruction or of the event giving rise to the claim. The Engineer/Employer shall check and if possible agree the value. In the absence of agreement, the Employer shall determine the value.

## 11. **CONTRACT PRICE AND PAYMENT**

### 11.1 (a) **Terms of Payments**

Payment of the Contract Price shall be made as per provisions in the Contract Data. The Employer is liable to pay compensation equal to eight percent (8%) per annum of the amount due to the Contractor if payment is delayed beyond the prescribed limit of thirty (30) days for interim payments and sixty (60) days for the final payment.

### (b) **Valuation of the Works**

The Works shall be valued as provided for in the Contract Data, subject to Clause 10.

## 11.2 Monthly Statements

The Contractor shall be entitled to be paid at monthly intervals:

- a) The value of the Works executed; and
- b) The percentage of the value of Materials and Plant reasonably delivered to the Site, as stated in the Contract Data, subject to any additions or deductions which may be due.

The Contractor shall submit each month to the Engineer/Employer a statement showing the amounts to which he considers himself entitled.

## 11.3 Interim Payments

Within a period not exceeding seven (7) days from the date of submission of a statement for interim payment by the Contractor, the Engineer shall verify the same and within a period not exceeding thirty (30) days from the said date of submission by the Contractor, the Employer shall pay to the Contractor the sum verified by the Engineer less retention money at the rate stated in the Contract Data.

## 11.4 Retention

Retention money shall be paid by the Employer to the Contractor within fourteen (14) days after either the expiry of the period stated in the Contract Data, or the remedying of notified defects, or the completion of outstanding work, all as referred to in Sub-Clause 9.1, whichever is the later.

## 11.5 Final Payment

Within twenty one (21) days from the date of issuance of the Maintenance Certificate the Contractor shall submit a final account to the Engineer to verify and the Engineer shall verify the same within fourteen (14) days from the date of submission and forward the same to the Employer together with any documentation reasonably required to enable the Employer to ascertain the final contract value.

Within sixty (60) days from the date of receipt of the verified final account from the Engineer, the Employer shall pay to the Contractor any amount due to the Contractor. While making such payment the Employer may, for reasons to be given to the Contractor in writing, withhold any part or parts of the verified amount.

The payment of Maintenance and Services item No. 03 of BOQ shall be made to the Contractor by the employer as under:

1. Half Amount of Quoted item price after One of Defect Liability Period.
2. Balance Half Amount of Quoted item price after Two of Defect Liability Period.

## 11.6 Currency

Payment shall be in the currency stated in the Contract Data.

## 12. DEFAULT

## 12.1 **Default by Contractor**

If the Contractor abandons the Works, refuses or fails to comply with a valid instruction of the Engineer/Employer or fails to proceed expeditiously and without delay, or is, despite a written complaint, in breach of the Contract, the Employer may give notice referring to this Sub-Clause and stating the default.

If the Contractor has not taken all practicable steps to remedy the default within fourteen (14) days after receipt of the Employer's notice, the Employer may by a second notice given within a further twenty one (21) days, terminate the Contract. The Contractor shall then demobilize from the Site leaving behind any Contractor's Equipment which the Employer instructs, in the second notice, to be used for the completion of the Works at the risk and cost of the Contractor.

## 12.2 **Default by Employer**

If the Employer fails to pay in accordance with the Contract, or is, despite a written complaint, in breach of the Contract, the Contractor may give notice referring to this Sub-Clause and stating the default. If the default is not remedied within fourteen (14) days after the Employer's receipt of this notice, the Contractor may suspend the execution of all or parts of the Works.

If the default is not remedied within twenty eight (28) days after the Employer's receipt of the Contractor's notice, the Contractor may by a second notice given within a further twenty one (21) days, terminate the Contract. The Contractor shall then demobilise from the Site.

## 12.3 **Insolvency**

If a Party is declared insolvent under any applicable law, the other Party may by notice terminate the Contract immediately. The Contractor shall then demobilise from the Site leaving behind, in the case of the Contractor's insolvency, any Contractor's Equipment which the Employer instructs in the notice is to be used for the completion of the Works.

## 12.4 **Payment upon Termination**

After termination, the Contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following:

- a) any sums to which the Contractor is entitled under Sub-Clause 10.4,
- b) any sums to which the Employer is entitled.
- c) if the Employer has terminated under Sub-Clause 12.1 or 12.3, the Employer shall be entitled to a sum equivalent to twenty percent (20%) of the value of parts of the Works not executed at the date of the termination, and
- d) if the Contractor has terminated under Sub-Clause 12.2 or 12.3, the Contractor shall be entitled to the cost of his demobilization together with a sum equivalent to ten percent (10%) of the value of parts of the Works not executed at the date of termination.

The net balance due shall be paid or repaid within twenty eight (28) days of the notice of termination.

## **13 RISKS AND RESPONSIBILITIES**

### **13.1 Contractor's Care of the Works**

Subject to Sub-Clause 9.1, the Contractor shall take full responsibility for the care of the Works from the Commencement Date until the date of the Employer's/Engineer's issuance of Certificate of Completion under Sub-Clause 8.2. Responsibility shall then pass to the Employer. If any loss or damage happens to the Works during the above period, the Contractor shall rectify such loss or damage so that the Works conform with the Contract.

Unless the loss or damage happens as a result of any of the Employer's Risks, the Contractor shall indemnify the Employer, or his agents against all claims loss, damage and expense arising out of the Works.

### **13.2 Force Majeure**

If Force Majeure occurs, the Contractor shall notify the Engineer/Employer immediately. If necessary, the Contractor may suspend the execution of the Works and, to the extent agreed with the Employer demobilise the Contractor's Equipment.

If the event continues for a period of eighty four (84) days, either Party may then give notice of termination which shall take effect twenty eight (28) days after the giving of the notice.

After termination, the Contractor shall be entitled to payment of the unpaid balance of the value of the Works executed and of the Materials and Plant reasonably delivered to the Site, adjusted by the following:

- a) any sums to which the Contractor is entitled under Sub-Clause 10.4,
- b) the cost of his demobilization, and
- c) less any sums to which the Employer is entitled.

The net balance due shall be paid or repaid within thirty five (35) days of the notice of termination.

## **14. INSURANCE**

### **14.1 Arrangements**

The Contractor shall, prior to commencing the Works, effect insurances of the types, in the amounts and naming as insured the persons stipulated in the Contract Data except for items (a) to (e) and (i) of the Employer's Risks under Sub-Clause 6.1. The policies shall be issued by insurers and in terms approved by the Employer. The Contractor shall provide the Engineer/Employer with evidence that any required policy is in force and that the premiums have been paid.

### **14.2 Default**

If the Contractor fails to effect or keep in force any of the insurances referred to in the previous Sub-Clause, or fails to provide satisfactory evidence, policies or receipts, the Employer may, without prejudice to any other right or remedy, effect insurance for the cover relevant to such as a default and pay the premiums due and recover the same plus a sum in percentage given in Contractor Data from any other amounts due to the Contractor.

## **15. RESOLUTION OF DISPUTES**

### **15.1 Engineer's Decision**

If a dispute of any kind whatsoever arises between the Employer and the Contractor in connection with the Works, the matter in dispute shall, in the first place, be referred in writing to the Engineer, with a copy to the other party. Such reference shall state that it is made pursuant to this Clause. No later than the twenty eight (28) days after the day on which he received such reference, the Engineer shall give notice of his decision to the Employer and the Contractor.

Unless the Contract has already been repudiated or terminated, the Contractor shall, in every case, continue to proceed with the Work with all due diligence, and the Contractor and the Employer shall give effect forthwith to every such decision of the Engineer unless and until the same shall be revised, as hereinafter provided in an arbitral award.

### **15.2 Notice of Dissatisfaction**

If a Party is dissatisfied with the decision of the Engineer or if no decision is given within the time set out in Sub-Clause 15.1 hereabove, the Party may give notice of dissatisfaction referring to this Sub-Clause within fourteen (14) days of receipt of the decision or the expiry of the time for the decision. If no notice of dissatisfaction is given within the specified time, the decision shall be final and binding on the Parties. If notice of dissatisfaction is given within the specified time, the decision shall be binding on the Parties who shall give effect to it without delay unless and until the decision of the Engineer is revised by an arbitrator.

### **15.3 Arbitration**

A dispute which has been the subject of a notice of dissatisfaction shall be finally settled as per provisions of Arbitration Act 1940 (Act No. X of 1940) and Rules made thereunder and any statutory modifications thereto. Any hearing shall be held at the place specified in the Contract Data and in the language referred to in Sub-Clause 1.5.

## **16 INTEGRITY PACT**

16.1 If the Contractor, or any of his Sub-Contractors, agents or servants is found to have violated or involved in violation of the Integrity Pact signed by the Contractor as Schedule-F to his Bid, then the Employer shall be entitled to:

- (a) recover from the Contractor an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by the Contractor or any of his Sub-Contractors, agents or servants;
- (b) terminate the Contract; and

- (c) recover from the Contractor any loss or damage to the Employer as a result of such termination or of any other corrupt business practices of the Contractor or any of his Sub-Contractors, agents or servants.

On termination of the Contract under Sub-Para (b) of this Sub-Clause, the Contractor shall demobilize from the Site leaving behind Contractor's Equipment which the Employer instructs, in the termination notice, to be used for the completion of the Works at the risk and cost of the Contractor. Payment upon such termination shall be made under Sub-Clause 12.4, in accordance with Sub-Para (c) thereof, after having deducted the amounts due to the Employer under Sub-Para (a) and (c) of this Sub-Clause.

## CONTRACT DATA

### **Sub-Clauses of Conditions of Contract**

- 1.1.3 Employer's Drawings, if any

As per list attached in the drawings.

- 1.1.4 The Employer means

**Jinnah Sindh Medical University,**  
Rafiqi H. J. Shaheed Road,  
Karachi-75510.

- 1.1.5 The Contractor means

Successful Bidder whose bid is accepted by Employer.

- 1.1.7 Commencement Date means

the date of issue of Engineer's Notice to Commence which shall be issued within fourteen (14) days of the signing of the Contract Agreement.

- 1.1.9 Time for Completion Four (04) calendar months.

- 1.1.20 **Engineer**

**In charge Works & Services**  
Planning & Development Department,  
Jinnah Sindh Medical University, Karachi,

- 1.3 Documents forming the Contract listed in the order of priority:

- (a) The Contract Agreement

- (b) Letter of Acceptance
- (c) The completed Form of Bid
- (d) Contract Data
- (e) Conditions of Contract
- (f) The completed Schedules to Bid including Schedule of Prices
- (g) The Drawings, if any
- (h) The Specifications

2.1 Provision of Site: On the Commencement Date

3.1 Authorized person: Will be intimated later.

3.2 Name and address of Engineer's/Employer's representative: Will be intimated later.

4.4 Performance Security:

Amount	:	Rupees equal to 5% of Contract price.
Shape	:	Bank Guarantee/Payorder
Validity	:	up to end period for notifying defects.

5.1 Requirements for Contractor's design (if any):

**Not Used.**

7.2 Programme:

Time for submission: Within fourteen (14) days of the Commencement Date.

7.4 Amount payable due to failure to complete shall be 5% per day up to a maximum of ten percent (10%) of sum stated in the Letter of Acceptance.

9.1 Period for remedying defects

Twelve (12) Calendar months.

9.2 Period of Maintenance and Services:

Twenty Four (24) Calendar months effective from the end of Defect liability period 12-months (9.1)

10.2 (e) Variation procedures:

**Not used.**

## 11. **CONTRACT PRICE AND PAYMENT**

Clause 11, Conditions of Contract is deleted in its entirety and substituted by the following:

11.1 Method of Application

The Contractor shall submit to the Engineer three copies, each signed by the Contractor's representative's approved by the Engineer in accordance with Sub-Clause 4.2, of a statement, in such form as the Engineer may from time to time

prescribe, showing the amount to which the Contractor consider himself to be entitled. Following stage wise payment schedule shall be applicable:

- i) Fifteen percent (10%) of the Quoted Lift Price (Item No.1 of BOQ) shall be paid as advance payment against Bank Guarantee from Schedule bank in Pakistan, after the Contractor has obtained necessary approval of equipment and materials from the Engineer.
- ii) Forty percent (40%) of the Quoted Lift Price (Item No.1 of BOQ) shall be paid as advance against Bank Guarantee from Schedule bank in Pakistan on submission of a copy of negotiable shipping documents and Bill of landing.
- iii) Twenty percent (20%) of the Quoted Lift Price (Item No.1 of BOQ) shall be paid on delivery of equipment/material at site and issuance of inspection certificates and approval by the Engineer. The Bank Guarantee provided by the Contractor at (ii) above would be released.
- iv) Twenty percent (20%) of the Quoted Lift Price (Item No.1 of BOQ) shall be paid on completion of installation to the satisfaction of the Engineer.
- v) Five percent (10%) of the Contract Price shall be paid on completion of testing and commissioning of the equipment and system and issuance of Certificate of Completion by the Engineer. The Bank Guarantee provided by the Contractor against payment at (i) above would also be released on issuance of Certificate of Completion by the Engineer.

The above payments are subject to Five percent (5%) retention money.

The payment against item No. 2 & 3 of BOQ shall be paid to the contractor on completion of specified item of work.

## 11.2 Payment of Retention Money

- (a) Upon the issue of Certificate of Completion with respect to the whole of the Works , one half of the Retention Money, shall be certified by the Engineer for payment to the Contractor.
- (b) Upon the expiration of the Period for remedying defects for the Works the other half of the Retention Money shall be certified by the Engineer for payment to the Contractor. Provided also that if at such time, there shall remain to be executed by the Contractor any work instructed, pursuant to Clause 9, in respect of the Works, the Engineer shall be entitled to withhold certification until completion of such work of so much of the balance of the Retention Money as shall, in the opinion of the Engineer, represent the cost of the work remaining to be executed.

## 11.3 Correction of Certificates

The Engineer may by any Interim Payment Certificate make any correction or modification in any previous certificate which shall have been issued by him and shall have authority, if any work is not being carried out to his satisfaction, to omit or reduce the value of such work in any Interim Payment Certificate.

#### 11.4 Final Payment

Within twenty one (21) days from the date of issuance of the Maintenance Certificate the Contractor shall submit a final account to the Engineer to verify and the Engineer shall verify the same within fourteen (14) days from the date of submission and forward the same to the Employer together with any documentation reasonably required to enable the Employer to ascertain the final contract value.

Within sixty (60) days from the date of receipt of the verified final account from the Engineer, the Employer shall pay to the Contractor any amount due to the Contractor. While making such payment the Employer may, for reasons to be given to the Contractor in writing, withhold any part or parts of the verified amount.

#### 11.5 Discharge

Upon submission of the Final Bill, the Contractor shall give to the Employer, with a copy to the Engineer, a written discharge confirming that the total of the Final Statement represents full and final settlement of all monies due to the Contractor arising out of or in respect of the Contract.

#### 11.6 Time for Payment

The amount due to the Contractor under any Stage wise Payment Certificate issued by the Engineer pursuant to this Clause , or to any other term of the Contract, shall, subject to Sub-Clause 7.4, be paid by the Employer to the Contractor within 28 days after such Payment Certificate has been delivered to the Employer, or in the case of the Final Payment referred to in Sub-Clause 11.4, within 60 days after such Final Payment has been delivered to the Employer.

### 14.1 Insurances:

#### **Type of cover**

The Works

#### **Amount of cover**

The sum stated in the Letter of Acceptance plus fifteen percent (15%)

#### **Type of cover**

Contractor's Equipment

#### **Amount of cover**

Full replacement cost

**Type of cover**

Third Party-injury to persons and damage to property

**Amount of cover**

Three (03) percent of contract price per occurrence with no of occurrence unlimited.

**14.2 Amount to be recovered**

Premium plus Ten (10) percent (10%).

**15.3 Arbitration**

Place of Arbitration: Karachi.

**16. Integrity Pact**

This Clause is deleted in its entirety.

**Add following Sub-Clause**

**17. Contract Agreement**

The successful Contractor shall enter into and execute an agreement (To be prepared at the Cost of contractor) in the prescribed form duly typed on stamp paper with such modifications as may be considered necessary by the Employer within ten (10) days of the date of issue of letter / Notice of Award.

The cost of complying with requirements of this Sub-Clause shall be borne by the Contractor.

**18. Customs and Import Duties**

The payment of customs and import duties in respect of importation of any items of the Works shall be the responsibility of the Contractor.

**19. Import Permits and Licenses**

The Contractor shall obtain all import permits or licenses required for any part of the Plant or Works in reasonable time having regard to the time for delivery of the Plant and completion of the Works.

## **STANDARD FORMS**

(Note: Standard Forms provided in this document for securities are to be issued by a bank. In case the bidder chooses to issue a bond for accompanying his bid or performance of contract or receipt of advance, the relevant format shall be tailored accordingly without changing the spirit of the Forms of securities).

# FORM OF BID SECURITY

(Bank Guarantee)

Guarantee No. \_\_\_\_\_

Executed on \_\_\_\_\_

(Letter by the Guarantor to the Employer)

Name of Guarantor (Scheduled Bank in Pakistan) with  
address: \_\_\_\_\_

Name of Principal (Bidder) with  
address: \_\_\_\_\_

Penal Sum of Security (express in words and  
figures): \_\_\_\_\_

Bid Reference No. \_\_\_\_\_ Date of Bid \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bid and at the request of the said Principal, we the Guarantor above-named are held and firmly bound unto the \_\_\_\_\_, (hereinafter called The "Employer") in the sum stated above, for the payment of which sum well and truly to be made, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the accompanying Bid numbered \_\_\_\_\_ and dated as above for \_\_\_\_\_ (Particulars of Bid) to the said Employer; and

WHEREAS, the Employer has required as a condition for considering the said Bid that the Principal furnishes a Bid Security in the above said sum to the Employer, conditioned as under:

- (1) that the Bid Security shall remain valid for a period of twenty eight (28) days beyond the period of validity of the bid;
- (2) that in the event of;
  - (a) the Principal withdraws his Bid during the period of validity of Bid, or
  - (b) the Principal does not accept the correction of his Bid Price, pursuant to Sub-Clause 16.4 (b) of Instructions to Bidders, or
  - (c) failure of the successful bidder to
    - (i) furnish the required Performance Security, in accordance with Sub-Clause IB-21.1 of Instructions to Bidders, or
    - (ii) sign the proposed Contract Agreement, in accordance with Sub-Clauses IB-20.2 & 20.3 of Instructions to Bidders, the entire sum be paid immediately to the said Employer for delayed completion and not as penalty for the successful bidder's failure to perform.

NOW THEREFORE, if the successful bidder shall, within the period specified therefore, on the prescribed form presented to him for signature enter into a formal Contract Agreement with the said Employer in accordance with his Bid as accepted and furnish within fourteen (14) days of receipt of Letter of Acceptance, a Performance Security with good and sufficient surety, as may be required, upon the form prescribed by the said Employer for the faithful performance and proper fulfilment of the said Contract or in the event of non-withdrawal of the said Bid within the time specified then this obligation shall be void and of no effect, but otherwise to remain in full force and effect.

PROVIDED THAT the Guarantor shall forthwith pay to the Employer the said sum stated above upon first written demand of the Employer without cavil or argument and without requiring the Employer to prove or to show grounds or reasons for such demand, notice of which shall be sent by the Employer by registered post duly addressed to the Guarantor at its address given above.

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the Principal has duly performed his obligations to sign the Contract Agreement and to furnish the requisite Performance Security within the time stated above, or has defaulted in fulfilling said requirements and the Guarantor shall pay without objection the sum stated above upon first written demand from the Employer forthwith and without any reference to the Principal or any other person.

IN WITNESS WHEREOF, the above bounded Guarantor has executed the instrument under its seal on the date indicated above, the name and seal of the Guarantor being hereto affixed and these presents duly signed by its undersigned representative pursuant to authority of its governing body.

\_\_\_\_\_

Guarantor (Bank)

Witness:

1. Signature \_\_\_\_\_

1.

2. Name \_\_\_\_\_

\_\_\_\_\_  
Corporate Secretary (Seal)

3. Title \_\_\_\_\_

2.

\_\_\_\_\_

\_\_\_\_\_  
(Name, Title & Address)

Corporate Guarantor (Seal)

# FORM OF PERFORMANCE SECURITY

(Bank Guarantee)

Guarantee No. \_\_\_\_\_

Executed on \_\_\_\_\_

(Letter by the Guarantor to the Employer)

Name of Guarantor (Scheduled Bank in Pakistan) with  
address: \_\_\_\_\_

Name of Principal (Contractor) with  
address: \_\_\_\_\_

Penal Sum of Security (express in words and  
figures) \_\_\_\_\_

Letter of Acceptance No. \_\_\_\_\_ Dated \_\_\_\_\_

KNOW ALL MEN BY THESE PRESENTS, that in pursuance of the terms of the Bidding Documents and above said Letter of Acceptance (hereinafter called the Documents) and at the request of the said Principal we, the Guarantor above named, are held and firmly bound unto the \_\_\_\_\_ (hereinafter called the Employer) in the penal sum of the amount stated above, for the payment of which sum well and truly to be made to the said Employer, we bind ourselves, our heirs, executors, administrators and successors, jointly and severally, firmly by these presents.

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has accepted the Employer's above said Letter of Acceptance for \_\_\_\_\_  
(Name of Contract) for the \_\_\_\_\_

\_\_\_\_\_ (Name of Project).

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the Employer, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of the said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till all requirements of Clause 9, Remedying Defects, of Conditions of Contract are fulfilled.

Our total liability under this Guarantee is limited to the sum stated above and it is a condition of any liability attaching to us under this Guarantee that the claim for payment in writing shall be received by us within the validity period of this Guarantee, failing which we shall be discharged of our liability, if any, under this Guarantee.

We, \_\_\_\_\_ (the Guarantor), waiving all objections and defences under the Contract, do hereby irrevocably and independently guarantee to pay to the Employer without delay upon the Employer's first written demand without cavil or arguments and without requiring the Employer to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the Employer's written declaration that the Principal has refused or failed to perform the obligations under the Contract, for which payment will be effected by the Guarantor to Employer's designated Bank & Account Number.

PROVIDED ALSO THAT the Employer shall be the sole and final judge for deciding whether the Principal (Contractor) has duly performed his obligations under the Contract or has defaulted in fulfilling said obligations and the Guarantor shall pay without objection any sum or sums up to the amount stated above upon first written demand from the Employer forthwith and without any reference to the Principal or any other person.

IN WITNESS WHEREOF, the above bounded Guarantor has executed this Instrument under its seal on the date indicated above, the name and corporate seal of the Guarantor being hereto affixed and these presents duly signed by its undersigned representative, pursuant to authority of its governing body.

	_____ Guarantor (Bank)
Witness:	
1. _____	1. Signature _____
_____	2. Name _____
Corporate Secretary (Seal)	3. Title _____
2. _____	
_____	_____
(Name, Title & Address)	Corporate Guarantor (Seal)

# FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (hereinafter called the "Agreement") made on the \_\_\_\_\_ day of \_\_\_\_\_ 200 \_\_\_\_\_ between \_\_\_\_\_ (hereinafter called the "Employer") of the one part and \_\_\_\_\_ (hereinafter called the "Contractor") of the other part.

WHEREAS the Employer is desirous that certain Works, viz \_\_\_\_\_ should be executed by the Contractor and has accepted a Bid by the Contractor for the execution and completion of such Works and the remedying of any defects therein.

NOW this Agreement witnesseth as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents after incorporating addenda, if any except those parts relating to Instructions to Bidders, shall be deemed to form and be read and construed as part of this Agreement, viz:
  - (a) The Letter of Acceptance;
  - (b) The completed Form of Bid alongwith Schedules to Bid;
  - (c) Conditions of Contract & Contract Data;
  - (d) The priced Schedule of Prices;
  - (e) The Specifications; and
  - (f) The Drawings
3. 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 defects therein in conformity and in all respects within the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works as per provisions of the Contract, 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.

IN WITNESS WHEREOF the parties hereto have caused this Contract Agreement to be executed on the day, month and year first before written in accordance with their respective laws.

Signature of the Contactor

Signature of the Employer

\_\_\_\_\_  
(Seal)

\_\_\_\_\_  
(Seal)

Signed, Sealed and Delivered in the presence of:

Witness:

Witness:

\_\_\_\_\_

\_\_\_\_\_

(Name, Title and Address)

(Name, Title and Address)

\

# FORM OF BANK GUARANTEE FOR ADVANCE PAYMENT

Guarantee No. \_\_\_\_\_  
Executed on \_\_\_\_\_  
(Letter by the Guarantor to the Employer)

WHEREAS the \_\_\_\_\_ (hereinafter called the Employer) has entered into a Contract for \_\_\_\_\_  
\_\_\_\_\_ (Particulars of Contract), with  
\_\_\_\_\_ (hereinafter called the Contractor).

AND WHEREAS the Employer has agreed to advance to the Contractor, at the Contractor's request, an amount of Rs. \_\_\_\_\_ Rupees \_\_\_\_\_) which amount shall be advanced to the Contractor as per provisions of the Contract.

AND WHEREAS the Employer has asked the Contractor to furnish Guarantee to secure the advance payment for the performance of his obligations under the said Contract.

AND WHEREAS \_\_\_\_\_ (Scheduled Bank) (hereinafter called the Guarantor) at the request of the Contractor and in consideration of the Employer agreeing to make the above advance to the Contractor, has agreed to furnish the said Guarantee.

NOW THEREFORE the Guarantor hereby guarantees that the Contractor shall use the advance for the purpose of above mentioned Contract and if he fails, and commits default in fulfillment of any of his obligations for which the advance payment is made, the Guarantor shall be liable to the Employer for payment not exceeding the aforementioned amount.

Notice in writing of any default, of which the Employer shall be the sole and final judge, as aforesaid, on the part of the Contractor, shall be given by the Employer to the Guarantor, and on such first written demand payment shall be made by the Guarantor of all sums then due under this Guarantee without any reference to the Contractor and without any objection.

This Guarantee shall come into force as soon as the advance payment has been credited to the account of the Contractor.

This Guarantee shall expire not later than \_\_\_\_\_ by which date we must have received any claims by registered letter, telegram, telex or telefax.

It is understood that you will return this Guarantee to us on expiry or after settlement of the total amount to be claimed hereunder.

\_\_\_\_\_  
Guarantor (Scheduled Bank)

Witness:

1. \_\_\_\_\_

1. Signature \_\_\_\_\_

\_\_\_\_\_

2. Name \_\_\_\_\_

Corporate Secretary (Seal)

2. \_\_\_\_\_

\_\_\_\_\_  
(Name, Title & Address)

3. Title \_\_\_\_\_

\_\_\_\_\_  
Corporate Guarantor (Seal)

## **SCHEDULE OF PRICES / BILL OF QUANTITIES**

**Bill Of quantities of Supply, Installation, Testing , Commissioning & Maintenance of  
2No's Passenger Lifts (630kg) in Existing Lift Shafts at Campus I, Jinnah Sindh  
Medical University, Karachi**

<b>S. No</b>	<b>Description</b>	<b>Qty.</b>	<b>Unit</b>	<b>Rate</b>	<b>Amount</b>
<b>1</b>	<b>New Lifts</b>				
1 (a)	<b><u>PASSENGER LIFT (L1) @ Academic Block</u></b> Supply, Installation, Testing, Commissioning and Maintenance (during defect liability period of 365 days / 1 year) of Passenger Lift (L1) Machine Room Less type (MRL), 6 stops / 6 opening having capacity 630 kg / 8 persons, 1.0 m/s travelling speed total travel 62'-0", lift including counter weights, supports brackets, embedded parts, access ladder separator screen, Emergency Rescue Device (ERD) / (ALD) Auto landing Device, Manual landing system , Phase sequence panel & other accessories. complete in all respect as per specification & drawings. Manufacturer Hyundai, Mitsubishi , Sigma, LG or approved equivalent (Made in Korea).	1.00	No		
1 (b)	<b><u>PASSANGER LIFT (L2) @ PDC Building</u></b> Supply, Installation, Testing, Commissioning and Maintenance (during defect liability period of 365 days / 1 year) of Passenger Lift (L2) Machine Room Less Type (MRL), 4 stops / 4 opening having capacity 630 kg / 8 persons, 1.0 m/s travelling speed total travel 42'-0", lift including counter weights, supports brackets, embedded parts, access ladder separator screen, Emergency Rescue Device (ERD) / (ALD) Auto landing Device, Manual landing system , Phase sequence panel & other accessories. complete in all respect as per specification & drawings. Manufacturer Hyundai, Mitsubishi , Sigma, LG or approved equivalent (Made in Korea).	1.00	No		
<b>2</b>	<b>Dismantling of Existing Lifts</b>				
2 (a)	Dismantling of Existing Lift capacity 630kg and its complete accessories, equipment, relevant parts from academic building block without damaging and handing over to Jinnah Sindh Medical University Karachi, store section. Dismantling includes making provision for installation of	1.00	Job		

	new lift item 1(a). No part or accessories of existing lift will be used in lift.				
2 (b)	Dismantling of Existing Lift capacity 630kg and its complete accessories, equipment, relevent parts from PDC building without damaging and handing over to Jinnah Sindh Medical University Karachi, store section. Dimantling includes making provision for installation of new lift item 1(b). No part or accessories of existing lift will be used in lift.	1.00	Job		
3	Maintenance and Services of two lifts (L1 & L2) for 2-years from the end of defect liability period of 365-days including supply of labor ,essnetial parts / accesories and equipment for maintenance and service of lifts.	1.00	Job		
<b>Total Cost Inclusive all Taxes</b>					

**Technical Specification  
and  
Special Provision**

## SECTION – 8530-02

### PASSENGER LIFTS

#### 1.0 GENERAL

This section shall cover Lifts where indicated on the drawings and specified herein. Any conflicts between the requirements in this specification and the codes, drawings, standards and specifications referred to herein shall be brought immediately to the attention of the Engineer for resolution. The Bidder shall submit technical data sheets, outline drawing and printed technical literature to fully elaborate offered equipment. The Bidder is advised to visit the site to check the available lift shafts, pit depth and machine room etc. to ensure that offered equipment will suit to existing conditions.

#### 2.0 SCOPE OF WORK

##### 2.1 General

Following lift work is required for Jinnah Sindh University of Medical Sciences

- One (01) Nos. brand new Passenger Lift (L-1) at Academic building, having capacity 630kg / 8 persons capacity, serving ground plus five upper floors.
- One (01) Nos. brand new Passenger Lift (L-2) at PDC building, having capacity 630 kg / 8 persons, serving ground plus three upper floors.
- Complete dismantling of existing lifts of capacity 630 kg serving ground plus four upper floors and Ground plus three upper floors respectively and handing over to JSMU Store section with complete accessories and equipment of dismantled lifts. Dismantling also includes necessary required alteration & provision for installation of new lifts.

The scope of work shall cover dismantling of existing one number passenger lift and design, supply, installation, testing & commissioning and maintenance of brand new two (02) Nos. passenger lifts equipment including hoisting machinery, sheaves and girders, controller, car, ropes, counterweights, supports, brackets and guides for car & counterweights, car & landing doors, door operator, switches & control, safety devices, signals, governor, safety gears, buffers, pit screens, well trimming girders, pit access

ladder, trap door and such related accessories complete in all respects as specified herein.

The Contractor shall also furnish all labour, erection equipment, (i.e. winches, scaffolding etc.), erection tools, appurtenances, embedded parts and materials, etc. necessary to dismantling of existing lift and supply, install, test & commission the new lifts all in perfect operating condition in accordance with these Specifications and Drawings.

The Contractor shall submit design drawings / shop drawings within two weeks after award of work for approval of Engineer. The drawings must show final arrangement of equipment, dynamic & static loads imposed on the building, openings, location of embedded parts etc. wiring and control logic diagrams.

The Contractor shall be responsible to make good any damage done to the civil works for erection or other purposes without cost to the Employer.

The Contractor shall also provide and install, from designated electrical power supply point, all required cabling and accessories without cost to the Employer.

The Contractor shall maintain the works during defect liability period. In addition to routine periodic maintenance, the Contractor shall execute all such work of repair, rectification, parts replacement and making good defects occurring during this period.

The Contractor shall also quote the amount for purchasing the dismantled lift in his Bid which is given in BOQ.

The Contractor shall also provide training to the staff of Employer regarding operation and maintenance of the equipment.

Prior to substantial completion date, the Contractor shall submit 3 copies of Operating and Maintenance Manuals for each lift to the Employer/Engineer.

## 2.2 **Maintenance of Lifts During Defect Liability Period**

The contractor shall also maintain both new lifts (L1 & L2) during defect liability period and shall supply all necessary spare parts / accessories / other material and provide technical staff and mechanic required for maintenance and repair . The said staff shall also be made available during overtime in case of emergency as and when required by the Employer.

One Sr. Engineer should also be available on call in case of major break down and will attend site within one hour and rectify the defect.

The contractor shall furnish all erection equipment, miscellaneous tools and material etc necessary for operation and maintenance works.

No separate payment will be made for the above mentioned works. The cost thereof shall be deemed to have been included in the quoted rates of the respective item of the schedule of prices.

### 2.3 **Maintenance & Repair Service (M&R) After Defect Liability Period**

The contractor shall Maintain & Service both new lifts (L1 & L2) after defect liability period for Two (02) years and shall execute all such work for repair, rectification, parts replacement, general maintenance, complete over hauling and make good any defects occurring during Two (02) years period.

The contractor shall furnish all erection equipment, miscellaneous tools and material etc necessary for operation and maintenance works.

The contractor shall also maintain all lifts during defect liability period and shall supply all necessary spare parts / accessories / other material and provide technical staff and mechanic required for maintenance and repair . The said staff shall also be made available during overtime in case of emergency as and when required by the Employer.

One Sr. Engineer should also be available on call in case of major break down and will attend site within one hour and rectify the defect.

The contractor shall furnish all erection equipment, miscellaneous tools and material etc necessary for operation and maintenance works.

No separate payment will be made for the above mentioned maintenance works and services. The cost thereof shall be deemed to have been included in the quoted rates of the respective item of the schedule of prices.

The payment of M&R services of lifts shall be paid annually.

## 2.4 **Methodology for Performing of Works**

The Contractor shall ensure that lift works on only one lift shall be carried out at a time while remaining existing lift shall be kept in operation for the use of building staff and students without any hindrance. Contractor shall submit detailed methodology keeping in view the above obstruction free movement of staff and students for Engineers approval prior to start the lift works.

No extension in project completion period and no extra payment shall be made to the Contractor if the work is delayed due to above mentioned requirement.

## 3.0 **APPLICABLE CODES AND STANDARDS**

The standards and codes applicable to only a portion of the works specified in this section are referred in the relevant clauses of this section. The works shall generally conform to standards & codes (latest additions) listed hereunder:

### British Standards Specification (B.S.)

B.S. 5655/ : Safety rules for construction and installation of electric lifts  
EN 81 Parts 1, 5, 6, 8, 9 & 10 with Appendices

### International Standards (I.S.O)

ISO 4190-1 : Part-1 Lift installation (Class I, II, III & IV lifts).

### American Welding Society (AWS)

AWS B 3.0 : Standard Qualification Procedure  
D 1.1 : Structural Welding Code

National Electric Manufacturer's Association (NEMA)

NEMA-1CS6 : Enclosures for Industrial Controls and System

National Electric Code (NEC) by NFPA

NFPA.70 : National Electrical Code

ANSI-A 17.1 : American National Standard Institute  
"Safety Codes for Elevators & Dumbwaiter"

Other authoritative codes and standards which ensure equal or higher quality than those referenced may also be acceptable subject to approval of the Engineer.

Any conflict between the requirements of this specification and those on the figures herein or in the codes, standards and specifications referred to herein shall be brought to the attention of the Engineer for resolution whose decision will be final and binding.

**4.0 ORIGIN OF SUPPLY**

Complete equipment, to be supplied under the contract shall be provided by any one of the following lift manufacturers and origin:

- Hyundai (Korea)
- MITSUBISHI (Korea/Singapore)
- LG (Korea)
- Sigma (Korea)

All major lift components shall be manufactured in the Lift Manufacturer's own manufacturing plants, such as complete hoisting unit including electric motor, controller, car, etc. However, components like pit screen, access ladder, trap door, separation beams & support brackets may be of local origin.

**5.0 PACKING**

The Contractor shall prepare all articles and materials for shipment in such a manner as to protect them from damage in transit or loss from repeated handlings and withstand extremes of climate during transport and storage at site. Packings shall be non-returnable.

## 6.0 **HANDLING & STORAGE**

The Contractor shall carry out port clearance, arrange inland transportation and deliver at site the lift machinery/equipment in their original packages and bundles bearing identification tags. A dry and protected area, close to work site, will be assigned to the Contractor for storage of his materials and tools. The Contractor shall store the equipment at his own cost and arrange guards to ensure safety of equipment.

## 7.0 **PAINTING**

### 7.1 **General**

All lift equipment including exposed steel work, ferrous metal parts of machine room equipment, gear & controllers, structures, cars, doors, guide rail fixings and other materials in the hoist way (except guide rails) shall be properly prepared, primed, undercoated and then painted in accordance with recognized international standards. The type and shade of paints particularly the finishes shall be subject to the approval of the Engineer.

### 7.2 **Preparation of metal surfaces prior to painting:**

Before application of primer, all surfaces shall be made clean and free from rust and grit by means of blast cleaning. Automatic blasting may be used with most of the common abrasives such as shot, chilled iron, cut wire, or proprietary grit abrasives. The surfaces shall be immediately painted after blast cleaning. In the event the surface become otherwise contaminated in the interval between cleaning and painting, re-cleaning shall be done before painting.

Surfaces of stainless steel, aluminium, bronze and machined surfaces adjacent to metal work being cleaned or painted shall be protected by effective masking or other suitable means, during the cleaning and painting operations.

### 7.3 **Application of Paints:**

All paints shall be in a thoroughly mixed condition at the time of application. All work shall be done in a workmanlike manner, leaving the finished surface free from drips, ridges, waves, laps and brush marks. All paints shall be applied under dry and dust free conditions. Unless approved by the Engineer paint shall not be applied when the temperature of the metal or the surrounding air is below 45 °F. Surfaces shall be free from moisture at the time of painting.

The first coat of paint shall be applied immediately after cleaning. When paint is applied by spraying, suitable measures shall be taken to prevent segregation of the paint in the container during painting operation. Effective means shall be adopted for removing all free oil and moisture from the air supply lines of the spraying equipment.

Each coat of the paint shall be allowed to dry or harden thoroughly before the succeeding coat is applied. Surfaces to be painted that will be inaccessible after assembly shall be completely painted prior to assembly operation.

## 8.0 **MATERIALS & WORKMANSHIP**

### 8.1 **Materials**

All materials shall be of the highest grade, free from defects and imperfections, of recent manufacture and unused, and of the classification and grades designated, conforming to the requirements of the latest issue of the appropriate specifications and standards. All materials, supplies, and articles not fabricated by the Manufacturer shall be the products of recognized reputable manufacturers.

### 8.2 **Workmanship**

All work shall be performed and completed in a thorough workmanlike manner and shall follow the best modern practice in the manufacture of high-grade machinery, notwithstanding any omissions from the Bid Documents. All work shall be performed by mechanics skilled in their various trades. All parts shall be made accurately to American Standard or other approved gage, where possible, so as to facilitate replacement and repairs. All bolts, nuts, screws, rivets, threads, pipes, gages and gears shall conform to applicable American or other approved standards.

### 8.3 **Structural Metal Work**

The fabrication of the Structural Steel shall be performed strictly in accordance with these

specifications and shall otherwise conform to the latest revision of the American Institute of Steel Construction "Specifications for the Design, Fabrication, and Erection of Structural Steel for Buildings". Surface finish shall conform to ANSI Standard B 64.1 Surface Texture. The Manufacturer shall be responsible for all errors of fabrication and for the correct fitting of the elements of the equipment. Structural Steel shall be thoroughly straightened by methods that will not result in injury. Sharp kinks or bends in members to be straightened will be cause for rejection. Completed work shall be free from kinks, bends or winds. Shearing shall be accurately done, with neat finish. Corners shall be square and true unless otherwise shown on the Drawings. Re-entrant cuts shall be made in a workmanlike manner and, where they cannot be made by shearing, a re-entrant punch may be used. Re-entrant cuts shall be filleted unless otherwise approved by the Engineer. Bends, except for minor details, shall be made with approved dies or bending rolls. Where heating is required, precautions shall be taken to avoid overheating the metal, and it shall be allowed to cool in such a manner as not to destroy the original properties of the metal. Steel with welds will not be accepted except where welding is definitely specified, called for on the Drawings, or otherwise approved. Low-carbon structural steel may be cut by machine-guided or hand-guided torches instead of shears or by saws. Flame cutting of material other than low-carbon steel shall be subject to approval and where proposed shall be definitely indicated on detailed drawings submitted to the Engineer. Where a torch is mechanically guided, no chipping or grinding will be required except where necessary to re-move the slag and sharp edges. Flame gouging will be permitted in preparation of welding where a torch is hand-guided. All cuts shall be chipped, ground or machined to sound levels.

## 9.0 **WORKS DESCRIPTION**

### 9.1 **General**

New lifts shall be installed by the Contractor at locations and in the positions in the lift wells and machine room shown on the drawing. The respective lift wells and machine room dimensions are also shown on the drawings.

Structurally the lift wells have been designed to withstand the loads normally expected for lifts of such capacity. The Contractor is recommended to provide equipment loading on the lift well and pits of each lift sufficiency in advance to ensure conformance and stability of the structure for the installation and operation of the equipment.

Any changes in the above planned lifts shaft and pit floor structure or other design details due to particular equipment requirement shall be submitted by the Contractor to the Employer/Engineer for approval within 15 days from the date of Award of the Contract. All such approved amendments shall be made by the Contractor without any additional cost

to the Employer. Similarly the lift contractor must coordinate the installation with the other trades.

The machine room of Lift is located above the lift wells with dimensions as given on the drawings. The machinery layout shall suit the machinery room orientation so as to allow easy access and sufficient space for maintenance work.

Sounds reducing materials to isolate motor set from beams and building structure, balance rotating parts to eliminate vibrations and flexible electrical conduits shall be provided. The operation of lift car and doors shall be completely free from all abnormal jerks, vibration and sound. The maximum sound level within the car must be within comfortable limits for human beings (max 45 Dba).

## 9.2 **Civil Construction**

### a) Lift Well

The lifts shall be installed in the completed lift wells of \_\_\_\_\_ dimensions as given in the following drawing:

- Drawing No. 3687/50J/TD/M001 – Passenger Lift (L-1)
- Drawing No. 3687/50J/TD/M002 – Passenger Lift (L-2)

The wells will be constructed by the Employer's Civil Contractor in reasonable plumb. Necessary door opening, block out and other provisions will be made by the Employer's Civil Contractor as per lift manufacturer's recommendation for which details will be supplied by the Contractor within fifteen days after award of Contract.

The Contractor, however, shall be responsible to carry out \_\_\_\_\_ minor correction for the purpose of installation of guides in perfect plumb and other equipment to ensure perfect installation and operation of the lifts without any cost to the Employer.

### b) Pit

The pit for the lift shall be designed as per details provided by the Contractor. The size, loads and other necessary data shall be intimated by Contractor for incorporation in civil design within 15 days after award of contract.

c) Hook/I-beam for Equipment Installation

Hook/I-beam shall be available on ceiling of the lift well to facilitate installation and maintenance of equipment. The exact location of the hooks/I-beam and any additional requirement in the lift well shall be intimated in advance within 15 days by the Contractor for incorporation in the civil works.

### 9.3 **New Lifts**

The characteristic details of the new lifts to be supplied under this contract are listed under para 10.0. The construction and functional details are given hereunder:

#### 9.3.1 **Lift Car**

a) Car Frame & Platform

The car frame, consisting of upper yoke with cross yoke side braces and bottom frame shall be made of welded or bolted steel channel sections, sufficiently rigid to withstand the operation of the safety-gear without permanent deformation of the car frame. The elevator car, platform, door operating mechanism, safety doors, maintenance station etc. shall be mounted on car frame.

The deflection of the members carrying the platform shall not exceed 1/1000 of their span under static conditions with the contract load evenly distributed over the platform.

Roller guides, mounted on car frame, shall have individual suspension to cushion jolts and minimize noise and vibration.

The platform shall be of fabricated frame of formed and structural steel shapes gusseted and rigidly welded, with provision for a floor covering as specified with the car body work. Rubber pads of sufficient size shall be provided between the car frame and the platform to provide sound and vibration isolation. The

underside of the platform will be covered with sheet steel to provide adequate fire resistance.

An aluminium sill grooved to suit door spuds shall be fitted to the platform together with a toe-guard.

The car bodywork shall be carried on the platform with the top fixing to the car frame being suitably isolated.

All auxiliary equipment shall be mounted and supported from the car frame.

b) Car Body Work

The car bodywork shall be of steel construction with provision for interchangeability of décor finishes and ceiling designs. The roof shall be constructed to withstand the weight of two men without deformation.

The car top shall have provision for emergency communication. A 3-pin socket outlet shall be fitted on top of the Lift car, besides two outdoor protected type lights one each at the bottom and top of the car operated through an MCB.

c) Finish

The car enclosure shall be as per technical data sheet under para 11. Recessed kick plate 6" high of stainless steel shall be provided on the three walls of the lift car. The floor shall be provided with sheet steel sound – isolated platform with Vinyl/PVC flooring unless otherwise specified in technical data sheet under para 11.

A6 mm thick full width safety glass mirror will be fitted between the ceiling and half height of the rear wall of the car.

Ceiling shall be of removable type with modular light fittings and emergency exit with safety switch and provision concealed type ceiling fan provision.

Handrails on three walls shall be provided with satin finish standard stainless steel hollow section. Fixing brackets shall also be in stainless steel.

The design and finish of car interior together with suspended ceiling, light fittings, floor covering and other fittings shall be to the Engineer's approval. The Contractor shall offer various options of car finish with his bid.

d) Telephone

A telephone compartment shall be provided in each car in the front return panel above the car operating buttons. The compartment shall be provided with hinged door flush with the panel. The entire compartment and door shall be of stainless steel.

The Contractor shall also provide a telephone set in the compartment which shall be connected to the machine room. Alternatively, intercom system with speaker set shall be provided.

9.3.2 **Doors**

a) Landing Doors

Each landing shall be provided with two panel center opening doors unless otherwise specified in technical data sheet under para 11. The doors, frames and architraves (if applicable) shall be made of stainless steel in satin finish. The door panels shall have a fire resistance rating of at least one hour. The panels shall be interconnected by a maintenance - free self-tensioning synchronizing wire rope.

Each landing shall be equipped with a toe-guard apron at the hoist way entrance side. The toe-guard apron shall be of sheet steel not less than 16 gauge thick, and shall extend not less than 50mm beyond the entrance jamb at each side. Toe-guard apron shall be approximately 2 feet deep, adequately fastened and braced, the lower edge turned inward.

The frames shall be of 12-14 SWG (min.) and panels fascia, toe-guards, dust and hanger covers shall be of 16 SWG. All other features not covered above shall be similar to that specified under Car Doors.

Each landing entrance shall be equipped with an approved type factory tested interlock as required by the code. The interlock shall be designed to prevent moving of the car away from the landing until the doors are locked in the closed position as defined by code and shall prevent opening of the doors at any landing from the corridor side unless the car is at rest at that landing or is in the leveling zone and stopping at that landing.

Landing door unlocking device as specified by the ANSI A17.1 or B.S. 5655: part 1 Code shall be provided to permit authorized persons to gain access to hoist way when Lift car is away from the landing.

Each Landing door or door panel shall be furnished with sheave type two-point suspension hangers and tracks complete in all respects. The sheaves shall have polyurethane tires with ball bearings sealed and lubricated for life. Hangers shall be provided with an adjustable slide to take the up-thrust of the doors. Tracks shall be of cold drawn steel shapes with smooth surface and shaped to conform to the hanger sheaves. Tracks shall be removable for replacement.

b) Car Doors

The car doors shall be two panel center-opening type unless otherwise specified in technical data sheet under para 11. The door-gear shall be operated by VVVF AC drive. The door gear shall be built-in unit with the car door top track support, mounted on the car entrance column extensions.

A retractable car door coupling shall be provided to connect the car and landing doors to eliminate any backlash and ensure complete door synchronization.

The car doors, frame and front shall be of stainless steel (satin finish) with panel construction and other features such as fire rating, etc. similar to the Landing Doors.

The door panels shall be suspended from sheave hangers with polyurethane tires and sheaves running on a polished steel track, and guided at the bottom by non-metallic shoes sliding in an extruded aluminium threshold groove.

If the car is stationary at floor level with the doors closed, it shall be possible to open the car doors from inside the car by pushing the car door in the opening direction. To open the doors from the landings, the triangular key must be used.

c) Door Safety Devices

i) *Full Width Light Curtain*

The car doors shall be fitted with light barrier system extending from 25mm above floor level up to a height of 1600mm, operating between car and landing doors. The barrier system shall comprise of a transmitter and a receiver strip containing several pairs of transmitters & receivers generating a large number of invisible light rays. In case if any one of these rays is interrupted, the control unit immediately reverses the door motion. The light curtain shall recalibrate itself at regular interval to update its scanning cycle.

In addition to above, the car doors shall be provided with an additional safety such as Door closing force limiting device or photoelectric beam etc. to maintain operational safety in case of failure of the main light barrier system.

ii) *Door Open Timing Feature*

The door operation shall also have door open timing feature operation in conjunction with light rays to provide adjustable, reduced, hold open time once rays are broken and re-established. In the event rays are broken beyond an adjustable time, a buzzer shall sound and doors to close at reduced speed.

d) Door Operator

A variable frequency controlled variable speed door operating unit capable of opening and closing car and landing doors simultaneously shall be mounted on the car frame independent of the car bodywork. The mechanism shall be designed to achieve smooth acceleration and retardation of doors without the use of dashpots. All pivot and bearing points shall be of steel and nylon or bronze bushed pins, ball or roller bearings suitably lubricated shall be fitted.

The driving mechanism shall be designed such that:

The closing force applied to the doors shall meet the requirements of B.S. 5655: Part I.

The car doors can be opened by hand in the event of a mains failure.

The motion of the doors will be reversed if they meet an obstruction. An AC motor with VVVF drive to provide variable speed shall be provided to obtain the performance required by the control system.

Mechanical Control Station, carrying controls and equipment as specified in B.S. 5655 shall be fitted on the top of the operator.

### 9.3.3 Machine Room Equipment

#### a) General

##### i) *Arrangement*

The hoisting machines over hoist way shall be placed on steel beams, which shall be provided by the Contractor for placing over concrete foundations as per Engineer's approval. Anchor bolts, templates, inserts, signal boxes, and sleeves for installation shall be furnished by the Contractor.

##### ii) *Identification*

Each hoisting machine and corresponding controller shall be numbered with 100mm high numerals giving lift numbers.

##### iii) *Sound Control*

Sound reducing buffers of elastic material shall be provided under the base of the hoisting machines to isolate sound and vibrations from the building structure. The rotating parts shall be dynamically balanced to eliminate vibration. The conduit to controller frames, starter frame and machinery with flexible connection shall be suitably fastened.

b) Hoisting Machines

i) *Gearless Drive*

The hoisting machine shall be of the permanent magnet gearless drive with motor, brake and other integral parts mounted as one assembly on steel bed plates so that proper alignment of these parts is maintained under all conditions.

Means shall be provided on all lift machines to enable the lift cars to be raised or lowered in an emergency by manual operation. The direction of winding corresponding to the raising and lowering of the lift car shall be clearly indicated.

Manual operation shall be by a smooth-rimmed detachable, spokeless wheel fitted to the shaft.

ii) *Brakes*

The brake shall be spring actuated, electrically released and of adequate proportions for the duty involved and fitted with two self-aligning shoes actuated by compression springs.

The brake shall be instantly and automatically applied in the event of interruption of the power supply and in case of rope damage.

The brake shall be capable of bringing the car to rest smoothly, under maximum conditions of load and speed, and capable of sustaining static load of 150% of the contract load.

iii) *Motor*

The variable voltage variable frequency (VVVF), motor specially designed to meet all lift duty requirements shall have a duty cycle rating of a minimum of 180 starts per hour. The motor speed shall have controls to allow smooth transition between acceleration and deceleration phase. The motor shall be capable of stable operation at all speeds up to the stated maximum and no abrupt speed change shall be permitted. It shall have a drip proof enclosure and may be force ventilated.

The drive motor shall be rated to provide sufficient power to accelerate the elevator to full speed in the shortest period while maintaining passenger comfort.

The power system shall incorporate solid state equipment controlling the speed of the lift motor. Smooth performance with step-less acceleration and deceleration are to be provided with a leveling accuracy of  $\pm 0.25''$  and the final stop at floor level is to be achieved dynamically after which the machine brake shall be applied to hold the lift car stationary.

#### 9.3.4 Hoist way Equipment

##### a) Suspension Ropes

Suspension ropes of high grade steel, specially designed for lift duty shall be provided in conformity with the requirements of BS EN 12385-5. The material of the rope shall conform to BS EN 10264-1. It shall be free from loose wires, distorted strands or other irregularities. All rope terminals shall comply with B.S. 461. Independent adjustment shall be provided for each rope.

The length of each rope shall be so adjusted that it loses traction with sheave when the counter-weight touches its buffers.

An automatic device shall be provided for equalizing the tensions of suspension ropes at least at one of their ends.

##### b) Guides, Fixings and Inserts

The guides shall consist of high quality 'T' section steel of adequate strength and dimensions suitable for travel, car weight, speed and lift capacity. Guiding surfaces shall be accurately machined. The joints shall be spigotted and joined by machined steel finish plates.

Guides shall be of sufficient length to prevent any of the car or counterweight shoes from running off the guides.

All guides are to be securely fixed to the walls of the lift well by steel brackets bolted to metal inserts or by other approved means. Ragbolts shall not be permitted. All metal inserts, fixings, guide rails, anchor bolts etc. shall be provided by the lift Contractor.

Guides shall be so jointed and fixed to their brackets that they do not deflect by more than 3mm under normal operation.

Guides and their fixing shall withstand the application of the safety-gear without permanent deformation when stopping a fully laden car or the counterweight.

c) Counterweight

A counterweight equal in weight to the car plus 40% to 50% of the specified load shall be provided to each lift. Structural Steel frame shall support requisite number of cast iron weights. It shall be fitted with guide shoes and suspension arrangements and accessories suitable for specified lift capacity.

Car and counterweight are to be fitted with roller guide shoes unless otherwise specified in technical data sheet under para 11.

d) Safety Gear and Governor

A friction type progressive safety gear actuated by centrifugal over speed governor shall be securely bolted to the car frame under the car platform.

The governor wire rope operating the safety gear mechanism shall not be less than 8mm diameter.

The tension weight fitted with an electrical safety device shall be provided to cause the hoist motor to stop should the governor rope break or slacken.

The governor shall be fitted with a direct driven unit to relay to the control system both the speed and position of the lift in shaft.

The governor shall be equipped with two electrical switches, preset to operate progressively in case of over speeding to reduce the lift speed in the first stage and if the lift speed is not brought under control, operate to cut of power supply to the hoist machine and apply brakes.

If the car continues to travel downwards at excessive overspeed, the mechanical trip shall operate causing the governor jaws to grip the rope to bring the safety gear mechanism into operation causing the jaws to grip the guide rails equally through self-aligning friction shoes thus bringing the car to rest gradually and smoothly. The governor and safety gear shall be released by raising the car.

The governor and safety gear shall be adjusted to operate as specified by B.S. 5655.

e) Buffers

Oil buffers of spring-return type (unless otherwise stated in Technical Data sheets under Para 11) shall be supplied and installed in pit under car and counterweight for each Lift. The minimum total stroke of the buffer shall be based on the retardation of 32 feet/sec.<sup>2</sup> based on 115% contract speed. The maximum rate of retardation of the oil buffers based on 115% contract speed shall be 80.5 feet/sec.<sup>2</sup> excluding any transient declarations having duration not exceeding 0.04 sec.

The buffers shall be mounted on continuous channels securely anchored to the pit floor and fastened to the guide rails. The channels, anchors and any additional supports required for buffers shall be provided by the Contractor.

The buffers shall be fitted with means of ascertaining the correct amount of oil in the buffers.

Each buffer shall be permanently and legibly marked to indicate the type and quantity of oil to be used within the buffer.

The buffers shall be self-setting type fitted with safety device to ensure its return to their normal position after operation.

f) Final Limit Switches

The lifts shall be equipped with an automatic device arranged to bring the car to a stop at the terminal landings independent of the regular operating devices in the car. Final limit switches should stop the car and prevent normal operation should it travel beyond the normal stopping device.

Separate control devices for normal stopping and final limit switches shall conform to the requirements of BS 5655: Part I.

### 9.3.5 **Controller & Control System**

#### a) Controller

The controller shall be floor mounted, upright type enclosed in enamel finish steel cabinet with either hinged doors at the front and removable panels at back or hinged door both at front and back.

The control system shall be microprocessor based and fitted with all safety devices to protect equipment and motors from damage in the event of overload or other malfunction. Protection against phase reversal shall provided as per code.

The driving unit control module, comprising of power and command module, shall control drive performance parameters. The controller unit shall control acceleration & deceleration, speed and the jerk rates during change in acceleration or deceleration to provide stepless speed variation for maximum passenger comfort. The jerk rates shall be individually adjustable to user's satisfaction. Upon receiving signal to perform journey, the command module shall evolve optimum speed profile for each journey and trigger power module for AC/DC and DC/AC conversion for necessary drive current and voltage to obtain desired motor torque.

The controller shall control car motion on feedback from motor-mounted tachometer and operate the brakes of hoisting motor through the signals received from micro switches and load weighing devices.

The controller shall be arranged to cut off the power supply, apply the brake and bring the car to rest upon failure of operation of any of the electrical safety devices.

The controller shall meet the requirements as specified in BS 5655.

b) Control System

i) General

The design of control system shall be based on functionally arranged section modules featuring high degree of efficiency, economy of operation, adaptability to changing operating conditions, safety and reliability in operation through maintenance free electronic circuitry.

The control equipment shall be microprocessor based electronic solid state. The total system shall be designed to operate in normal machine room ambient and incorporate full protection against noise and electrical interference generated within the power section, controller and switchgear. The system design shall allow the control algorithm to be reprogrammed by software changes.

The Controller for each main bank lift shall be capable for individual lift control as well as group control. It shall be state-of-art microprocessor based controller capable of high- speed data transmission and analysis for optimization of traffic control.

All modules shall be tested at the manufacturer's works prior to installation. System component shall be subjected to environmental endurance, thermal shocks and salt spray in test chambers.

The control system for the passenger lifts shall be Group Supervisory type as per technical data sheet under para 11 with provision to operate any lift independently from the group.

ii) Group Supervisory Operational Mode

The operational mode of the Passenger Lift shall be group supervisory automatic control as specified in para 10.0 with special operation features, viz emergency operation and fireman switch.

The control system shall be provided with a parking feature, which returns the car to the main floor when there are no calls in the system.

The lift shall be provided with individual landing station and operated from interconnected landing buttons including two operating devices in the car. Single touch buttons shall be mounted at each terminal landing.

On touching car or landing buttons, (other than those for landing at which car is standing) shall start the car provided interlock circuits are established and causes car to start traveling in the direction of registered call. Car shall stop at the designated landings for which calls are registered with stops made in order in which landings are reached, irrespective of sequence in which calls are registered, provided call for a given landing is registered sufficiently in advance of arrival of car at that landing to permit stop to be made.

If there are no car calls and car starts up in response to outside landing calls, car shall proceed first to the highest down call and then reverses to collect other down calls. Up landing calls shall be collected similarly when car starts down in response to such calls. If car stops for a landing call and a car call is registered within a predetermined interval after stop for a landing corresponding to direction car was traveling, car shall proceed in the same direction regardless of other landing calls registered.

If DOWN landing buttons are touched while car is travelling up, car shall not stop at these landings, but calls remain registered. After highest car and landing calls have been answered and door interlock circuit is established, car shall reverse automatically and respond to down car and landing calls. When traveling down, car shall not respond to up landing calls, but calls shall remain registered and answered on next up trip. No double door operation shall be permitted.

iii) Load weighing

Means shall be provided for weighing passenger load. Control system shall be designed to provide dispatching in advance of normal intervals and to provide landing call by-pass when the car is filled to approximately 80% of full capacity load.

Settings shall be individually adjustable. A buzzer shall be provided to indicate overload in lift

iv) Door Operation

Doors shall open automatically when a car arrives at a terminal to permit egress of passengers. When another car is at the terminal and is loading for departure or upon expiration of a timed interval, the doors shall close until car is designated for loading. In the event a passenger has entered the elevator, the doors shall reopen upon registration of call on the car button or by pressing the door open button. If no other car is at the terminal, an arriving car shall have its doors open until the car is dispatched or expiration of a timed interval with no demand.

v) Automatic leveling

An automatic 2-way leveling device shall be provided, designed to govern the leveling of the car to within 6mm above or below the landing sill. The leveling operation shall avoid over-travel, under-travel, of the car and maintain the leveling accuracy regardless of the load in the car, direction of travel, rope slippage or stretch in ropes.

vi) Independent Operation

Controls shall be provided for operation of the lift from car buttons only. A key operated switch shall be provided in each car.

vii) Emergency Features

- 1) Emergency operation: The Lift shall be equipped with control system to operate and recall the cars in fire or other emergency conditions and to allow the lift to run on emergency power supply.

The operation of lift on emergency service shall be as follows:

- The Lift shall be operable only by a person in the car.

- Lift shall not respond to Lift corridor calls.

The opening of power operated doors shall be controlled only by buttons or switches. If the switch or button is released prior to the doors reaching the fully open position, the doors shall automatically re-close. Open doors shall be closed by either the registration of a car call or by "door close" switch or button.

Lifts shall be removed from emergency service by moving the emergency service key-operated switch in the car to the 'off' position with the car at the main floor.

- 2) Emergency Lighting and Emergency alarm unit: An emergency light shall be included for each lift car. An automatic change over switch shall be provided in the controller so that upon normal supply failure Emergency power supply shall be available for the light fixture, exhaust fan, and alarm unit.

The Contractor shall supply a suitable button in the car control station wired to a terminal box fixed in the lift shaft near the bottom floor served. A suitable alarm bell shall be provided and fixed including all necessary wiring connecting up to the terminal box.

The power for the emergency lighting, exhaust fan and alarm bell shall be from the same emergency supply consisting of rechargeable nickel cadmium battery unit with trickle charger and 10 years minimum life expectancy.

- 3) Emergency power transfer: In the event of normal power failure, adequate emergency power will be supplied through Employer furnished stand-by generator to run the Lift.

- 4) Automatic power evacuation device: In the event of normal power failure the lift shall be provided with an automatic evacuation device which will bring the lift car to stop at the next floor and open the doors.

- 5) Hand Winding System: Provision shall be made on each hoisting machine such that the lift car can be raised or lowered during emergency by manual operation.
  
- 6) Intercom: The Contractor shall install for each lift, an intercom facility with control room or at location designated by Employer for 24 hours communication.
  
- 7) Earthquake control: In the event of an earthquake, the lift facility shall be provided with a seismic detector which will bring all cars to stop at the next floor and open the doors.
  
- 8) Fireman Switch: A fireman switch shall be provided in the ground floor lift lobby. In the event of fire & upon manual actuation of the fireman switch, all the registered calls shall be cancelled and shall stop at the designated parking floor and open the doors.

The emergency alarm unit shall also sound once the fireman switch is actuated.

#### 9.3.6 Signals & Fixtures

a) Integrated Hall Indicator

An integrated hall indicator consisting of digital car position indicator (revealing floor position of car) and illuminated or digitalized arrows indicating the arrival and departing direction, as determined by the control system shall be installed for each individual lift and at each landing. A two tone electronic gong shall also be provided for audible announcement of the arrival of the lift car.

b) Landing Call Station

Landing call station fitted with call buttons shall be installed at each landing. It shall be designed for mounting on the landing door frame or on adjacent side wall, subject to Engineers' approval.

The call buttons shall be of micro-movement type, constructed of stainless steel pressel suitable for long arduous duty. The translucent surround of the button shall illuminate to indicate acceptance of call signal. The pressel shall incorporate two light emitting diodes. The pressels shall be mounted flush with the faceplate. The faceplate shall be of stainless steel 2mm thick, fixed with tamper resistant screw.

The call buttons of each landing station shall be inter-linked such that with the pressing of call button of any lift, call buttons of lifts in the same direction shall light up and record the call.

c) Car Station

The car station shall be integral with the front return of the car and constructed from 1.6mm thick stainless steel, plate of natural satin finish.

The hinged full height front panel of the car station shall carry the controls and indicators. The panel shall be fitted with a secret release, which can only be opened from the back of the trough. When the hinged panel is opened an isolate/normal switch shall be available.

The car-operating panel shall contain at least the following controls:

- Alarm button
- One floor button for each floor served
- Open door button/hold on button
- Key operated car independent service switch
- Key operated fan switch
- Digital car position indicator and direction arrows

All buttons shall be set flush with the panel surface for maximum resistance against abuse. When operated, a LED illuminated halo shall surround the buttons thereby informing that the call has been registered. The buttons shall be plastic pressel engraved with the appropriate floor marking.

COP shall be equipped with car call cancellation feature. This feature should allow cancellation of an incorrect registered car call by pressing the floor button twice.

The digital car position indicator and direction arrows shall be positioned above the buttons.

### 9.3.7 Power Supply & Electrical Installations

#### a) General

The power supply at load break switch will be available in the Lift machine room. All further wiring, controls and providing proper distribution boards, along with necessary material and accessories beyond the power supply points shall be supplied and installed by the Contractor. The electrical installation and appliances shall comply with B.S. 5655: Part I.

#### b) Wiring Installation

All wiring shall be carried out in accordance with the IEE regulation, NEC standard and B.S.S. wherever applicable.

All cables shall be PVC insulated, and if required PVC sheathed also, single or multi-core having tinned copper conductors. Cables for different voltage circuits which are run together must have the insulation rating, suitable for the highest voltage present. Wherever cables are subjected to high temperature such as termination to car light, it shall be protected by suitable heat resistant sleeve. At all terminations, cable ends shall have numbered ferrule to match with the mark on respective component and control drawings. All wiring shall be continuous between terminations.

Travelling cables between the lift well and lift car terminal boxes shall be suspended by looping over reels or by suitable clamps. The connections in the terminal boxes shall be marked for identification purposes.

Travelling flexible cables shall be fire resistant and shall comply with B.S. 6977:

#### c) Trunking and Conduits

All wiring from machine room to motor controls at each floor and to other circuits shall either be run in 16 SWG galvanized steel conduit or trunking, the selection and route of which shall depend on the number of cables and ease of installation and maintenance. If trunking is installed it shall have removable covers, and the trunking finished in dark grey enamel as per B.S. 381C. Fixing arrangements of

conduit of trunking shall be vibration proof suitable for the existing conditions. All connections from trunking or conduits to motors or other equipment subjected to vibration shall be with flexible galvanized steel conduit. All trunking and conduit shall be continuous through out the length to ensure good earth continuity.

d) Earthing

Earthing of all equipment and metal work which can be subjected to dangerous voltage under normal operating and fault conditions shall be earthed in accordance with NEC Standard. One PVC insulated earth conductor of suitable size having yellow colour with green tracer shall be run along the trunking or conduit as main earth. All branch circuits in conduit or trunking and other metal work shall have branch earthing cable connected to main earth. All length of trunking shall also be bonded to main earth.

e) Testing

Testing of electrical installations shall be carried out to the satisfaction of the Engineer in accordance with standard practice and recognized international standards/codes.

**9.3.8 Local Materials**

a) Pit Access Ladder

Rugged steel ladders for easy access to the pits shall be provided by the lift Contractor in all pits.

b) Pit Screen

A suitable rigid steel screen shall be provided and fixed by the Lift Contractor at the bottom of the lift well where the counter-weight comes down on its buffers and between lifts. The screen shall have a minimum height of 7 ft. as per code requirements.

c) Separator Beams & Well Trimming Girders

Properly designed separator beams and trimming girders shall be supplied and installed at proper location in Lift well by the lift contractor to suit fixing requirement of offered lift. The separator beams and trimming girders installed in

lift shall be of at least 200mm rolled I-beams of prime quality structural steel (ASTM A-36 or equivalent).

d) Trap Door

The Contractor shall provide and install the trap doors of rugged construction in the machine rooms at location shown on relevant drawing to enable access of the hoisting machinery into the machine rooms. The trap door shall be strong enough to temporarily withstand/support heavy machinery. It shall be installed flush with the finished floor when closed and be lockable only from inside the machine room.

The Contractor shall include the above items in his bid price for the lifts.

## 10.0 TECHNICAL DATA

### 1a) Passenger Lift (L-1) for Academic Building

S. No	Description	Required
01	Capacity	630 Kg / 8 persons
02	Travel Height	18.90 m (62'-0")
03	No. of Stops/Openings	6 / 6 (G + 5 upper floors)
04	Lift Speed	1.0 m/sec
05	Internal Car Sizes	1600 x 1400 x 2300 mm (W x D x H)
06	Machine Type	Rail Mounting Traction System / Gear less Type VVVF (Machine Room Less Type)
07	Car & Counterweight Guide Shoes	Sliding guide shoes
08	Drive Location	Wall Mounted Type (Machine Room Less Type)
09	Control System	Simplex selective collective
10	Jambs	Narrow jambs with steel bars for fixing jambs
11	Pit Depth	Upto max1525 mm (5'-0")

12	Head Room	3500 mm (11'-4") or as per existing lift shaft condition
13	Buffers	Oil buffers of spring return type
14	Door Size	850 x 2100 mm (Side Opening Type) As per Existing Door Opening size
15	Door Operation & Type	Power operated, 2 panels Side opening, with stainless steel construction, etching finish (as per engineer instructions) and fire rating of 1 hr.
16	Indicators	- Digital car position indicator on each landing with direction arrows.  - Digital position indicator inside car with direction arrows.  - Two tone electronic gong announcing arrival of car.
17	Landing Call Station	- Raised, micro-movement button with call acceptance illuminated indications
18	Car Station	- Integral with the front return of the car and constructed of stainless steel.  - It shall include alarm buttons, floor call buttons, door open/hold button, key-operated attendant switch, fan switch.

19	Car Design	<ul style="list-style-type: none"> <li>- Side and rear walls of stainless steel (hairline finish) construction.</li>   <li>- Front return and car door of stainless steel (hairline finish) construction</li>   <li>- Ceiling grid with modular light fittings (as per Engineer instructions)</li>   <li>- Fan/blower</li>   <li>- Handrails on three sides</li>   <li>- Full width and half height mirror at rear wall.</li>   <li>- PVC/Vinyl flooring of approved colour &amp; design by Engineer</li>   <li>- Hand set free telephone/intercom system</li>   <li>- Emergency exit in ceiling with safety switch.</li>   <li>- Load measuring device with overload buzzer and inter-lock till overload is removed.</li> </ul>
20	Door Safety Devices	<ul style="list-style-type: none"> <li>- Full height Light curtain protection</li>   <li>- Door opening timing feature</li> </ul>
21	Special Features	<ul style="list-style-type: none"> <li>- Attendant control</li> </ul>

		<ul style="list-style-type: none"> <li>- Emergency operation and fireman switch.</li> <li>- Emergency lighting &amp; alarm unit.</li> <li>- Earthquake control system</li> <li>- Automatic power evacuation device</li> <li>- Automatic Parking</li> <li>- Voice guidance system</li> <li>- Car call cancellation feature</li> <li>- Manual Hand winding System</li> <li>- Full load by-pass</li> <li>- Suitability for 40°C ambient temperature</li> <li>- Phase reversal failure indication &amp; interlock</li> </ul>
22	Power Supply	<ul style="list-style-type: none"> <li>- 3 Phase / 400V / 50 Hz.</li> <li>- 1Phase/230V/50 Hz. (for lighting)</li> </ul>

**1b) Passenger Lift (L-2) for PDC Building**

<b>S. No</b>	<b>Description</b>	<b>Required</b>
01	Capacity	630 Kg / 8 persons
02	Travel Height	12.80 m (42'-0")
03	No. of Stops/Openings	3 / 3 (G + 3 upper floors)
04	Lift Speed	1.0 m/sec
05	Internal Car Sizes	1100 x 1400 x 2200mm (W x D x H)
06	Machine Type	Rail Mounting Traction System / Gear less Type VVVF (Machine Room Less Type)
07	Car & Counterweight Guide Shoes	Sliding guide shoes
08	Drive Location	Wall Mounted Type (Machine Room Less Type)
09	Control System	Simplex selective collective
10	Jambs	Narrow jambs with steel bars for fixing jambs
11	Pit Depth	Upto max1525 mm (5'-0")
12	Head Room	3500 mm (11'-4") or as per existing lift shaft condition

13	Buffers	Oil buffers of spring return type
14	Door Size	1000 x 2100 mm (Centre Opening Type) As per Existing Door Opening size
15	Door Operation & Type	Power operated, 2 panels Centre opening, with stainless steel construction, etching finish (as per engineer instructions) and fire rating of 1 hr.
16	Indicators	<ul style="list-style-type: none"> <li>- Digital car position indicator on each landing with direction arrows.</li> <li>- Digital position indicator inside car with direction arrows.</li> <li>- Two tone electronic gong announcing arrival of car.</li> </ul>
17	Landing Call Station	- Raised, micro-movement button with call acceptance illuminated indications
18	Car Station	<ul style="list-style-type: none"> <li>- Integral with the front return of the car and constructed of stainless steel.</li> <li>- It shall include alarm buttons, floor call buttons, door open/hold button, key-operated attendant switch, fan switch.</li> </ul>

19	Car Design	<ul style="list-style-type: none"> <li>- Side and rear walls of stainless steel (hairline finish) construction.</li> <li>- Front return and car door of stainless steel (hairline finish) construction</li> <li>- Ceiling grid with modular LED light fittings</li> <li>- Fan/blower</li> <li>- Handrails on three sides</li> <li>- Full width and half height mirror at rear wall.</li> <li>- PVC / Vinyl flooring of approved design and colour.</li> <li>- Hand set free telephone/intercom system</li> <li>- Emergency exit in ceiling with safety switch.</li> <li>- Load measuring device with overload buzzer and inter-lock till overload is removed.</li> </ul>
20	Door Safety Devices	<ul style="list-style-type: none"> <li>- Full height Light curtain protection</li> <li>- Door opening timing feature</li> </ul>
21	Special Features	<ul style="list-style-type: none"> <li>- Attendant control</li> <li>- Emergency operation and fireman switch.</li> </ul>

		<ul style="list-style-type: none"> <li>- Emergency lighting &amp; alarm unit.</li> <li>- Earthquake control system</li> <li>- Automatic power evacuation device</li> <li>- Automatic Parking</li> <li>- Voice guidance system</li> <li>- Car call cancellation feature</li> <li>- Manual Hand winding System</li> <li>- Full load by-pass</li> <li>- Suitability for 40°C ambient temperature</li> <li>- Phase reversal failure indication &amp; interlock</li> </ul>
22	Power Supply	<ul style="list-style-type: none"> <li>- 3 Phase / 400V / 50 Hz.</li> <li>- 1Phase/230V/50 Hz. (for lighting)</li> </ul>

NOTE:

- i) Bidder is advised to visit the site to check as built dimensions of lift shafts, overhead and pit and confirm in his Bid that offered lifts will suit to as built dimensions.

ii) All leaflets properly signed/stamped in original to be submitted for the equipment including drive, controls, car design, doors & architrave, indicators landing and car station, safety devices etc. being offered.

iii) Ceiling type, handrails type, buttons type and other finishes and fixtures will be selected by the Engineer.

## 11.0 **INSTALLATION**

### **A. General**

The installation of lift equipment including its electrical installations shall comply with applicable standards, manufacturers' instructions and recommendations. Electrical work required during installation shall comply with NFPA 70 or approved equivalent.

The scope of installation and civil works shall include the following:

- Providing and/or cutting all necessary holes, chases and openings and making good after installation of equipment.
  
- Supplying and fixing all supports, beams, ladders etc. necessary for the installation of the machinery, guide brackets, doors, buffers etc.
  
- Furnishing all necessary cement and/or concrete for 'grouting-in' brackets, bolts, etc.
  
- Providing and fixing suitable scaffolding and protection of work in progress.

### **B. Welded Construction**

Welded construction shall be provided for installation of Lifts wherever bolted connections are not required for subsequent removal or for normal operation, adjustment, inspection, maintenance, or replacement of worn parts. Welding workmanship and qualification of welding operators shall comply with American Welding Society (AWS) standards or approved equivalent.

### **C. Sound Isolation**

Rotating and vibrating Lift equipment and components shall be mounted on vibration - absorption mounts designed to effectively prevent the transmission of vibrations of the structure, and thereby eliminate the sources of structure - borne noise.

**D. Lubrication**

Operating parts of the system including ropes, guides, etc., shall be lubricated as per manufacturer's recommendation.

**E. Alignment**

Proper co-ordination of installation of hoistway entrances with the installation of elevators' guide rails shall be done for accurate alignment of entrances. Wherever possible the final adjustment of sills and doors shall be delayed until the car is operable in the shaft. The clearance shall be reduced to minimum, safe, workable dimensions at each landing.

**F. Sills**

Sill unit shall be set at each floor landing accurately aligned, slightly above structural floor, to suit level of scheduled floor finish.

**G. Painting, Retouching & Re-finishing**

After completion of installation and testing to the satisfaction of the Engineer-in-Charge, the Contractor shall carryout all finishing, retouching and refinishing operation on the entire equipment accessories and installation matching the original finish in an approved way. All auxiliary works carried out by the Contractor as the finished installation shall also be painted in the approved standard after applying anticorrosive base.

**12.0 TESTING AND INSPECTION REQUIREMENTS**

The Contractor shall submit separate list of shop tests, to be conducted prior to shipment and field tests after installation prior to commissioning.

Testing after installation shall be carried out for each lift before it is put into normal service in accordance with B.S. 5655 Part 10 and appropriate certificate shall be completed. The tests shall include but be not limited to the following:

- Functioning of all system and devices
- Operational test of all safeties
- Protection against false signals
- Earth fault test on cable/controller & switch gears
- Insulation resistance test for cables

A thorough inspection of all equipment shall also be under taken at this stage and appropriate certificate shall be completed.

Lift shall be periodically re-examined during defect liability period and at the end of guarantee/defect liability period appropriate certificate shall be completed to assess operational performance.

All equipment and personnel required to complete testing and inspection shall be provided by the Contractor. All erection work and tests shall be performed by the Contractor's erectors who shall be suitably qualified and experienced persons to the satisfaction of the Engineer.

## 13.0 MEASUREMENT AND PAYMENT

### A. General

Except otherwise specified herein or elsewhere in the Contract Document, no separate measurement and payment will be made for the under mentioned works related to the relevant item of the Schedule of Prices. The cost thereof shall be deemed to have been included in the quoted unit rates of the respective items of the Schedule of Prices.

- a) Designing of Lifts and submission of manufacturer's data, specification, diagram and drawings, installation, operation and maintenance manuals etc.
- b) Painting and finishes of equipment.

- c) Supply of accessories including supports, brackets, trimming girders, separator beams, pit access ladder, pit screen, trap door, installation equipment, miscellaneous tools, winches, scaffolding, etc., required for proper erection of Lifts as recommended by the manufacturer.
- d) Handling and proper storage of equipment prior to installation.
- e) Supply of tools and special tools.
- f) Pre-shipment inspection [where applicable] of complete equipment at its point of original manufacturer before its packing & dispatch to site.
- g) Provision of necessary guidance and supervision for the Civil works to the Civil Contractor, which will be carried out for lift installation.
- h) Rectification of any damage done to the Civil works for erection or other purposes.
- i) Testing and commissioning of lifts after installation including supply of requisite manpower and testing tools/instruments and completion of documentation.
- j) Training of Employer's personnel for operation and maintenance of equipment.
- k) Maintenance of the work during defect liability period including supply of necessary spares/other material and maintenance personnel needed to keep the Lifts in perfect operating condition.

**B. Measurement**

Measurement shall be made for the total number of completed units as given in Schedule of Prices acceptably supplied and installed by the Contractor.

**C. Payment**

Payment shall be made at the contract rate entered in the Schedule of Prices for the items accepted by the Engineer.

## SECTION – 8530-29

### SPECIAL PROVISIONS

#### 01. SCOPE OF WORK

The scope of work given in relevant sections of equipment shall include but not necessarily be limited to the following:

- Design, preparation of all relevant installation / erection drawings, obtaining government and/or Employer' required approvals and/or certificates, fabrication, installation, testing, commissioning, and maintenance thereafter for the stipulated period of equipment including training of Employer's staff.
- All wiring and controls including necessary material and accessories beyond the power supply point provided at the load break switch near the equipment.
- All other miscellaneous equipment and/or work required to render the equipment ready for continuous, safe and efficient operation.
- Cutting, patching and repairing of damaged civil works required during installation of equipment.
- Inspection of already constructed related civil works immediately after award of work and confirmation of it's suitability for the equipment.
- Maintenance and periodic servicing of equipment during defects liability period (i.e 365 days) including greasing, oiling, cleaning etc. of parts as recommended by the manufacturer.

- Provide all required installation, operation and maintenance manuals, spares lists, drawings and diagrams, inspection test certificates and submission of misc. requisite documentation.
- Providing training to Employer's Staff at site regarding operation and maintenance of the equipment.

**During Maintenance & Repair Services Period of (Two years after Defect liability period of 365 days**

- The contractor shall Maintain & Service both new lifts (L1 & L2) after defect liability period for Two (02) years and shall execute all such work for repair, rectification, parts replacement, general maintenance, complete over hauling and make good any defects occurring during Two (02) years period.
- The contractor shall furnish all erection equipment, miscellaneous tools and material etc necessary for operation and maintenance works.
- The contractor shall also maintain all lifts during defect liability period and shall supply all necessary spare parts / accessories / other material and provide technical staff and mechanic required for maintenance and repair . The said staff shall also be made available during overtime in case of emergency as and when required by the Employer.
- One Sr. Engineer should also be available on call in case of major break down and will attend site within one hour and rectify the defect.
- The contractor shall furnish all erection equipment, miscellaneous tools and material etc necessary for operation and maintenance works.
- No separate payment will be made for the above mentioned maintenance works and services. The cost thereof shall be deemed to have been included in the quoted rates of the respective item of the schedule of prices.

**02. CODES AND STANDARDS**

All equipment & materials under this works shall be furnished in conformity with latest edition of applicable standards of ASME, BS, AWS, NFPA, ASTM, NEMA, IEE, etc. and

applicable Government and Local Codes governing the same. In case of conflict, the stricter requirements shown/specified shall govern. All equipments shall be rated and tested as per relevant standard (latest edition).

Where possible, the same codes and standards shall be used throughout a particular facility. However, the final decision on with codes and standards shall be applied shall remain with the Engineer.

Abbreviation for codes and standards referred in the contract are as under:

- ASME                      American Society of Mechanical Engineers, USA
- BS/EN                     British Standards / European Norms
- AWS                        American Welding Society
- NFPA                       National Fire Protection Association
- ASTM                      American Society for Testing and Materials, USA
- NEMA                      National Electrical Manufacturer's Association
- IEE                         Institute of Electrical Engineers, London

03.    **[NOT USED]**

04.    **PRODUCT HANDLING AND STORAGE**

It will be the Contractor's entire responsibility to ensure that all necessary precautions are taken during transportation to avoid damage to any of the equipment.

The Contractor must arrange with the supplier of mechanical equipment, well in advance, that there is sufficient clear and load bearing passage at site to be used for shipping the equipment to the installation place. The Contractor shall also liaise with the equipment supplier with regard to adequate openings and lifting points.

Specific handling or storage requirements will be dealt with in the relevant parts of the specifications, where necessary.

## 05. **INSPECTION AND CONTROL**

### 5.1 **General**

The Contractor shall ensure that the manufacturer continuously conducts his own thorough inspections of all equipment during manufacturing and installation.

The Engineer shall have the power at any time to inspect, examine and test any part of the works, or any materials or plant intended to be used in the works, either on the site or at any factory or workshop where such parts, materials or plant are being constructed, manufactured or from which they are being obtained.

### 5.2 **[Not Used]**

### 5.3 **Inspection at Site Works**

All equipment/materials supplied by the Contractor shall be inspected by the Engineer after delivery of the same at site to assess any damage or short of quantities and any other requirements of the specifications. The Engineer will issue an inspection certificate if the supplied items of equipment and material are found to be satisfactory.

The Engineer shall inspect the works in progress as and when considered necessary by the Engineer and the Contractor shall provide full access and assistance to the Engineer for carrying out inspection to verify the conformity of

works as shown on Drawings and as specified. Such inspection if made shall not relieve the Contractor from any obligations under the Contract.

#### **5.4 Damages, During Transportation, Storage & Installation**

The Contractor shall be responsible for any damage of the Equipment/material during transportation to site (if applicable), storage and installation until satisfactory handing over the works to the Employer. The Contractor shall replace any damaged equipment/materials at his own cost.

### **06. DRAWINGS AND SUBMITTALS**

In general, the following submittals are required for the works covered under this section. However, the final decision with regard to what should be submitted, to what extent and at which time of the contract period shall remain entirely with the Engineer.

#### **6.1 Technical Data Sheets**

All Bidders are required to submit with their Bid submission the completed Data Sheets along with a comprehensive range of technical literature, drawings and brochures/catalogues to show that their equipment is of a standard make and complies with the laid down specifications.

All Bidders are required to adopt great care when filling in the characteristic data of their equipment. The data sheets will be used for evaluating the Bid and will subsequently form part of the contract documents. Failing to submit the completed data sheets and the technical literature may result in the rejection of the Bid.

#### **6.2 Outline Drawings**

The Contractor must submit with his Bid submission outline drawings showing the arrangement of the equipment and the relevant electrical installations offered by him.

The drawings must be prepared keeping the dimensions shown on the architectural and mechanical drawings in mind.

The Out-line drawings will constitute part of the Bid evaluation.

### **6.3 Design Drawings/Shop Drawings**

The successful Bidder shall submit Design Drawings/Shop Drawings within two (2) weeks from acceptance of Bid to the Engineer for approval.

The drawings must show in reasonable detail installation and design features such as:

- i. Final arrangement of equipment keeping in view the dimensions provided in architectural drawings for civil construction of the Equipment.
- ii. Maximum dynamic and static loads imposed on building structures
- iii. Dimensions and locations of all services, openings in floors and walls, location of embedded parts and location of Employers furnished electrical connection.
- iv. The contractor shall review the civil construction drawings related to the equipment and identify any shortcomings/rectifications essentially required for equipment installation within above stipulated time period.
- v. Wiring and control logic diagrams.
- vi. All other relevant information required by the Engineer.

Approval given by the Engineer is to be understood as an approval to proceed with the works. The approval does not in any way release the Contractor from his contractual obligation to supply, install and maintain the equipment supplied by him as laid down in the specifications.

### **6.4 As-Installed Drawings**

Such drawings, diagrams and schedules as will, in the opinion of the Engineer, provide an adequate record of the work "as installed" shall be submitted to the Engineer for approval before the issue/taking over certificate.

The drawings shall include particulars of all items of equipment, including wiring diagrams, etc. As-installed drawings shall be submitted to the Engineer at least 30 days before issue/taking over certificate.

The size of the drawings shall be minimum A1 size. Every item and dimensions in drawings must be legible.

## **6.5 Installation, Operating and Maintenance Manuals**

Two sets of installation manual for the equipments shall be supplied by the Contractor prior to commencement of installation of equipment.

At least 30 days prior to the scheduled date of practical completion, the contractor shall supply a complete set of operating and maintenance manuals to the Engineer for approval. Once approved, the Contractor shall proceed to prepare and hand to the Engineer four sets of the approved operating and maintenance manuals.

The manuals shall be neatly bound and provided with a suitably captioned hard cover. The contents shall be generally arranged in the following manner unless otherwise specified/required.

- Index
  
- General description of the complete facility.
  
- Operating instruction of the complete facility.
  
- Emergency directions of the complete facility.

- Safety control adjustment and settings of all safety protection equipment.
  
- List of equipment giving manufacturer's and agents' name, and name plate data together with all data sheets published by the equipment manufacturer.
  
- Installation, operating and maintenance instructions for each item of equipment (including lubricating charts).
  
- List of spare parts for each item of equipment as recommended by the manufacturer.
  
- List of essential tools recommended by the manufacturer for operation and maintenance.
  
- As-installed drawings.

All above submission shall be signed and stamped by the Contractor prior to submission and all submission shall be in English. The approval by the Engineer of the above submission shall not be held to relieve the Contractor of any part of his responsibility to meet all of the requirements of this Contract.

## **07. OPERATION AND MAINTENANCE**

### **7.1 Maintenance During Defects Liability Period**

The Contractor shall include the maintenance and guarantees of the whole of the Contract Works as laid down in the General and Special Conditions. During this term, the Contractor shall remedy and/or replace all defective parts or items and correct any omissions certified by the Engineer.

The Contractor will also be held liable for any costs of dismantling or re-erection which may have to be undertaken in order to replace defective parts. The cost of spare parts and other material and labor shall be included in quoted price of Lift.

Continuous service shall be provided on a routine weekly basis. Emergency service shall be available on short notice.

Service shall be performed by skilled personnel under the supervision of an experienced supervisor.

The maintenance shall include and the Contractor will be held liable for any costs of inspection of all equipment, lubrication of all bearings, supply of all consumables, supply of necessary oil & grease, supply of cotton waste, running adjustments and keeping the installation and equipment in a clean condition unless otherwise specified/required by the Engineer.

## **7.2 Register Of Service And Maintenance**

The Contractor shall provide a register of service and maintenance for the installation. Where such requirements are specially required by any regulation of authorities having relevant jurisdiction over this contract work this shall be complied with strictly.

The Contractor shall also provide and maintain a record of all services, maintenance and repair work carried out in detail. Such record shall be prepared in duplicate and should be in the form of a maintenance/repair sheet with one copy to be retained by the Engineer upon the execution of such services.

All registers and records shall be kept by competent persons in the employment of the Contractor during the period for which he is responsible for maintaining the installation.

## **08. TOOLS & INSTRUMENTS FOR SERVICING AND MAINTENANCE**

The Contractor shall supply and deliver to site a complete set of essential tools and other instruments necessary for proper servicing and maintenance of the equipments. Tools shall not include special tools and instruments, which are necessary for overhauling and commissioning of the equipment. The tools shall be supplied in the form of complete kits and shall be contained in well constructed and compartmented tool boxes. The Contractor will not use these tools during installation, testing, commissioning and defect liability period.

## 8.1 SPARE PARTS

### i) Consumables

The Bidder shall provide with the Bid recommended list of consumable spares (with part number) for a minimum period of two (2) years of operational duties or otherwise as mentioned in the relevant equipment specifications. All items to be separately listed.

### ii) Normal Spare Parts

The Bidder shall provide with the Bid a recommended list of spares and components (other than the above consumables), which shall be required to maintain each equipment over a period of three (3) years of operational duties or otherwise as mentioned in the relevant equipment specifications. Each item to be separately listed.

## 09. PAINTING & FINISHES

All equipment, machinery, gears, controls, exposed and unexposed steel work shall be thoroughly cleaned, freed from oil, grease and other foreign substances detrimental to good finishing.

Apply approved primer, undercoats and finishing coats on a properly prepared surface in accordance with the paint manufacturer's recommendation and in accordance with recognized international standards.

The type and shade of paints, particularly of the finishing coat shall be subject to the Employer's/Engineer's approval.

Enamel shall also be applied according to the manufacturer's recommendation. Stainless steel finish shall be No.4 finish or equivalent, unless specified otherwise in the specification. If field touch-ups of abraded and damaged surfaces become necessary, the same type of paint used in the factory shall be employed.

## 10. TESTING AND COMMISSIONING

On the completion of the Work substantially in accordance with the Contract, the Contractor shall give the Engineer notice in writing thereof and before making the "Testing and Commissioning" shall give the Engineer and the local authority seven days notice in writing of the date on which he will make the said tests of the work in accordance with relevant codes and in the manner prescribed by the Specification.

Unless otherwise agreed, the Contractor shall commence such tests upon the date and shall carry out the same, in the presence of the Engineer or his authorized representative, whose name shall previously have been communicated in writing to the Contractor and the local authority.

If any portion of the works fails under the tests to fulfill the Contract conditions, the Contractor shall inform the Engineer thereof in writing, and tests of the faulty portions shall, if required by the Engineer be repeated within a reasonable time upon the same terms and conditions.

If the "Testing and Commissioning" is not successfully made by the Contractor within one week after the date fixed by the Contractor for the completion for operational use or for the testing of the works, the Engineer may in writing call upon the Contractor under seven days notice to make such tests, and on the expiry of such notice such tests shall forthwith be made by some other agency appointed by the Engineer at the expense of Contractor.

The Contractor shall supply all necessary utilities, labour, apparatus and instruments necessary for the prescribed tests. The accuracy of the Contractor's instruments shall be demonstrated if required.

The Contractor shall make for payment of all or any fees charged by the local authorities for the above.

Each section of the installation will be required to operate within the specified limits of its rating either continuously or intermittently as may be required without failure of any kind for a period of one year after the "Testing and Commissioning" of each section, the date of completion of the above being certified by the Engineer.

The installation will be under the charge of the Contractor during this period, at which time the Contractor shall instruct the Employer's personnel on the maintenance, servicing and trouble shooting of the various plants and system.

## **11. TEST CERTIFICATES AND REPORTS**

The Contractor shall provide copies of all test certificates/reports including the following:

- (i) Test Certificates of critical materials
- (ii) Factory test reports
- (iii) Pre-shipment test report
- (iv) Report of testing & commissioning of equipment

## **12. TRAINING**

On completion of all works, but prior to final taking over, the Contractor shall arrange for free training and instruction to be provided to the client's maintenance staff and operators. This training shall cover all aspects of the operation and maintenance of the plant/equipment and shall ensure that the trainee is provided with at least the necessary fundamentals required for the safe and efficient operation of the plant/equipment in question. The instructor(s) must be competent and experienced personnel, well acquainted with the task of lecturing. The schedule of offered training highlighting the details of syllabus indicating number of hours for training and field instruction subject to be taught and no. of Clients staff strength to be trained shall be enclosed with each Bid so as to allow for an evaluation by the Engineer.

## **13. GUARANTEE**

The Contractor shall submit two copies of written guarantee that the material and workmanship of the equipment installed is according to recognized international standards and conform to all contractual requirements of this specification that he will make good without extra cost any defects not due to ordinary wear and tear or improper

use, which may develop within one year from date of the installation being handed over to the Employer.

During the last month of the guarantee period, the Contractor shall demonstrate to the Engineer that all equipment and accessories are operating to the required specifications.

The guarantee period shall be one year after final commissioning.

In case if equipment remains out of order for more than 10 days or more, guarantee/maintenance period will be extended accordingly.

14. **MEASUREMENT AND PAYMENT**

No measurement and payment shall be made for the works involved within the scope of this section of specifications unless otherwise specifically stated in the schedule of prices or herein. The cost thereof shall be deemed to have been included in the quoted unit rate price of other items of the schedule of prices.