Summary of Contents

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

INVITATION FOR BIDS

INVITATION FOR BIDS

Date: 09-12-2014
Bid Reference No.: DD (Proc.)/MUET/JAM/-62

1. The Procuring Agency, Mehran University of Engineering and Technology, Jamshoro, invites sealed bids from interested firms or persons licensed by the Pakistan Engineering Council and duly **pre-qualified Contractors at MUET, Jamshoro, for the Electrical and Air-Conditioning Works, INTERNAL/ EXTERNAL ELECTRIFICATION, AIR-CONDITIONING SYSTEM, VOICE SYSTEM, PUBLIC ADDRESSING, VIDEO CONFERENCING SYSTEM & COMPUTER DATA SYSTEM WITH BACKUP OF UPS WORKS OF INNOVATION AND ENTREPRENEURSHIP CENTER AT M.U.E.T, JAMSHORO**, which will be completed in **18 months.**

2. A complete set of Bidding Documents may be purchased by an interested eligible bidder on submission of a written application to the office given below and upon payment of a non-refundable fee of Rupees 3000. Bidders may acquire the Bidding Documents from the Office of the Procuring Agency, at office of the Executive Engineer (Works), Mehran University of Engineering & Technology, Jamshoro. The tender will be issued between **15-12-2014 to 30-12-2014** on working days only.

3. All bids must be accompanied by a Bid Security/Earnest Money in the amount of two percentage (2%) of bid price in the form of *pay order* and shall be received in the office of Executive Engineer (Works), Mehran University of Engineering & Technology, Jamshoro upto or before 12.00 Noon, on **31-12-2014.** Bids will be opened @ 12.30 P.M on 31-12-2014 in the presence of bidders' representatives who choose to attend, at the same address. Any bid with conditional or un-accompanied of the earnest money will not be considered in the bidding process.

4. **The Procurement Agency reserves the right as per SPPRA rules to reject [illegible] any reason thereof.**

Accountant
Mehran University of Engineering & Technology Official Hyderabad

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

INSTRUCTIONS TO BIDDERS & BIDDING DATA

Notes on the Instructions to Bidders

This section of the bidding documents should provide the information necessary for bidders to prepare responsive bids, in accordance with the requirements of the Procuring Agency. It should also give information on bid submission, opening and evaluation, and on the award of contract.

Matters governing the performance of the Contract or payments under the Contract, or matters affecting the risks, rights, and obligations of the parties under the Contract are not normally included in this Section, but rather in the appropriate sections of the *Conditions of Contract* and/or *Contract Data*.

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INSTRUCTIONS TO BIDDERS

INSTRUCTIONS TO BIDDERS

(Note: *(These Instructions to Bidders (IB) along with 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 Procuring Agency as defined in the Bidding Data (hereinafter called "the Procuring Agency") 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 Procuring Agency has arranged funds from its own sources or *Federal/ Provincial /Donor agency or any other source*, which may be indicated accordingly in bidding data towards the cost of the project/scheme.

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.

Provided that the works costing Rs. 2.5 million or less shall not require any registration with PEC .

b) duly pre-qualified with the Procuring Agency. (*Where required*).

In the event that prequalification of potential bidders has been undertaken, only bids from prequalified bidders will be considered for award of Contract.

c) if prequalification has not undertaken , the procuring agency may ask information and documents not limited to following:-

(i) company profile;
(ii) works of similar nature and size for each performed in last *3/5* years;
(iii) construction equipments;
(iv) qualification and experience of technical personnel and key site management;

(v) financial statement of last 3 years;
(vi) information regarding litigations and abandoned works if any.

IB.3 Cost of Bidding

3.1 The bidder shall bear all costs associated with the preparation and submission of its bid and the Procuring Agency will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process (SPP Rules 24 & 25).

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, Qualification Information & Schedules to Bid
   Schedules to Bid comprise the following:
   (i) Schedule A: Schedule of Prices/ Bill of Quantities (BoQ).
   (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 (works costing Rs 10 million and above)
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/Procuring Agency at the Engineer's/ Procuring Agency's address indicated in the Bidding Data.

5.2 An interested bidder, who has obtained bidding documents, may request for clarification

of contents of bidding documents in writing and procuring agency shall respond to such quarries in writing within three calendar days, provided they are received at least five calendar days prior to the date of opening of bid (SPP Rule 23-1).

IB.6 Amendment of Bidding Documents (SPP Rules 22(2) & 22).

6.1 At any time prior to the deadline for submission of Bids, the Procuring Agency may, for any reason, whether at his own initiative or in response to a clarification requested by a interested 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 Procuring Agency.

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

C. PREPARATION OF BIDS

IB.7 Language of Bid

7.1 All documents relating to the Bid shall be in the language specified in the Contract Data.

IB.8 Documents Comprising the Bid

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

(a) Offer /Covering Letter
(b) Form of Bid duly filled, signed and sealed, in accordance with IB.14.3.
(c) Schedules (A to F) to Bid duly filled and initialed, in accordance with the instructions contained therein & in accordance with IB.14.3.
(d) Bid Security furnished in accordance with IB.13.
(e) Power of Attorney in accordance with IB 14.5.
(f) Documentary evidence in accordance with IB.2(c) & IB.11
(g) Documentary evidence in accordance with 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 premium on the rates of CSR / rates and prices quoted/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 percentage above or below the Composite Schedule of Rates/unit rates and prices of the Works to be performed under the Contract. Prices in the Schedule of Prices/Bill of Quantities shall be quoted entirely in Pak Rupees 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 or percentage above or below on the composite schedule of rates shall be quoted by the bidder in the currency as stipulated in Bidding Data.

10.4 Items for which no rate or price is entered by the Bidder will not be paid for by the Procuring Agency when executed and shall be deemed covered by the other rates and prices in the Bill of Quantities.

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 must possess and provide evidence of its capability and the experience as stipulated in Bidding Data and the Qualification Criteria mentioned 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 Procuring Agency 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 as percentage of bid price/estimated cost or in the amount stipulated in Bidding Data in Pak. Rupees in the form of *Deposit at Call/ Payee's Order or a Bank Guarantee* issued by a Scheduled Bank in Pakistan in favour of the Procuring Agency valid for a period up to twenty eight (28) days beyond the bid validity date (*Bid security should not be below 1%.and not exceeding 5% of bid price/estimated cost SPP Rule 37*).

13.2 Any bid not accompanied by an acceptable Bid Security shall be rejected by the Procuring Agency 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, and signed the Contract Agreement (SPP Rule 37).

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 (b) hereof; or
(c) in the case of a successful bidder, if he fails within the specified time limit to:

(i) furnish the required Performance Security or
(ii) sign the Contract Agreement.

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 In exceptional circumstances, Procuring Agency may request the bidders to extend the period of validity for a additional period but not exceeding 1/3 of the original period.The request and the bidders' responses shall be made in writing or by cable. A Bidder may refuse the request without forfeiting the Bid Security. A Bidder agreeing to the request will not be required or permitted to otherwise modify the Bid, but will be required to extend the validity of Bid Security for the period of the extension, and in compliance with IB.13 in all respects (SPP Rule 38).

14.3 All Schedules to Bid are to be properly completed and signed.

14.4 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.

14.5 Each bidder shall prepare Original and number of copies specified in the Bidding Data of the documents comprising the bid as described in IB.8 and clearly mark them "ORIGINAL" and "COPY" as appropriate. In the event of discrepancy between them, the original shall prevail.

14.6 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.

14.7 The Bid shall be delivered in person or sent by registered mail at the address to Procuring Agency 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 Procuring Agency at the address/provided in Bidding Data not later than the time and date stipulated therein.

15.2 The inner and outer envelopes shall

(a) be addressed to the Procuring Agency at the address provided in the Bidding Data;
(b) bear the name and identification number of the Contract as defined in the Bidding and Contract Data; and
(c) provide a warning not to open before the specified time and date for Bid opening as defined in the Bidding Data.
(d) In addition to the identification required in 15.2, the inner envelopes shall indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared late.
(e) If the outer envelope is not sealed and marked as above, the Procuring Agency will assume no responsibility for the misplacement or premature opening of the Bid.

15.3 Bids submitted through telegraph, telex, fax or e-mail shall not be considered.

15.4 Any bid received by the Procuring Agency after the deadline for submission prescribed in Bidding Data will be returned unopened to such bidder.

15.5 Any bidder may modify or withdraw his bid after bid submission provided that the modification or written notice of withdrawal is received by the Procuring Agency prior to the deadline for submission of bids.

15.6 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 IB.13.5 (a).

E. BID OPENING AND EVALUATION

IB.16 Bid Opening, Clarification and Evaluation (SPP Rules 41, 42 & 43)

16.1 The Procuring Agency will open the bids, in the presence of bidders' representatives who choose to attend, at the time, date and in the place specified 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 Procuring Agency at its discretion may consider appropriate, will be announced by the Procuring Agency at the bid opening. The Procuring Agency 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/Procuring Agency 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 (SPP Rule 43).

16.4 (a) Prior to the detailed evaluation, pursuant to IB.16.7 to 16.9, the Engineer/Procuring Agency will determine the substantial responsiveness of each bid to the Bidding Documents. For purpose of these instructions, a substantially responsive bid is one which conforms to all the terms and conditions of the Bidding Documents without material deviations. It will include determining 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 Procuring Agency 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 (**major deviation**) may be waived by Procuring Agency,

provided such waiver does not prejudice or affect the relative ranking of any other bidders.

(A). Major (material) Deviations include:-

(i) has been not properly signed;
(ii) is not accompanied by the bid security of required amount and manner;
(iii) stipulating price adjustment when fixed price bids were called for;
(iv) failing to respond to specifications;
(v) failing to comply with Mile-stones/Critical dates provided in Bidding Documents;
(vi) sub-contracting contrary to the Conditions of Contract specified in Bidding Documents;
(vii) refusing to bear important responsibilities and liabilities allocated in the Bidding Documents, such as performance guarantees and insurance coverage;
(viii) taking exception to critical provisions such as applicable law, taxes and duties and dispute resolution procedures;
(ix) a material deviation or reservation is one :
  (a) which affect in any substantial way the scope, quality or performance of the works;
  (b) adoption/rectification whereof would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

(B) Minor Deviations

Bids that offer deviations acceptable to the Procuring Agency and which can be assigned a monetary value may be considered substantially responsive at least as to the issue of fairness. This value would however be added as an adjustment for evaluation purposes only during the detailed evaluation process.

16.7 The Engineer/Procuring Agency will evaluate and compare only the bids previously determined to be substantially responsive pursuant to 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 IB.16.8 herein below.

Technical Evaluation: It will be examined in detail whether the works offered by the bidder complies with the Technical Provisions of the Bidding Documents. For this purpose, the bidder's 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.

16.8 Evaluated Bid Price

In evaluating the bids, the Engineer/Procuring Agency 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 IB.16.4 hereof.

(ii) discount, if any, offered by the bidders as also read out and recorded at the time of bid opening.

(iii) excluding **provisional sums** and the provisions for **contingencies** in the Bill of Quantities **if any**, but including **Day work**, where priced competitively.

IB.17 Process to be Confidential

17.1 Subject to IB.16.3 heretofore, no bidder shall contact Engineer/Procuring Agency 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 Procuring Agency. The evaluation result shall be announced at least seven (07) days prior to award of Contract (SPP Rule 45). 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/Procuring Agency 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 to Complaint Redressal Committee as per terms and conditions mentioned in SPP Rules 31 & 32. However, mere fact of lodging a complaint shall not warrant suspension of procurement process.

17.3 Bidders may be excluded if involved in **"Corrupt and Fraudulent Practices"** means either one or any combination of the practices given below SPP Rule2(q);

(i) **"Coercive Practice"** means any impairing or harming, or threatening to impair or harm, directly or indirectly, any party or the property of the party to influence the actions of a party to achieve a wrongful gain or to cause a wrongful loss to another party;

(ii) **"Collusive Practice"** means any arrangement between two or more parties to the procurement process or contract execution, designed to achieve with or without the knowledge of the procuring agency to establish prices at artificial, noncompetitive levels for any wrongful gain;

(iii) **"Corrupt Practice"** means the offering, giving, receiving or soliciting, directly or indirectly, of anything of value to influence the acts of another party for wrongful gain;

(iv) **"Fraudulent Practice"** means any act or omission, including a misrepresentation, that knowingly or recklessly misleads, or attempts to mislead, a party to obtain a financial or other benefit or to avoid an obligation;

(v) **"Obstructive Practice"** means harming or threatening to harm, directly or indirectly, persons or their property to influence their participation in a procurement process, or affect the execution of a contract or deliberately destroying, falsifying, altering or concealing of evidence material to the investigation or making false statements before investigators in order to materially impede an investigation into allegations of a corrupt, fraudulent, coercive or collusive practice; or threatening, harassing or intimidating any party to prevent it from disclosing its knowledge of matters relevant to the investigation or from pursuing the investigation, or acts intended to materially impede the exercise of inspection and audit rights provided for under the Rules.

F. AWARD OF CONTRACT

IB.18. Post Qualification

18.1 The Procuring Agency, at any stage of the bid evaluation, having credible reasons for or *prima facie* evidence of any defect in contractor's capacities, may require the 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 therefore 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 B.11, as well as such other information required in the Bidding Documents.

IB.19 Award Criteria & Procuring Agency's Right

19.1 Subject to IB.19.2, the Procuring Agency 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 the IB.18.

19.2 Not withstanding IB.19.1, the Procuring Agency 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 Procuring Agency'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 (SPP Rule 25).

IB.20 Notification of Award & Signing of Contract Agreement

20.1 Prior to expiration of the period of bid validity prescribed by the Procuring Agency, the Procuring Agency will notify the successful bidder in writing ("Letter of Acceptance") that his bid has been accepted (SPP Rule 49).

20.2 Within seven (07) days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the Procuring Agency 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 Procuring Agency and the successful bidder duly stamped at rate of ----% of bid price(updated from time to time) stated in Letter of Acceptance shall be executed within seven (07) days of the receipt of Form of Contract Agreement by the successful bidder from the Procuring Agency.

IB.21 Performance Security

21.1 The successful bidder shall furnish to the Procuring Agency a Performance Security 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 (SPP 39).

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.

21.3 Publication of Award of Contract: within seven days of the award of contract, the procuring shall publish on the website of the authority and on its own website, if such a website exists, the results of the bidding process, identifying the bid through procurement identifying Number if any and the following information:

(1) Evaluation Report;

(2) Form of Contract and letter of Award;

(3) Bill of Quantities or Schedule of Requirements. (SPP Rule 50)

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 Sindh Government procurement contracts exceeding Rupees ten (10) million. Failure to provide such Integrity Pact shall make the bid non-responsive (SPP Rule 89).

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 Procuring Agency:** Mehran University of Engineering and Technology, Jamshoro.

Brief Description of Works: This work consists of **INTERNAL/ EXTERNAL ELECTRIFICATION, AIR-CONDITIONING SYSTEM, VOICE SYSTEM, PUBLIC ADDRESSING, VIDEO CONFERENCING SYSTEM & COMPUTER DATA SYSTEM WITH BACKUP OF UPS WORKS OF INNOVATION AND ENTREPRENEURSHIP CENTER AT M.U.E.T, JAMSHORO,**

5.1 (a) Procuring Agency's address: Office of the Executive Engineer (Works), Mehran University of Engineering & Technology Jamshoro.

(b) Engineer's address:

KAD Consultants Hyderabad
F-1, Zaib Residency, 70/72/1 Hussain Housing Scheme, Near Summit Bank Wadhu Wah, Qasimabad Hyderabad
Ph# +92-22-2652274
Fax# +92-22-2652275
E-mail: kad.consultants@hotmail.com

10.3 Bid shall be quoted entirely in Pak. Rupees. The payment shall be made in Pak. Rupees.

11.2 The bidder has the financial, technical and constructional capability necessary to perform the Contract as follows:

i. Financial capacity: (must have annual average turnover of Rs20 Million of last 3 years);
ii. Technical capacity: Category of registration with PEC C-6 or above

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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 required in accordance with Schedule B to Bid, 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 Amount of Bid Security/Earnest Money: 2% of total bid amount

14.1 Period of Bid Validity: 90 days

14.4 Number of Copies of the Bid to be submitted: One original plus 2 copies.

14.6 (a) Procuring Agency's Address for the Purpose of Bid Submission:
Office of the Executive Engineer (Works), Mehran University of Engineering & Technology, Jamshoro

15.1 Deadline for Submission of Bids: Time: **12.00 NOON** Date:31-12-2014..

16.1 Venue, Time, and Date of Bid Opening

Venue: Office of the Executive Engineer, Mehran University of Engineering &Technology, Jamshoro

Time: 12.30 P.M Date: 31-12-2014

16.4 Responsiveness of Bids

(i) Bid is valid till required period
(ii) Bid prices are firm during currency of contract/Fixed Price Contract
(iii)Completion period offered is within specified limits
(iv)Pre-qualified Bidders are eligible to Bid and possesses the requisite experience, capability and qualification
(v) Bid does not deviate from basic technical requirements and
(vi)Bids are generally in order, etc.

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(a) **Fixed Price contract**: In these contracts no escalation will be provided during currency of the contract

(b) **Price adjustment contract**: In these contracts escalation will be paid only on those items and in the manner as notified by Finance Department, Government of Sindh, after bid opening during currency of the contract.**(NOT APPLICABLE)**

FORM OF BID AND SCHEDULES TO BID

FORM OF BID
(LETTER OF OFFER)

Bid Reference No. _____

_____

_____

(Name of Works)

To:

_____

_____

_____

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 Program of Works
- Schedule E to Bid: Method of Performing Works
- Schedule F to Bid: Integrity Pact]

SCHEDULE – A TO BID

SCHEDULE OF PRICES

* *[To be prepared by the Engineer/Procuring Agency]*

PREAMBLE TO SCHEDULE OF PRICES

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 Systeme Internationale d' Unites (SI Units).

_____

_____

(Note: The abbreviations to be used in the Schedule of Prices to be defined by the Procuring Agency).

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 premium, 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 Procuring Agency 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. Such cost shall be inbuilt in his quoted rates.

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.

5. Bid Prices

5.1 Break-up of Bid Prices

The various elements of Bid Prices shall be quoted as detailed by the Procuring Agency 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 and Day work

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/Procuring Agency. The Contractor will only receive payment in respect of Provisional Sums, if he has been instructed by the Engineer/Procuring Agency to utilize such sums.

6.2 Day work rates in the contractor's bid are to be used for small additional amounts of work and only when the Engineer have given written instructions in advance for additional work to be paid for in that way.

SCHEDULE OF PRICES – SUMMARY OF BID PRICES (Sample)

Bill No.	Description	Total Amount (Rs)
	(A) Building Work	
1.	Civil works	
2	Internal sanitary and water supply	
3	Electrification	
4	External Development works	
5	Miscellaneous Items	
	(B) Road Work.	
1.	Earthwork	
2.	Hard Crust and Surface Treatment	
3.	Culverts and Bridges	
4.	Miscellaneous Items	
	(C) Public Health Engineering Works.	
1.	Earthwork	
2.	Subsurface Drains	
3.	Pipe Laying and Man holes	
4.	Tube wells, Pump houses	
5.	Compound wall	
6.	Miscellaneous Items	
	Total Bid Price (The amount to be entered in Paragraph 1 of the Form of Bid) (In words)	

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SCHEDULE OF PRICES

Item No.	Description	Quantity	Unit Rate(Rs)	Total Amount (Rs)
	I. (Civil works)			
1.				
2.				
3.				
	II.Internal sanitary and water supply.			
1.				
2.				
3.				
	III. Electrification.			
1.				
2.				
3.				
	IV. External Development works.			
1.				
2.				
3.				
1.	**V. Miscellaneous Items**			
2.				
3.				
Total (*to be carried to Summary of Bid Price*) *Add/ Deduct the percentage quoted above/below on the prices of items based on Composite Schedule of Rates*				

*SPECIFIC WORKS DATA

(To be prepared and incorporated by the Procuring Agency)

**(Note: The Procuring Agency shall spell out the information & data required to be filled out by the bidder and to furnish complementary information).*

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)*

Note:

- *The Procuring Agency should decide whether to allow subcontracting or not.*

  In case Procuring Agency decides to allow subcontracting then following conditions shall be complied with:

1. No change of Sub-Contractors shall be made by the bidder without prior approval of the Procuring Agency.

2. The truthfulness and accuracy of the statement as to the experience of Sub-Contractors is guaranteed by the bidder. The Procuring Agency'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 or Program Evaluation and Review Technique (PERT) or Critical Path Method (CPM) 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.

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 construction and plant erection, 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.
- Organisation chart indicating head office & field office personnel involved in management, supervision and engineering of the Works to be done under the Contract.

SCHEDULE – F TO BID

(INTEGRITY PACT)

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC PAYABLE BY CONTRACTORS

(FOR CONTRACTS WORTH RS. 10.00 MILLION OR MORE)

Contract No._____ Dated _____
Contract Value: _____
Contract Title: _____

..... [name of Contractor] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of Sindh (GoS) or any administrative subdivision or agency thereof or any other entity owned or controlled by it (GoS) through any corrupt business practice.

Without limiting the generality of the foregoing, [name of Contractor] represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation fee or otherwise, with the object of obtaining or inducing the procurement of a contract, right, interest, privilege or other obligation or benefit in whatsoever form from, from Procuring Agency (PA) except that which has been expressly declared pursuant hereto.

[name of Contractor] accepts full responsibility and strict liability that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with PA and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

[name of Contractor] accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other rights and remedies available to PA under any law, contract or other instrument, be voidable at the option of PA.

Notwithstanding any rights and remedies exercised by PA in this regard, [name of Supplier/Contractor/Consultant] agrees to indemnify PA for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to PA in an amount equivalent to ten time the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of Contractor] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from PA.

..... [Procuring Agency]

[Contractor]

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CONDITIONS OF CONTRACT

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CONDITIONS OF CONTRACT

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 Procuring Agency'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 Procuring Agency's drawings of the Works as listed in the Contract Data, and any Variation to such drawings.

Persons

1.1.4 "Procuring Agency" 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 Procuring Agency) any assignee.

1.1.6 "Party" means either the Procuring Agency 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 "Procuring Agency'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 Procuring Agency 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/Procuring Agency 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 Procuring Agency 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 PROCURING AGENCY

2.1 **Provision of Site**

The Procuring Agency shall provide the Site and right of access thereto at the times stated in the Contract Data.
Site Investigation Reports are those that were included in the bidding documents and are factual and interpretative reports about the surface and subsurface conditions at the Site.

2.2 **Permits etc.**

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

2.3 **Engineer's/Procuring Agency's Instructions**

The Contractor shall comply with all instructions given by the Procuring Agency or the Engineer, if notified by the Procuring Agency, 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/Procuring Agency shall affect the Contractor's obligations.

3. ENGINEER'S/PROCURING AGENCY'S REPRESENTATIVES

3.1 **Authorised Person**

The Procuring Agency 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 Procuring Agency shall notify the Contractor, in writing, the precise scope of the authority of such authorized person at the time of his appointment.

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3.2 **Engineer's/Procuring Agency's Representative**

The name and address of Engineer's/Procuring Agency's Representative is given in Contract Data. However the Contractor shall be notified by the Engineer/Procuring Agency, 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 Procuring Agency for such appointment which consent shall not be withheld without plausible reason(s) by the Procuring Agency. 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 Procuring Agency 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 Procuring Agency.

4.4 Performance Security

The Contractor shall furnish to the Procuring Agency within fourteen (14) days after receipt of Letter of Acceptance a Performance Security at the option of the bidder, in the form of Payee's order /Bank Draft or Bank Guarantee from scheduled bank 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/Procuring Agency all designs prepared by him, within fourteen (14) days of receipt the Engineer/Procuring Agency 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/Procuring Agency 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/Procuring Agency shall be responsible for the Specifications and Drawings.

6. PROCURING AGENCY'S RISKS

6.1 **The Procuring Agency's Risks**

The Procuring Agency'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 Procuring Agency 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 Procuring Agency's personnel or by others for whom the Procuring Agency 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 Procuring Agency and accepted by the Procuring Agency.

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/Procuring Agency a programme for the Works in the form stated in the Contract Data.

7.3 Extension of Time

The Contractor shall, within such time as may be reasonable under the circumstances, notify the Procuring Agency/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 Procuring Agency/Engineer for a reasonable extension in the time for the completion of works. Subject to the aforesaid, the Procuring Agency/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 Procuring Agency/Engineer within such period as may be prescribed by the Procuring Agency/Engineer for the same; and the Procuring Agency may 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 Procuring Agency for such failure shall be to pay the amount as liquidity damages 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/Procuring Agency 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 Procuring Agency/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 Procuring Agency/Engineer may identify any outstanding items of work which the Contractor shall undertake during the Maintenances 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 Procuring Agency, 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 Procuring Agency/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 Procuring Agency/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 Procuring Agency 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/Procuring Agency 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 Procuring Agency/Engineer may issue Variation Order(s) in writing. Where for any reason it has not been possible for the Procuring Agency/Engineer to issue such Variations Order(s), the Contractor may confirm any verbal orders given by the Procuring Agency/Engineer in writing and if the same are not refuted/denied by the Procuring Agency/Engineer within ten (10) 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/Procuring Agency considers appropriate, or

e) if the Engineer/Procuring Agency 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 **Changes in the Quantities.**

a) If the final quantity of the work done differs from the quantity in the Bill of Quantities for the particular item by more than 25 percent, provided the change exceeds 1 percent of the Initial Contract Price, the Procuring Agency/Engineer shall adjust the rate to allow for the change and will be valued as per sub clause 10.2.

b) The Engineer shall not adjust rates from changes in quantities if thereby the Initial Contract Price is exceeded by more than 15 percent, except with the prior approval of the Procuring Agency.

c) If requested by the Engineer, the contractor shall provide the Engineer with a detailed cost breakdown of any rate in the Bill of Quantities.

10.4 **Early Warning**

The Contractor shall notify the Engineer/Procuring Agency 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/Procuring Agency being unable to keep all relevant records or not taking steps to minimise 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.

10.5 **Valuation of Claims**

If the Contractor incurs Cost as a result of any of the Procuring Agency's Risks, the Contractor shall be entitled to the amount of such Cost. If as a result of any

Procuring Agency'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/Procuring Agency within fourteen (14) days of the occurrence of cause.

10.6 **Variation and Claim Procedure**

The Contractor shall submit to the Engineer/Procuring Agency an itemised detailed breakdown 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/Procuring Agency shall check and if possible agree the value. In the absence of agreement, the Procuring Agency shall determine the value.

11. CONTRACT PRICE AND PAYMENT

11.1 (a) **Terms of Payments**

The amount due to the Contractor under any Interim Payment Certificate issued by the Engineer pursuant to this Clause, or to any other terms of the Contract, shall , subject to Clause 11.3, be paid by the Procuring Agency to the Contractor within 30 days after such Interim Payment Certificate has been jointly verified by Procuring Agency and Contractor, or, in the case of the Final Certificate referred to in Sub Clause 11.5, within 60days after such Final Payment Certificate has been jointly verified by Procuring Agency and Contractor;

Provided that the Interim Payment shall be caused in thirty (30) days and Final Payment in 60 days in case of foreign funded project. In the event of the failure of the Procuring Agency to make payment within 90 days then Procuring Agency shall pay to the Contractor compensation at the 28 days rate of KIBOR+2% per annum in local currency and LIBOR+1% for foreign currency, upon all sums unpaid from the date by which the same should have been paid.

(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 less to the cumulative amount paid previously; and
b) value of secured advance on the materials and valuation of variations (if any).

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

11.3 **Interim Payments**

Within a period not exceeding seven (07) 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 (30/60) days from the said date of submission by the Contractor, the Procuring Agency shall pay to the Contractor the sum subject to adjustment for deduction of the advance payments and retention money.

11.4 **Retention**

Retention money shall be paid by the Procuring Agency 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 Procuring Agency together with any documentation reasonably required to enable the Procuring Agency to ascertain the final contract value.

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

11.6 **Currency**

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

12. DEFAULT

12.1 **Defaults by Contractor**

If the Contractor abandons the Works, refuses or fails to comply with a valid instruction of the Engineer/Procuring Agency or fails to proceed expeditiously and without delay, or is, despite a written complaint, in breach of the Contract, the Procuring Agency 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 Procuring Agency's notice, the Procuring Agency 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 Procuring Agency instructs, in the second notice, to be used for the completion of the Works at the risk and cost of the Contractor.

12.2 **Defaults by Procuring Agency**

If the Procuring Agency 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 Procuring Agency'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 Procuring Agency'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 Procuring Agency 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 Procuring Agency is entitled,

c) if the Procuring Agency has terminated under Sub-Clause 12.1 or 12.3, the Procuring Agency 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 demobilisation 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 Procuring Agency's/Engineer's issuance of Certificate of Completion under Sub-Clause 8.2. Responsibility shall then pass to the Procuring Agency. 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 Procuring Agency's Risks, the Contractor shall indemnify the Procuring Agency, 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/Procuring Agency immediately. If necessary, the Contractor may suspend the execution of the Works and, to the extent agreed with the Procuring Agency demobilize 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 Procuring Agency 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 Procuring Agency's Risks under Sub-Clause 6.1. The policies shall be issued by insurers and in terms approved by the Procuring Agency. The Contractor shall provide the Engineer/Procuring Agency 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 Procuring Agency 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 Procuring Agency 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 Procuring Agency (Superintending Engineer) 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 Procuring Agency (Superintending Engineer)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 of consultant or if no decision is given within the time set out in Sub-Clause 15.1 here above, 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.

If a contractor is dissatisfied with the decision of the Engineer of the department or decision is not given in time then he can approach Superintending Engineer within 14 days, in case of dissatisfaction with decision of Superintending Engineer or not decided within 28 days, then arbitration process would be adopted as per clause 15.3.

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 there under 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 Procuring Agency 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 Procuring Agency 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 Procuring Agency 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 Procuring Agency under Sub-Para (a) and (c) of this Sub-Clause.

CONTRACT DATA

Sub-Clauses of
Conditions of Contract

1.1.3 Procuring Agency's Drawings: Attached Separately

1.1.4 **The Procuring Agency** means— the person or entity 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. Here P/A is Mehran University of Engineering & Technology Jamshoro

1.1.5 **The Contractor** means a firm which is employed by the P/A. A contractor is responsible for providing all of the material, labor, equipment and services necessary for the construction of the project.

1.1.7 Commencement Date means the date of issue of Engineer's Notice/Work Order to Commence which shall be issued within fourteen (14) days of the signing of the Contract Agreement.

1.1.9 Time of Completion 18 Months

1.1.20 Engineer

KAD Consultants
Electrical Engineers
F-1, Zaib Residency, 70/72/1Hussain Housing Scheme,
Near Summit Bank WadhuWah, Qasimabad Hyderabad
Ph# +92-22-2652274
Fax# +92-22-2652275
E-Mail: kad.consultants@hotmail.com

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) Bill of Quantities (BOQ)
(g) The Drawings
(h) The Specifications
(i) Special Conditions of Contract

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2.1 Provision of Site: On the Commencement Date

3.1Authorized person: Executive Engineer (Works), MUET, Jamshoro

3.2 Name and address of Engineer's/Procuring Agency's representative:
Office of the Executive Engineer, Mehran University of Engineering & Technology, Jamshoro.

4.4 **Performance Security:**
Contractor to submit performance insurance guarantee equal to 10% of contract amount from any of following insurance companies in the specified form. No mobilization shall be paid until contractor has signed the agreement and submitted performance guarantee.

a) *EFU General Insurance Limited.*

b) *Adamjee Insurance Company Limited.*

c) *National Insurance Corporation Limited.*

d) *Pakistan General Insurance Company limited.*

5.1 **Requirements for Contractor's design (if any):** Contractor to confirm design of all cables/equipments.

7.2 **Programme:**
Time for submission: Within fourteen (14) days of the Commencement Date.
Form of programme: *Bar Char t / CPM/PERT*

7.4 Amount payable due to failure to complete shall be 0.05% per day up to a maximum of (10%) of sum stated in the Letter of Acceptance

7.5 Early Completion (Not Applicable)
In case of earlier completion of the Work, the Contractor is entitled to be paid bonus up to limit and at a rate equivalent to 50% of the relevant limit and rate of liquidated damages stated in the contract data.

9.1 Period for remedying defects (Defects Liability Period): 6 Months from the effective date of taking over certificate.

10.2 (e) **Variation procedures: (Not Applicable)**
Day work rates_____
_____(details)

11.1 Terms of Payments

a) Mobilization Advance

(1) Mobilization Advance up to 10% of the Contract Price stated in the Letter of Acceptance shall be paid by the Procuring Agency to the Contractor on the works costing Rs.2.5 million or above on following conditions:

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(i) On submission by the Contractor of a Mobilization Advance Guarantee for the full amount of the Advance in the specified form from a Scheduled Bank in Pakistan to the Procuring Agency;

(ii) Contractor will pay interest on the mobilization advance at the rate of 10% per annum on the advance; and

(iii) This Advance including the interest shall be recovered in 5 equal installments from the five (05) R.A bills and in case the number of bills is less than five (05) then 1/5th of the advance **inclusive of the interest** thereon shall be recovered from each bill and the balance together with interest be recovered from the final bill. It may be insured that there is sufficient amount in the final bill to enable recovery of the Mobilization Advance.

2) **Secured Advance on Materials**

(a) The Contractor shall be entitled to receive from the Procuring Agency Secured Advance against an INDENTURE BOND in P W Account Form No. 31(Fin.R. Form No. 2 acceptable to the Procuring Agency of such sum as the Engineer may consider proper in respect of non-perishable materials brought at the Site but not yet incorporated in the Permanent Works provided that:

(i) The materials are in accordance with the Specifications for the Permanent Works;

(i) Such materials have been delivered to the Site and are properly stored and protected against loss or damage or deterioration to the satisfaction and verification of the Engineer but at the risk and cost of the Contractor;

(ii) The Contractor's records of the requirements, orders, receipts and use of materials are kept in a form approved by the Engineer, and such records shall be available for inspection by the Engineer;

(iii)The Contractor shall submit with his monthly statement the estimated value of the materials on Site together with such documents as may be required by the Engineer for the purpose of valuation of materials and providing evidence of ownership and payment therefore;

(iv)Ownership of such materials shall be deemed to vest in the Procuring Agency and these materials shall not be removed from the Site or otherwise disposed of without written permission of the Procuring Agency;

(v) The sum payable for such materials on Site shall not exceed 75 % of the:

a. landed cost of imported materials, or
b. ex-factory / ex-warehouse price of locally manufactured or produced materials, or
c. market price of stands other materials.

(vii) Secured Advance should not be allowed unless & until the previous advance, if an, fully recovered

(viii) Detailed account of advances must be kept in part II of running account bill and

(ix) Secured Advance may be permitted only against materials/quantities anticipated to be consumed / utilized on the work within a period of 3 months from the date of issue of secured advance and definitely not for full quantities of materials for the entire work/contract

(b) Recovery of Secured Advance:

(i) Secured Advance paid to the Contractor under the above provisions shall be effected from the monthly payments on actual consumption basis, but not later than period specified in the rules not more than three months (even if unutilized); other conditions.

(ii) As recoveries are made the outstanding accounts of the items concerned in Part II should be reduced by making deduction entries in the column; —deduct quantity utilized in work measured since previous bill,I equivalent to the quantities of materials used by the contractor on items of work shown as executed in part I of the bill.

(c) Interim payments: The Contractor shall submit to the Engineer monthly statements of the estimated value of the work completed less the cumulative amount certified previously.

(i) The value of work completed comprises the value of the quantities of the items in the Bill of Quantities completed.

(ii) Value of secured advance on the materials and valuation of variations (if any).

(iii) Engineer may exclude any item certified in a previous certificate or reduce the proportion of any item previously certified in any certificate in the light of later information.

(v) Retention money and other advances are to be recovered from the bill submitted by contractor.

11.2 *(a) **Valuation of the Works:**

Measurement of executed quantities at quoted rates.

11.3 Percentage of retention: Ten percent (10%), which also includes two percent (2%) bid security.

11.6 Currency of payment: Pak Rupees

14.1 Insurances: (Not Applicable)

Type of cover
The works

Amount of cover

The sum stated in the letter of acceptance plus fifteen percent

Type of cover
Contractor's equipment

Amount of cover
Full replacement cost

Type of cover
Third party injury to persons and damage of property

Workers:

Other cover:

14.2 Amount to be recovered

Premium plus **10** **percent.**

15.3 Arbitration

Place of Arbitration MUET, Jamshoro.

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 Procuring Agency)

Name of Guarantor (Scheduled Bank in Pakistan) with address:_____
Name of Principal (Bidder) with address:_____
_____
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 _____, (bereinafter called The "Procuring Agency") 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 Procuring Agency; and

WHEREAS, the Procuring Agency has required as a condition for considering the said Bid that the Principal furnishes a Bid Security in the above said sum to the Procuring Agency, 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 Procuring Agency 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 Procuring Agency 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 Procuring Agency 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 Procuring Agency the said sum stated above upon first written demand of the Procuring Agency without cavil or argument and without requiring the Procuring Agency to prove or to show grounds or reasons for such demand, notice of which shall be sent by the Procuring Agency by registered post duly addressed to the Guarantor at its address given above.

PROVIDED ALSO THAT the Procuring Agency 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 Procuring Agency 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. _____

_____
Corporate Secretary (Seal)

2. _____

_____
(Name, Title & Address)

1. Signature _____

2. Name _____

3. Title _____

Corporate Guarantor (Seal)

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FORM OF PERFORMANCE SECURITY
(Bank Guarantee)

Guarantee No._____
Executed on _____
Expiry Date

(Letter by the Guarantor to the Procuring Agency)

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 Procuring Agency) in the penal sum of the amount stated above, for the payment of which sum well and truly to be made to the said Procuring Agency, 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 Procuring Agency'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 Procuring Agency, 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. 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 defenses under the Contract, do hereby irrevocably and independently guarantee to pay to the Procuring Agency without delay upon the Procuring Agency's first written demand without cavil or arguments and without requiring the Procuring Agency to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the Procuring Agency'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 Procuring Agency's designated Bank & Account Number.

PROVIDED ALSO THAT the Procuring Agency 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 Procuring Agency 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. _____

_____
Corporate Secretary (Seal)

2. _____

_____
(Name, Title & Address)

1. Signature _____
2. Name _____
3. Title _____

_____
Corporate Guarantor (Seal)

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (hereinafter called the "Agreement") made on the _____ day of _____ 200 _____ between _____(hereinafter called the "Procuring Agency") of the one part and _____ (hereinafter called the "Contractor") of the other part.

WHEREAS the Procuring Agency 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 along with Schedules to Bid;
   (c) Conditions of Contract & Contract Data;
   (d) The priced Schedule of Prices/Bill of quantities (BoQ);
   (e) The Specifications; and
   (f) The Drawings

3. In consideration of the payments to be made by the Procuring Agency to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Procuring Agency to execute and complete the Works and remedy defects therein in conformity and in all respects within the provisions of the Contract.

4. The Procuring Agency 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

(Seal)

Signature of the Procuring Agency

(Seal)

Signed, Sealed and Delivered in the presence of:

Witness:

(Name, Title and Address)

Witness:

(Name, Title and Address)

MOBILIZATION ADVANCE GUARANTEE

Guarantee No._____

Executed on_____

(Letter by the Guarantor to the Procuring Agency)

WHEREAS the _____ (hereinafter called the Procuring Agency) has entered into a Contract for _____

_____

_____ (Particulars of Contract), with _____

_____ (hereinafter called the Contractor).

AND WHEREAS the Procuring Agency 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 Procuring Agency 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 Procuring Agency 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 Procuring Agency for payment not exceeding the aforementioned amount.

Notice in writing of any default, of which the Procuring Agency shall be the sole and final judge, as aforesaid, on the part of the Contractor, shall be given by the Procuring Agency 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. _____

_____
Corporate Secretary (Seal)

2. _____

_____
(Name, Title & Address)

1. Signature _____
2. Name _____
3. Title _____

_____
Corporate Guarantor (Seal)

INDENTURE FOR SECURED ADVANCES.

(For use in cases in which is contract is for finished work and the contractor has entered into an agreement for the execution of a certain specified quantity of work in a given time).

This INDENTURE made the ..... day of ..... ---- ..... ---------.....-197--"- BETWEEN (hereinafter called "the Contractor" which expression shall where the context so admits or implied be deemed to include his heirs, executors, administrators and assigns) of the one part and THE GOVERNOR OF SINDH (hereinafter called "the Government" of the other part).

WHEREAS by an agreement, dated (hereinafter called the said agreement, the contractor has agreed to perform the under-mentioned works (hereinafter referred to as the said work):-

(Here enter (the description of the works).[1]

AND WHEREAS the contractor has applied to the .... —..... ----- for an advance to him of Rupees ----------. (Rs. .....) on the security of materials absolutely belonging to him and brought by him to the site of the said works the subject of the said agreement for use in the construction of such of the said works as he has undertaken to execute at rates fixed for the finished work (inclusive of the cost of materials and labour and other charge) AND WHEREAS the Government has agreed to advance to the Contractor the sum of Rupees, (Rs. .....) on the security of materials the quantities and other particulars of which are detailed in Part II of Running Account Bill (E). the said works signed by the contractor

Fin R.Form.17 A

on---------- .....— and on such covenants and conditions as are hereinafter contained and the Government has reserved to itself the option of marking any further advance or advances on the security of other materials brought by the Contractor to the site of the said works.

NOW THIS INDENTURE WTTNESSETH that in pursuance of the said agreement and in consideration of the sum of Rupees.....---------- .....-.....—..... (Rs. ----- ..... -----) on or before the execution of these presents paid to the Contractor by the Government (the receipt whereof the Contractor doth hereby acknowledge) and of such further advances (if any) as may be made to him as aforesaid (all of which advances are hereinafter collectively referred to as the said amount) the Contractor doth hereby assign unto the Government the said materials by way of security for the said amount

And doth hereby covenant and agree with the Government and declare ay follow :-

(1) That the said sum of Rupees .....-..... ---------..... ---------- (Rf. ----------) so advanced by the Government to the Contractor as aforesaid and all or any further sum or sums which may be advanced aforesaid shall be employed by the contractor in or towards expending the execution of the said works and for no other purpose whatsoever.

(2) That the materials detailed in the said Running Account Bill (B) which have been Fin R Form No. 17-A
Offered to and accepted by (he Government as security for the said amount are absolutely by the Contractors own property free from encumbrances of any kind and the Contractor will not make any application for or receive a further advance on the security of materials which are not absolutely his own property and free from encumbrances of any kind and the contractor hereby agrees, at all times, to indemnify and save harmless the Government against all claims whatsoever to any materials in respect of which an advance has been made to him as aforesaid.

(3) That the said materials detailed in the said Running Account Bill (B) and all other Fin R. Form No. 17-A
Materials on the security of which any further advance or advances may hereafter be made as aforesaid (hereinafter called the said materials) shall be used by the Contractor solely in *the* execution of the said works in accordance with the directions of the Divisional Officer----------(hereinafter called the Divisional Officer) and in the terms of the said agreement.

(4) That the Contractor shall make at his own cost all necessary and adequate arrangement for the proper watch, safe custody and protection against all risks of the said material and that until used in construction as aforesaid the said materials shall remain at the site of the said works in the Contractor's custody and at his own risk and on his own responsibility and shall at all times be open to inspection by (he Divisional Officer or any officer authorized by him. In the event of the said materials of any part (hereof being stolen, destroyed or damaged or becoming deteriorated in a grater degree than is due to reasonable use and wear thereof Contractor will forthwith replace the same with other materials of like qualify or repair and make good the same as required by the Divisional Officer and the materials so brought to replace the said materials so repaired and made good shall also be considered as security for the said amount.

(5) 'Hurt the said materials shall not on any account be removed from the site of the said works except with the written permission of the Divisional Officer or an officer authorized by him in that behalf

(6) That the said amount shall be payable in full when or before the Contractor receives payment, from the Government of the price payable to him for the said works under the terms and provisions of the said agreement PROVIDED THAT if any intermediate payments are made to the contractor on account of work done then on the occasion of each such payment the Government will be at liberty to make a recovery from the Contractors Bill for such payment by deducting there from in the value of the said materials (hen actually used in the construction and in respect of which recovery has not been made previously the value for this purpose being determined in respect of each description of material at (he rates at which the amount of the advances made under these presents were calculated.

(7) That if the Contractor shall at any time make any default in the performance or observation in any respect of any of the terms and provisions of the said agreement or of these presents the total amount of the advance or advances that may still be owing to the Government shall immediately on the happening of such default be repayable by the Contractor to the Government together with interest thereon at twelve

percent per annum from the date or respective dates of such advance or advances to the date or repayment and with all costs, charges, damages and expenses incurred by the Government in or for the recovery thereof or the enforcement of this security or otherwise by reason of (he default of the Contractor and any moneys so becoming due and payable shall constitute a debt due from the Contractor to the Government and the Contractor hereby covenants and agrees with the Government to repay and the same respectively to it accordingly.

(8) That the Contractor hereby charges all the said materials with the repayment to the Government of the said sum of Rupees ..... - ..... (Rs. .....) and any further sum or sums which may be advanced as aforesaid and all costs charges damages and expenses payable under these present PROVIDED ALWAYS and it is hereby agreed and declared that not withstanding anything in the said agreement and without prejudice to the powers contained therein if and whether the covenant for payment and repayment hereinbefore contained shall become enforceable and the money owing shall not be paid to accordingly.

Once therewith the Government may at any time thereafter adopt all or any of following courses as it may deem best ;-

(a) Seize and utilize the said materials or any part thereof in the completion of the said works on behalf of the Contractor in accordance with the provisions in that behalf contained in the said agreement debiting the Contractor with the actual cost of effecting such completion the amount due in respect of advances under these presents and crediting the Contractor with the value of work done as he had carried it out in accordance with the said agreement and at the rates thereby provided. If the balance is against the Contractor he is to pay the same to the Government on demand.

(b) Remove and sell by public auction the seized materials or any part thereof and out of the moneys arising from the sale retain all the sums aforesaid repayable to the Government under these presents and pay over the surplus (if any) to the Contractor.

(c) Deduct all or any part of the moneys owing out of the security deposit or any sum due to the Contractor under the said agreement.

(9) That except as is expressly provided by the presents interest on the aid advance shall not be payable.

(10) That in the event of any conflict between the provisions of these presents and the said agreement the provisions of these presents shall prevail and in the event of any dispute or difference arising over the construction or effect of these presents the settlement of which has not been hereinbefore expressly provided for the same shall be referred to the Superintending Engineer ..... Circle whose ..... decision shall be final and the provisions of the Indian Arbitration Act for the time being in force so far as they are applicable shall apply to any such reference.

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In witnesses whereof the* ------ -- __.................................. on behalf of the Governor of Sindh and the said................ —......................... - ....--have hereunto set their respective hands and seals the day and first above written.

Signed, sealed and delivered by* In the presence of

Seal
1st witness 2nd witness

Signed, sealed and delivered by* In the presence of

Seal

1st Witness 2nd witness

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

SPECIFICATIONS

FOR

ELECTRICAL WORKS

KAJ CONSULTANTS ENGINEERING SERVICES HYDERABAD

SPECIFICATIONS FOR ELECTRICAL WORKS

- **A-General Requirement**
- **B-Specification**
- **C-Specification of Installation**
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SPECIFICATIONS FOR ELECTRICAL WORKS

A – GENERAL REQUIREMENTS

1 SCOPE OF CONTRACT

1.1 The item rates of the contract shall include supply equipment and material except the equipment and material to be specifically provided by the owner, erection including all load and lift, installation, completion and testing of the individual components and finally the whole installation in accordance with the specifications and enclosed drawings. The work shall be carried out to the complete satisfaction of the Inspector.

1.2 For the materials listed as free issue "materials in this tender, it will be responsibility of the Contractor to take delivery of such material from the stores of the Employee supply of the necessary electrical installation including testing and commissioning.

2. GENERAL REQUIREMENTS

2.1 The Contractor shall carry out all the work in accordance with this specification and in conformity with the Indian Electricity Act and Rules as adopted in Pakistan and the latest edition of the wiring Rules of the Institute of Electrical Engineers London (hereinafter referred to as the (I.E.E.) Wiring Rules) but where these specifications differ from these rules, these specifications shall be followed.

2.2 Any special requirements of the Electric Inspection shall be to the entire satisfaction of the Employer or The electric works shall be carried out only by Licensed Workmen authorized by the Government to Undertake such class of works under the provision of the India Electricity Act and Rules as adopted in Pakistan under the direct supervision of whole time electrical supervision and particulars of commencement of works. The works shall further be under direct supervision of whole time qualified Engineer, a Bio-data of whom shall be submitted for staff. Any conflict b/w documents shall be brought to the attention of the employer and resolved in writing before work is performed.

2.3 If during preparation of the Tender, the Contractor finds any points that need clarification he shall raise these with the Employer accepts no responsibility for the failure of the Contractor to obtain clarification on any areas of uncertainty.

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Any installation not complying with the specification shall be corrected by the contractor with no cost to the Employer.

2.4 It is the Contractor's responsibility to protect equipment and materials from damage from the time of taking over Certificate is issued by the Employer after the plant has been commissioned.

2.5 Any deviations from these Specifications or any of the requirements of the Contract shall be clearly defined at the tender stage under Exceptions to the Contractors Specifications. Unless such exceptions are so made, the Employer will assume there are no exceptions other than those specifically included in the Employer's Construction drawings. No other exceptions will be considered after the Contract has been executed. The contractor shall produce comprehensive documents of individual testing, calibration and installation together with an overall record of the state of completion of the installation Contract which is to be submitted to the Employer at regular intervals as required.

2.6 If the contractor requires clarification of any point, this must be obtained from the Employer accepts no responsibility for the Contractor's failures to obtain clarification on any areas of uncertainty.

2.7 The Contractor requires should state his ability and willingness to comply with the enclosed Construction Program. All necessary civil and builders works shall be under taker by others except minor civil works by the Contractor.

3. ELECTRICAL EQUIPMENT AND MATERIALS

3.1 Except for the items mentioned in the enclosed Free Issue list the contractor shall supply all materials, tools, plant, scoff folding, hardware, supports and fixings as necessary to provide a complete and satisfactory installation. Where any materials is the Contractor's Supply are specified on the drawings or in Bill of Quantities, the Employer. When the 'Free Issue' materials have been received by the contractor he at his own expense any missing or damage items.

3.2 In the event of any Free Issue items bec0ming surplus to requirements the Contractor shall notify the Employer who shall Issue Instructions for its disposal.

3.3 The Contractors will be required to collect free issue materials from the Employer's site stores.

3.4 Any material supplied by the Contractor shall be new and good quality, type and standard as detailed in this specification. Where equipment, materials or articles

are referred to in the specifications as "equal to" any particular standard the choice and approval.

4. PROGRAM OF WORKS

4.1 The Contractor shall within fifteen days after the acceptance of his tender submit in writing for approval of the Employer. Consultant a program showing the order or precedence and method in which he proposes to carry out the works.

4.2 The program which the contractor is required to furnish shall be such as to allow the completion of the data mentioned in the tender as required by Employer.

4.3 The program which the cover the full period of works from the data of the acceptance of the completion of the installation, testing and handing over of the plants and installations in working orders.

4.4 The program shall submitted by the contractor shall be amended if any part of it is not the satisfaction of the Employer and it shall not be carried into effect until it has been approved (in an amended form if necessary by the Employer).

4.5 The Contractor may at any time during the period of the contractor submit to the Employer for his approval, proposals for amending the program of the works such amendments shall not be carried out into effect unless these have been approved by the Employer.

4.6 If the employer requires the Contractor to amend his program of work, the contractor shall not thereby be entitled to any adjustment in contract price or to any extension of time.

4.7 The contractor shall furnish in writing such further information concerning his arraignments for the carrying out of the works and of the constructional plant or temporally works he intends to supply, use of construct and of his arrangements for the direction and administration of his performance of the contract as the Employer may from time to time required.

4.8 The submission to or approval by the Employer of such program or the furnishing of such particulars or information shall not relieve the contractor of any of his duties or responsibilities under the contract.

5. SATISFACTION OF THE ELECTRICAL INSPECTOR & INSURANCE COMPANY

The work shall be carried out in accordance with IEE Rules

Rules and regulations as adopted in Pakistan, to satisfy the requirements of the Govt. Electrical Inspector, as Well as those of fire office insuring the building furniture etc., and the work is to pass the survey of their respective inspectors.

6. PROTECTIONS

The constructors shall be effectively protect his on work from damage during and as may be necessary, after installation, and he shall likewise protect adjoining work of other trades from damage resulting from installation of Electrical work.

7. BUILDING WORK

7.1 The information of channels foundations brick work, basis, recessed for board etc. will be carried out free of charge for contractor by the civil contractor if specifically indicated during the constructions work only.

7.2 All necessary working drawings which may be necessary for the civil contractor to carry out the above referred work shall be supplied to him by the contractor well in time. The contractor shall however be responsible for the proper marking out of such work at side and for ensuring that all brackets and sleeves etc. are correctly build in.

7.3 provision and fixing off brackets, clips, supports and stay etc., to the fixed to wood Iron masonry or other such materials shall be the responsibility of the contractor.

8. CODES AND STANDARDS ETC

8.1 The latest published rules of the national Electrical code, so far as applicable to this works, B.S.S. and I.E.E. Rules and regulations off local city authorities shall be considered included as parts of these specifications and all requirements under then shall be fully met all wiring shall be carried out in looping system.

8.2 The entire Installations shall be free from improper grounds, open and short circuit faults. Tests shall be made in accordance with section "E" of I.E.E. Regulation for the Electrical Equipment of building "1966" Edition in presence of a representative for the Employer / Consultant. Each panel shall be tested with mains connected to the riser, branches connected lamps removed or omitted, sockets and wall switches closed. Each individual power line shall be tasted with the power equipment connected for proper and intended operations. In no case shall the Installation resistance by lease then that allowed by the regulations for

Electrical Equipment of Building failure shall be corrected in a manner satisfactory to the Employer/ Consultant.

8.3 It shall be the responsibility of the Contractor to test all system of the entire Electrical Installations as well as those Installations where sequence Operations is required. The Electrical Contractor shall test for Proper sequence and he shall leave the Entire Electrical Installations in satisfactory working Conditions.

8.4 The contractor shall guaranteed that the Electrical system including all component and accessories used there in are free of all grounds, short and open circuit faults and defective workmanship and materials, any Electrical as well as mechanical defects known compliance of specification in any respect and will remain so, for the period of maintenance after the that of acceptance of the work, any defects, appearing with in the aforesaid period, shall be remedied by the contractor at his own Expense.

8.5 All electrical Installations in "Explosion hazardous zones" should comply to the institute of petroleum code of saves practices part-I Electrical.

9. OPERATION AND MAINTENANCE MANUALS

During the Time of Contact and before final approval of Electrical Installations, The Contractor shall submit to principal 2 (Two) copies descriptive literature maintenance and operation that and part list of each Item of Equipment installed under this contract.

10 ELECTRICAL SERVICE CONNECTION

10.1 It shall be the Contractor's responsibility to give all notices to the power supply authority for provision of any load required as a result of this work and to seek Quotation for the Installation, furnishing and connection of the required electrical load complete in all respect.

10.2 When the Installation is complete, the contractor shall intimate the power supply Authority and make such tests as required by them to demonstrate conformance With their regulations prior to their connection to the Installation. The Extant of work herein specified represents the minimum requirement and the Extent of work shall be extended as required to include at no increase in coast all that is required by the local power supply authority for an installation of this type.

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10.3 If inspection by the Government constituted body is to be carried out, the contractor shall be responsible for carrying out the same. If any fee is paid for such inspection the same shall be reimbursed to the contractor to arrange all temporary power requirements during the construction work at his own risk and cost.

11. MODIFICATION TO COMPLY WITH LOCAL STANDARD ETC

11.1 The Electrical works in general has been designed complying to National Electrical Code, B.S.S. and I.E.E. (London) Standards. The contractors Shall carefully check the Drawing and applicable portions of the specifications and he shall modify with local standard and have them incorporated in the "**SHOP DRAWING**". In the event contract drawings are modified, it shall be the responsibility of the contractor to supply these modifications to all circuit work, panel boards, feeders, conduit switch points, sockets outlets, and in.

11.2 Any changes from the contract drawings and specifications due to manufacture requirement which may add to the cost of the Electrical works shall be taken into Consideration by the contractor and such additional costs, if any, shall be included in the tender at the time of submitting the tender.

12. RECORD DRAWINGS

12.1 The contractor shall during the progress of the work, keep a careful installation differs from that shown on the CONTRACT or SHOP DRAWINGS. Upon completion of work the contractor shall prepare completion drawings on tracing cloth in a neat and accurate manner, from the signed record of all changes and revisions of the original design, to represent true installation in the completed work. These completion drawings shall be scrutinized and finalized by the OWNER/CONSULTANTS and two sets of prints handed over to the contractor. The Original tracings shall be retained by the OWNER. Final payment shall be withheld until receipt of these completion drawings in tracing cloth and subject to general terms and other clauses of the contract.

13. LOCATION OF WIRING OUTLETS

13.1 The contractor shall coordinate his work with all trades involved so that Exhalative locations may be obtained for all Outlets, apparatus, appliances and

wiring. The circuit numbers for lighting and power circuits are indicated on the drawing against the location of the outlet controls.

13.2 The Contractor shall provide for all power from main distribution switches board to all power boards and thereafter to all socket and socket outlets.

13.3 The power leads to all motors shall be in Conduit. Where motors have conduit terminal boxes, the feeder conduit shall be connected directly to boxes, the feeder conduit shall be connected directly into the same, except of fans and pumps which shall have at least 18 inches of armored flexible conduit from end of rigid conduit to motor terminal box. Under no circumstances shall rigid conduit terminals be used or be fastened to motor foundation. Armored Flexible conduit shall be Installed motors having sliding base. Provision shall also be made for the movement of Motors bolted to equipment.

13.4 The Location of outlets shown on diagrammatic wiring plans shall be considered as approximate and it shall be incumbent upon the contractor, before installation outlets Boxes, to study all pertinent drawings and obtain precise information from the architectural schedules, scale drawings, large scale and full details of finished rooms approved shop drawings of the trades etc. from the consultant.

13.5 In centering outlets due allowance shall be made for overhead piping, ducts, windows and door trim, variations in thickness of furring, plastering, etc. as erected, regardless of conditions which may be otherwise shown on drawings. Outlets incorrectly located shall be properly located at the contractor's expense. Local switches which are shown near door shall be at the strike side of the door as finally hung regardless swing shown on the drawings.

B – SPECIFICATIONS

14. SWITCHES

14.1 Switches controlling light and fan points shall be 5 Amperes or above, 250 Volts single or double pole, one way or two way, flush type as stated in Bill of Quantities The Switches shall be mounted on wall flushed steel back boxes, where the drawing indicates two or more switches or switches and sockets side by side, they shall be mounted in a multiple gang box. If molded case switches are specified, the combination of standard gang switches shall be used with back boxes for each gang.

14.2 samples shall be provided to the consultants for his prior approval before purchase.

15. SOCKET OUTLETS

15.1 Socket outlets and plugging assembly shall 5 Amps, 2 round pins, line-neutral,5 Amps, 3 round pin, line-neutral-ground or 13/15 Amps, 3 pin, line-neutral-ground These Shall be made of Bakelite and shall be suitable mounting flush with wall or column or surface mounting as called for in Bill of Quantities.

15.2 Each socket outlet shall have its control switch by the side of it one a common board if it is not of combined type switch-socket unit.

15.3 Where the socket and switch units or switch-socket outlets are to be Installed in a or wet or damp area, they shall be of whether proof type.

15.4 Samples shall be provided to the consultant for his prior approval before purchase.

16. OUTLETS BOXES

16.1 Each outlet in the wire form conduit system shall be provided with an outlet box to suit The Condition encountered. Where outlets boxes are exposed to the weather or in normally we location including flush and surface or exterior masonry walls and in explosive location shall be of the cost metal type having threaded hubs. Boxes in all other location shall be either of PVC conduit or of black enameled arsenic-coated sheet steel type. Each box shall have sufficient volume to accommodate the number requirements. Ceiling and bracket Outlets

boxes shall be not less than 3" square except the smaller boxes may be used where by consultant. Recessed fixture shall be provided with separate junction boxes. Boxes to be Installed in concealed locations all with the proper type extension rings or plaster covers where required.

16.2 Boxes for use with conduit system shall not be less 1-1/2" except where shallow boxes are required by structural conditions and as provided by consultant. Switched and socket outlets boxes shall be not less than 3" x 3". All boxes shall be concrete tight whether installed in concrete or in fluid material.

16.3 Pull boxes shall not less than the minimum size required by the codes and shall be constructed of galvanized cast iron or teak wood. Boxes shall be furnished with screw-fastened covers. For multiple cables passing through a common pull box, feeders shall be tagged to indicate clearly the electrical characteristics circuit number and panel designation.

17. OUTLET COVERS

Where not integral with the devices, the outlet plates shall be on-piece type. These shall be provided for outlets to suit the devices installed. Bakelite, plastic or Formica sheets as specified elsewhere in the tender documents. Screws for fastening of the plates/covers shall be of non-ferrous metal with counter sunk heads. The covers sheet shall be installed with all four edges in continuous contract with finished wall surface without use of mats or similar devices. The use of sectional type outlet covers shall not be permitted.

18. LIGHTING FIXTURES

18.1 General

18.1.1 The lighting fixtures type are given on the drawing and each type is specified in detail in the items of specified in detail in the items of bill of quantities. Where a definite manufacture's type and catalogue number is specified, it shall also serve as an illustration of type and if the particular type and if the particular of fixture specified is not available approved equivalent fixture may be accepted.

18.1.2 The determination of quality will be based on certificate photometric data covering the coefficient of utilization average brightness data, as well as equivalent of construction, the Engineer's approval is necessary. The contractor shall submit samples of each [illegible] lighting fixture

specified and obtain approval of the Engineer before commencing installation.

18.2 Fluorescent Light Fixtures

18.2.1 The industrial type fluorescent light fixtures shall have lamps and ballast of proper type and wattage as specified in the items of Bill of Quantities. The fluorescent lamps shall be 4 ft. 40 watts. The fluorescent color shall be white, cool day-light or day-light in that order of performance- the lamps shall be hyson or Philips make or equivalent.

18.2.2 The lamp holders shall be rotary, lock-in type. The starter shall be Philips make or approved equivalent.

18.2.3 The internal wiring of the fluorescent light fixtures with heat resistance wires shall be done at the manufacture's factory. Two or more than two lamps fixtures shall be provided with power factor improvement capacitor to give a power factor of 0.9. In addition to power factor improvement capacitor, capacitor for anti-ratio Interference shall be provided in each fluorescent fixture. The fluorescent light fixture shall be have with stove enameled sheet steel reflector white stove enameled inside and gray outside. The sheet steel shall not be thinner than 20 gauge. Appropriate size bushed wire entry holes, fixing holes, etc. shall be provided.

18.3 Incandescent Light Fittings

18.3.1 The glass shade or globe incandescent light fitting shall be of first quality glass free from any air double or voids. The Glass shall be opal white color unless otherwise specified.

18.3.2 The surface mounting incandescent light fitting shall have white stove enameled sheet body. The fixing shall match the outlet box. The wall brackets incandescent light fittings shall have back plate with holes matching those of the conduit outlet box.

18.2.3 The incandescent fittings shall have bi-pin lamp holders of brass. The lamps shall be Hyson's or Philips make.

19. CEILING FANS

19.1 Ceiling Fans shall be capacitor type, five speeds, suitable for 250 volts, single phase, 50 c/s a.c. The displacement shall be 10,0000e.f.m. for 48" (1219 m) sweep and 12,00 ef.m.for 56" (1423 mm) sweep at maximum speed. The fan motor shall be capacitor type and bearings shall be groove type to give noiseless operation. The fan regulator shall have laminated high grade sheet steel and regulators shall be recessed mounting type. The fan and regulator shall be of Millat or National Lahore, make or approved equivalent.

19.2 The fan shall be made of 15.8 mm (5/8") dia mild steel rod to shape of approved design. It should be in the form of loop about 87.5 mm (3-1/2") Long and about 50 mm (2") wide. The rod should be bents to have at least 200 mm extension on both sides for type to the reinforcement steel of the slab.

19.3 The fan hook shall be installed in the R.C.C. Ceiling at the time of pouring of concrete. The fan hook extending rods shall be tied to the reinforcement steel firmly so as no to be distributed during pouring of concrete.

19.4 The installation of fan shall include fixing of blades down rod, clamp and far regulator and wiring of down rod from the ceiling rose to the fan terminals, testing and commissioning the down rod shall have long threads and shall be provided both of the fan clamps for safety. Any as cartouches on the body of the fan or quality paints as provided by the manufactures.

20. CONDUIT AND WIRING ACCESSORIES

20.1 Section B of the regulation for the electrical equipment of the Building, issued by the Institute of Electrical Engineers London 14th Edition (Referred Hereinafter as wiring regulation) shall be complied with as far as applicable to this installation.

20.2 The conduit wherever concealed in masonry shall be of rigid PVC b-Class 6kg/cm^2 pressure manufactured by Pakistan PVC D-Class 12 kg/cm^2 pressure. Where no permitted because of dampness of fire, steel conduit of 16 SWG shall be installed the Conduit systems shall be installed in accordance with regulation B-87-100 of the wiring relation. The conduit system shall be concealed in masonry wall, floor with required minimum concrete over it where not possible due to structural reasons; the conduit shall be exposed clipped to wall or roof.

20.3 Separate conduit shall be laid for different system, the mains, power such circuit and control wiring b/w control and the outlet.

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20.4 The drawings indicate the suggestive runs for the various routes of the wiring as well as position of outlet. Minor change to suit actual construction shall be acceptable for which special and specific details be indicated in the shop drawing for the approval of the principal/Consultant. The contractor shall keep true record of all conduit layouts and submit as installed drawings before finally handing over the installation.

20.5 For the jointing of PVC conduit, PVC adhesive solution of approved make shall be applied to all joint and junction boxes to ensure proper sealing. Exposed conduit wherever utilized shall be securely fastened in place by means of approved conduit supports and fasteners. Where Conduit/pipe are to be fastened to masonry walls, floor or portion use of wooden block will not permitted. Metal saddles of approved type not more Then 4' apart shall be used for fixing exposed conduit.

20.6 The conduit shall be fastened to the box coupling and lock nut and insulating bushing approved make and type.

21. LOW TENSION CABLE

21.1 All the low tension cables shall be of size specified on the drawing or stated in the schedule of Quantities, single core, 3 core, or 3-1/2 core as required, polyvinyl chlorides (PVC) insulated and PVC sheathed. The cables shall be used either in floor in floor trenches ir in conduit and thereof should be suitable fir above conditions.

21.2 The copper used in manufacture of cables should conform to B.S.S. 10 or equivalent standard, having an electrical conductivity of not BSS 2004 & 2746 and should have heat stability and volume resistivity in accordance with the standard laid down by cable manufactures association (U.K.)

21.3 All the cables should comply the test requirements of B.S.S. 200:1961.

21.4 The low tension cables shall be four cores with reduced neutral or 3 core as described having copper conductors of standard, a healed, electrolytic, high conductivity copper wires PVC insulated and PVC compound sheathed armored and non-armored and non-armored. The voltage grade shall be 1000/600 volts. The cables shall conform to B.S.6346:1969 and I.E.C. standard 502-1:1978.

21.5 The copper conductor will meet the requirements M.S. 6360:1969 and EC grade specifications of ASTM.

21.6 Core identification shall be by colors. Red, Yellow, and blue will indicate the three phase and black, the neutral.

21.7 The cables shall comprise of shaped stranded copper conductor, PVC insulated, tapped bedding galvanized steel wire armor and PVC over sheath.

21.8 The cables shall be capable of operating at a maximum continues temperature of 70 ^{0}C and short circuit temperature of 150 ^{0}C. The cables shall be suitable for operation on 415 Volts 4 wire 50 Hz AC system with the neutral point solidly earthed at transformer.

21.9 Technical particular of L.T. PVC/PVC cable shall be furnished for each size of the cable offered and mentioned in B.O.Q.

22. L.T. CABLE GLANDS, CLIPS & LUGS

22.1 Cable glands shall comprise of gland body, compression ring. Armor ring (Where required) gland and conduit thread.

22.2 Cable glands shall be suitable for size of cable used and shall conform to BS 6121:1973.

22.3 All termination of PVC insulated cable shall be in compression connectors and termination. The lugs shall be manufactured from high conductivity copper, electro plated to resist corrosion and give good electrical continuity. Lugs shall be fitted by Compression tools made for the purpose.

22.4 Correct type of cable clamps and clips shall be used where needed. These shall be selected according to cable manufactures recommendations.

23. DISTRIBUTION PANELS

23.1 The Distribution panels shall be totally enclosed metal clad, safety dead front type with hinged door and built – in concealed locks. The panels shall be suitable for working Voltage for which the equipment incorporated there in is designed for and tested in accordance with B.S. 116/1952.

23.2 The panels shall be constructed from 14 SWG sheet steel and shall accommodate circuit breakers, fuse switches distribution board, metering equipment, bus bars supports, cable glands and other relevant equipment.

23.3 The panels shall be finished inside and outside the hammer light gray air drying enamel and two finishing coats shall be applied after basic coat of anticorrosive primer. & Oven baked.

23.4 The mountings on the panel shall be earthed by means of earthling the entire pane through the two earthling terminals specifically provided for this purpose.

23.5 The panel shall be equipped with a terminal block of suitable rating and all out going connections shall be brought to that terminal block. The terminal block shall have a minimum 20% spare capacity for future use.

23.6 All panel enclosures shall have protection class I.P.54 as per DIN 4050 and I.E.C regulation.

23.7 **Panel Boards**

The protective devices in the boards shall be miniature circuit breakers (MCBs) of the Quantities and ratings specified in the Bill of Quantities/Drawings. The Circuits Shall be connected to the respective/MCBs. The MCBs shall be suitable for minimum 5 KA rupturing Capacity and designed for 2000 switching operation.

24. EARTHING

24.1 All exposed non-current carrying metallic part of the of the electrical equipment, flexible conduit switch gear shall be efficiently earthed.

24.2 The earthing shall be done to comply with the following rules.

24.2.1 Indian Electricity Rules as adopted in Pakistan.

24.2.2 Section 'D' of part of the regulations for the electrical equipment of Buildings published by the Institution of Electrical Engineers London, 14th Edition.

24.2.3 British **standard Code of Practice No. CP. 1013:1956.**

24.3 The specifications are given here as under:

24.3.1 The earthing of the individual distribution points etc., shall be done as specified exclusively and Independently of the sub-station earthing.

24.3.2 For earthing of L.T. equipment earths shall be provided with copper plate earthing electrode. The earthing connections to the Neutral point shall bear distinct indicates, 'NOT TO DISCOUNT'. Ex[illegible] the pit in the soil

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does the site refilling the pit with earth, lime and Charcoal, watering consolidation and ramming the layers to full compactness.

24.3.3 The earth shall consist of 2x2'1/8" copper plate as specified hereafter and buried in the ground at a depth of 15 feet or more according to the moisture in the strata Two earthing leads of the required size (circular) pipe of the size specified straight from the earth plate upto the point in the installation to the earth. A tee shall be provided at the vertical and extended in a manhole of 12"x12" size of inject water casually.

24.3.4 The earth lead shall be of soft annealed electrolytic copper strip. Size 1 ½" x1/4' two such leads shall be brought out from each earth plate conforming to B.S.S. No.899 and shall be run in a 4" diameter hums pipe, as far as in the ground till it trench of the sub-station, where it shall be properly fixed on saddle and support.

24.3.5 The upper end of hums pipe, shall be terminated in a manhole so as to inject the water for improving the earth resistance, as and when necessary.

24.3.6 The earthing leads shall be terminated on the earthing block.

24.3.7 The connection between earth lead, earth plate or earth LR lead/earth bar shall be with 3/16" diameter bolts conforming to B.S.S. NO. CP. 326.101 of 1948. The contact surface shall be silver coated before fixing and silver soldered after fixing. The connection with earth plate shall be at two distinct suitably spaced points.

24.3.8 There shall be no joint in the earthing leads between the earthing plate and earth block.

24.3.9 The earthing bar for the sub-station earth shall be cast and machined in electrolytic copper, conforming to B.S.S.I., 400. The size of earthing block shall be least 4"x12"x5/8". The earthing block shall be suitable for interconnections of two sets of earth leas 1-1/2x1/8" suitable number of brass bolt terminals shall be provided for terminating the earth leads from various load points as well as sheathing of all the outgoing cables.

24.3.10 The earth leads of sot annealed, electrolytic copper strip, size 1'x1/8" conforming to B.S.S. 899 shall be used to earth all the control panels installed in the sub-station and a separate lead of 1 ½" x ¼" for earthing neutral point. All the other equipment shall be earthed by circular copper conductors or as specified otherwise.

24.3.11 All the joints made in the strips shall be riveted in accordance with clause No.802 of G.P. 326 101. The surface, before riveting shall be silver plated, and soldered after riveting.

24.3.12 The ends of the circular earth conductors shall be tinned after twisting, so as to ensure the minimum contact resistance throughout its useful life.

24.3.13 The earth plates, for different earth shall be buried at least 30 feet apart so that their resistance shall not overlap.

24.3.14 The shortest route to the earth the electrode shall be adopted but sharp bends and joints shall in all cases be avoided. The earthing leads shall be connected to the earthing electrodes by means of sweating sockets, bars nuts, bolts and double washers so fixed to make a permanent and positive connection with the earthing electrode.

24.3.15 The maximum continuity resistance from any point in the installation including earthing leads to the earth plate shall not be exceed 1 ohm. The contractor therefore, must ensure that the earth leads are efficiently bonded to all metal works other than the current carrying parts so that the above resistance limit is no exceeded. Contractor shall arrange testing in the presence of the Engineer as required under I.E.E. **'WIRING REGULATIONS'** and submit certified copies to the Engineer.

25. VOICE SYSTEM

25.1 General

The telephone system shall comprise of a Main Telephone Distribution Board, Sub-Telephone Distribution Boards floor mounting type telephone socket Outlets. The contractor shall be responsible for furnishing and installing all the above equipment. Cables conduits back boxes etc., according the specifications described herein. The contractor shall carry out the work in accordance with the Electrical code of practice CP 32.101, CP 327.102 of England, to the local applicable codes and to the entire satisfaction of telephone Department. The Contractor shall make all necessary arrangement with telephone and telegraph Depart for the incoming cable (s). The contractor shall perform all the work to the satisfaction of T&T Department. The contractor shall guarantee the proper functioning and defect free working of the system for period of one year for the date the system shall be commissioned.

25.2 Installation Work

The installation of non-equipment work shall include delivery, unloading, uncrossing setting in place, fastening to walls, floor, ceiling and other structures etc., and the completed conducting according to the specifications given in conduit installation including fixing of junction/pull boxes, pulling and connecting of cables installation of Telephone Distribution Board. The telephone layout drawings shows the floor plan of the respective floors and the conduits shall be laid above the RCC floor slab concealed in floor finish, unless otherwise specifically shown on the drawings.

25.3 Telephone Distribution Boards

The telephone distribution boards shall be made of superior quality teak wood 10mm thick and enclosed in tight fitting in black enameled steel outer box of 16 SWG, the two being fastened together by means of nuts and bolts. A sheet steel door 16 SWG antitrust treated and painted, with locking arrangement shall be fixed on the box. The TDB,s will be either flush or surface mounting type as specified in Bill of Quantities In case of flush mounting type TDB's, The steel door will flush with the surface of the wall.

The door shall match the wall color. The TDBs shall be of appropriates size to accommodate terminal strips. The terminal strips fixed in the TDBS shall be made to copper. These shall be made of Telephone Industries of Pakistan.

25.4 Conduit and conduit Accessories

The contractor shall furnish and Install complete conduit system with associated outlet boxes and terminal boxes, so as to be complete in all respects for installation of wire and cable. Conduits shall be 1"Dia PVC. The specification for conduit accessories remains same as given before of these specifications. At each telephone outlet location as shown on the drawings, the contractor shall furnish heavy gauge Sheet box black enameled inside and out install flush with the surface of wall suitable for mounting the telephone rosette.

26. DATA NETWORKING SYSTEM

In the Data System, the following equipments will have the electrical/mechanical characteristics/features as detailed below;

(i) Rack Mount Fiber Patch Panel
(ii) Category 6 Patch Panels

(iii) Data Communication Racks
(iv) Category 6 Cable

26.1 Rack Mount Fiber Patch Panel

This Panel shall have the following mechanical/electrical characteristics features.

26.1.1 Mechanical Characteristics

(i)	Material	Box-powder coated aluminum alloy
(ii)	Spool sheet	Flame Retardant Grade (FR grade) of ABS Material
(iii)	Cable Grommets	FR grade nylon
(iv)	Splice Tray	Aluminum + ABS
(v)	Splice Tray Dimensions	140 x 125 x 10mm
(vi)	Dimensions	370 x 350 x80 (H x W x D)

26.1.2 Product Features

(i) Aluminum housing with durable epoxy powder coating
(ii) Suitable for 19" rack mountable cabinet.
(iii) Allow minimum two cable entries
(iv) Flame retardant plastic high impact resistance cable spool
(v) Qualifies as per ISO/IEC 11801
(vi) EN 20173

26.2 Category 6 Patch Panels

This Panel shall have the following mechanical/electrical characteristics features.

26.2.1 Electrical Characteristics

(i)	Dielectric Strength	1000V RMS at 60 Hz for 1 minute
(ii)	Current Rating	1.5 Amp maximum
(iii)	Insulation Resistance	200 M Ω minimum
(iv)	Contact Resistance	1 m Ω per contact
(v)	Temperature Range	- 40 °C to +70 °C
(vi)	Transmission performance	Exceeds ISO/IEC 11801 Class E AS/NZS 3080:2003 Class

26.2.2 Mechanical Characteristics

Modular Connector

(i)	RJ45 8-Pin Connector	FC part 68, Subpart F and IEC-60603-7 compliant
(ii)	Durability	1000 mating cycles
(iii)	Material	Phosphor bronze with 50 micro-inches of Gold over 100 micro inches nickel plating

IDC Connector

(i)	IDC connector	Insulation slicing of 22 to 24 AWG (0.64 mm to 0.41 mm).
(ii)	Insulation Diameter (wire)	0.70 mm – 1.40 mm
(iii)	Connector material	phosphor bronze with nickel plating

26.2.3 Product Features

(i) Removable rear cable management tray
(ii) Compatible with standard 19" equipment frames
(iii) IDC termination using a Actassi or other compatible tools
(iv) Fully compliant to AS/NZS 3080:2003, ISO/IEC 11801 Edition 2 2002 And ANSI/TIA/EIA-568-B series connecting hardware standards

26.3 Data Communication Racks

(i) Frames shall be manufactured from SPCC cold rolled steel and thickness of steel sheet as below.

a. Mounting rail	2.0 mm
b. Mounting angle	1.5 mm
c. Others	1.2 mm

(ii) 19" standard installation with adjustable dimension.
(iii) Side doors with locks for protection.
(iv) Static loading capacity of 1000 kg or above.
(v) Must have IP 20 degree of protection.

26.4 Category 6 UTP Cables

This Cable shall have the following technical information and product features.

26.4.1 TECHNICAL INFORMATION

Physical Specifications	
Rated Temperature	75°C
Flammability Test	CMR, CM, LSZH
Application	Horizontal Wiring in LAN
Reference Standard	UL Subject 444, EIA/TIA 568-B.2 & ISO/IEC 11801, IEC61156-5

26.4.2 CONSTRUCTION

Conductor	Solid Bare Copper
AWG	23
Conductor Dia. Nom. (mm)	0.57
Insulation	PE
Average Thickness (mm)	0.22
Min. Point Thickness (mm)	0.18
Insulation Diameter (±0.10mm)	0.95
Twisting Lay Length (mm)	30 underneath
Cabling Lay Length (mm)	200 underneath
Filler	PE
Jacket	PVC
Average Thickness (±0.05mm)	0.50
Min. Point Thickness (mm)	0.43
Outer Diameter (±0.2mm)	6.00
Rip Cord	Yes
1.0-100.0MHz Input Impedance (Ohms)	100±6
100-250MHz Input Impedance (Ohms)	100±6
1.0-250.0MHz Delay Skew (ns/100m)	≤45
Pair-to-Ground Capacitance Unbalance (pF/100m)	≤330
Max. Conductor DC Resistance 20°C (Ohms/km)	73.2
Resistance Unbalance (%)	≤5

26.4.3 Product Features

I. complies with category 6 ANSI/TIA/EIA-568 & ISO/IEC 11801 standard.
II. 23 AWG conductors and the transmission is certified to 250 MHz.
III. UL listed CM fire rated.
IV. Exceeds category 6 ANSI/TIA/EIA-568 & ISO/IEC 11801 standards.
V. Supports transmission of digital and analogue voice, data and video signal.
VI. Supports gigabit Ethernet (1000 Base-T)

27. PUBLIC ADDRESSING SYSTEM

27.1 PA Mixer Power Amplifier:

Equipped with 6 Microphone inputs and 5 AUX inputs (simultaneous use of 9 inputs possible), the PA amplifier of 240 W is designed to suit the following PA system applications: announcements, BGM, and broadcasting in mosques, churches, large rooms, and factories.

- **Specifications:**

* 0 dB = 1 V

Power Source	220 - 230 V AC, 50/60 Hz
Rated Output	240 W
Power/Current Consumption	532 W (rated output), 220 W (EN60065), 60 mA or less (when power switch is OFF)
Frequency Response	50 Hz - 20 kHz (±3 dB)
Distortion	2 % or less at 1 kHz, rated power
Input	MIC 1 - 6: -60 dB*, 600 Ω, electronically-balanced, combined type of XLR-3-31 equivalent and phone jack AUX 1 - 2: -20 dB*, 600 Ω, electronically-balanced, combined type of XLR-3-31 equivalent and phone jack (Either MIC 5 or AUX 1, and either MIC 6 or AUX 2 selectable) AUX 3 - 4: -20 dB*, 10 kΩ, unbalanced, RCA pin jack AUX 5: -20 dB*, 10 kΩ, unbalanced, combined type of XLR-3-31 equivalent and phone jack PWR AMP IN: 0 dB*, 600 Ω, unbalanced, RCA pin jack (An equalizer or other signal processor connectable between LINE OUT and PWR AMP IN terminals)
Output	REC: 0 dB*, 600 Ω, unbalanced, RCA pin jack LINE: 0 dB*, 600 Ω, unbalanced, RCA pin jack SPEAKER SELECTOR: 2 zone, high impedance (100 V line/42 Ω), individual selector key, M4 screw terminal DIRECT SPEAKER OUT: High impedance (100 V line/42 Ω), M4 screw terminal Low impedance (4 - 16 Ω), M4 screw terminal (Both Low and High impedance terminals cannot be used at the same time.)

Phantom Power	ON or OFF for each MIC1 - 6 with switch setting (+17 V DC)
S/N Ratio (Band Pass : 20 Hz - 20 kHz)	100 dB or more (Master volume: min) 76 dB or more (Master volume: max) 60 dB or more (MIC 1 - MIC 4) 53 dB or more (MIC 5, MIC 6) 76 dB or more (AUX 1 - AUX 5)
Tone Control	Bass: ±10 dB at 100 Hz, Treble: ±10 dB at 10 kHz
Control Input	REMOTE VOLUME: M3 screw terminal POWER REMOTE: No-voltage make contact input, open voltage: 28 V DC (when the unit's power is OFF), short-circuit: 10 mA or less, M3 screw terminal
Indicator	5 point LED output level meter, Power indicator LED, Zone indicator LED
Operating Temperature	-10 °C to +40 °C
Finish	Panel: ABS resin, black, hairline Case: Steel plate, black
Dimensions	420 (W) × 107.7 (H) × 367 (D) mm
Weight	13.5 kg
Accessory	Power cord .....1, Terminal block cover .....1, Terminal block cover mounting screw 2
Option	Rack mounting bracket: MB-25B Volume control cover: YA-920

27.2 PA Universal Speaker

It should be 2-way bass-reflex type speaker featuring a wide frequency range suitable for use for announcements and music playback. It can be used for both high-impedance and low-impedance applications. The speaker's splash-proof construction permits it to be installed under the eaves where the speaker is not directly exposed to rain.

- **Specification:**

Enclosure	2-way bass-reflex type
Rated Input	30 W
Rated Impedance	8 Ω

	100 V line: 330 Ω (30 W), 500 Ω (20 W), 670 Ω (15 W), 1 kΩ (10 W), 2 kΩ (5 W) 70 V line: 170 Ω (30 W), 250 Ω (20 W), 330 Ω (15 W), 500 Ω (10 W), 1 kΩ (5 W)
Sound Pressure Level	90 dB (1 W, 1 m)
Frequency Response	80 Hz - 20 kHz
Speaker Component	12 cm cone-type + dome-type
Speaker Cord	2-core cabtyre cord with diameter of 6 mm
Operating Temperature	-10 °C to +50 °C
Water Protection	IPX4 (can be installed vertically or horizontally.*)
Finish	Enclosure: ABS resin, white (RAL9010 PURE WHITE), paint Net: Surface treated steel plate, white (RAL9010 PURE WHITE), powder coating Bracket: Surface treated steel plate, white equivalent to RAL9010 PURE WHITE, powder coating
Dimension	196 (W) × 290 (H) × 150 (D) mm (unit only)
Weight	2.5 kg (unit only)
Accessory	Bracket...1, Bracket mounting screw...2, Bracket mounting washer...2
Option	Mounting bracket: SP-420 Applicable bracket: WCB-13W, SP-410 Applicable stand: ST-16A

27.3 PA Pendent Speaker

It should be designed for ceiling suspension installations. Considered in architectural design, it can blend in with lighting equipment. A directly-attached 5 m (16.4 ft) cable allows the speaker to be suspended from the high ceiling. It can be driven on both high-impedance (100 V and 70 V) and low-impedance (8 Ω) lines. The input power (impedance) can be easily changed at the upper side of the speaker. The speaker is easy to repaint so as to meet a wide range of design needs.

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➢ **Specifications:**

Enclosure	Bass-reflex type
Rated Input	30 W (100 V, 70 V line, 8 Ω)
Rated Impedance	100 V line: 330 Ω (30 W), 500 Ω (20 W), 670 Ω (15 W), 1 kΩ (10 W), 2 kΩ (5 W) 70 V line: 170 Ω (30 W), 250 Ω (20 W), 330 Ω (15 W), 500 Ω (10 W), 1 kΩ (5 W) 8 Ω
Sensitivity	91 dB (1 W, 1 m) (500 - 5,000 Hz, pink noise)
Frequency Response	70 - 20,000 Hz (peak -20 dB)
Speaker Component	12 cm (5") cone-type + balanced dome-tweeter
Speaker Cord	2-core cabtyre cord 5 m (16.4 ft)
Applicable Cable	600 V vinyl-insulated cable (IV wire or HIV wire) Solid copper wire: φ0.8 - φ1.6 mm (equivalent to AWG 20 - 14) 7-core twisted copper wire: 0.75 - 1.25 mm² (equivalent to AWG 18 - 16)
Connection	Push-in connector (bridging terminal-2 branch type)
Finish	Enclosure: HIPS resin, off-white (RAL 9010 or equivalent color) Grille: Surface-treated steel plate net, off-white (RAL 9010 or equivalent color), paint
Dimensions	φ186 × 251 (H) mm (φ7.32" × 9.88") (unit only)
Weight	2.1 kg (4.63 lb) (unit only)
Accessory	Ceiling bracket …1, Mounting hanger …1, Ceiling cover …1, Speaker mounting screw (4 × 16)…4

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27.4 PA Unidirectional Microphone

It should be a multi-purpose microphone featuring high intelligibility.

- **Specifications:**

Type	Moving coil microphone
Directivity	Unidirectional
Rated Impedance	600 Ω, unbalanced
Rated Sensitivity	-55 dB (1 kHz 0 dB=1 V/Pa)
Frequency Response	100 Hz - 12 kHz
Connection Cable	Single-core shielded cable
Cable Length	7.5 m
Terminal of Cable	Phone plug
Talk Switch	Short-off, slide switch
Finish	Body: Die-cast aluminum, black Head: ABS resin/zinc-plated steel wire, black
Dimensions	φ55 × 178 mm (microphone body)
Weight	155 g (without connection cable)
Accessory	Microphone holder (U5/16, NS5/8)

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27.5 UHF WIRELESS MICROPHONE

■SPECIFICATIONS

Product Composition	Handheld wireless microphone WM-5220 -1, Diversity tuner WT-5810 -1
Frequency Range	636 - 865 MHz(*2), UHF
Tone Frequency	32.768 kHz
Operating Temperature	-10 °C to +50 °C
Accessory	AC adapter(*3) -1, Screw driver -1, Microphone holder (with stand adapter) -1, Storage case -1

Wireless microphone

Microphone Element	Electret condenser microphone unit; Cardioid
Modulation	Frequency modulation
Channel Selectable	64 channels
RF Carrier Power	50 mW or less
Oscillator	PLL synthesized
Maximum Input Level	126 dB SPL
Maximum Deviation	±40 kHz
Audio Frequency Response	100 Hz - 15 kHz
Battery	LR6 (AA)
Battery Life	10 hours or more (alkaline)
Indicator	Power/Battery lamps
Antenna	Built-in type
Finish	Resin, rubber coating
Dimensions	ø43.6 x 231.5 mm
Weight	180 g (with battery)

Wireless tuner

(*1) 0 dB = 1 V

Power Source	AC mains (supplied AC adapter must be used)
Power Consumption	130 mA (12 V DC)
Channel Selectable	16 channels
Receiving System	Double super-heterodyne
Diversity System	Space diversity
Mixing Output	MIC: -60 dB(*1), 600 Ω, balanced, XLR-3-31 type connector LINE: -20 dB(*1), 600 Ω, unbalanced, phone jack
Mixing Input	-20 dB(*1), 10 kΩ, unbalanced, phone jack
Antenna	Rod antenna
Receiving Sensitivity	90 dB or more, Signal to Noise ratio (70 dBμV input, 40 kHz deviation)
Squelch Sensitivity	18 - 40 dBμV variable
Squelch System	Using together of noise SQ, carrier SQ and tone SQ
Indicator	ANT A/B, Audio (peak), Battery alarm, Channel number
Channel Check	Usable frequencies scanning
Signal to Noise Ratio	104 dB or more (A-weight, unbalanced output)
Harmonic Distortion	1 % or less (typical)
Frequency Response	100 Hz - 15 kHz, ±3 dB
Finish	Resin, black
Dimensions	206 (W) x 40.6 (H) x 152.7 (D) mm (excluding antenna)
Weight	590 g

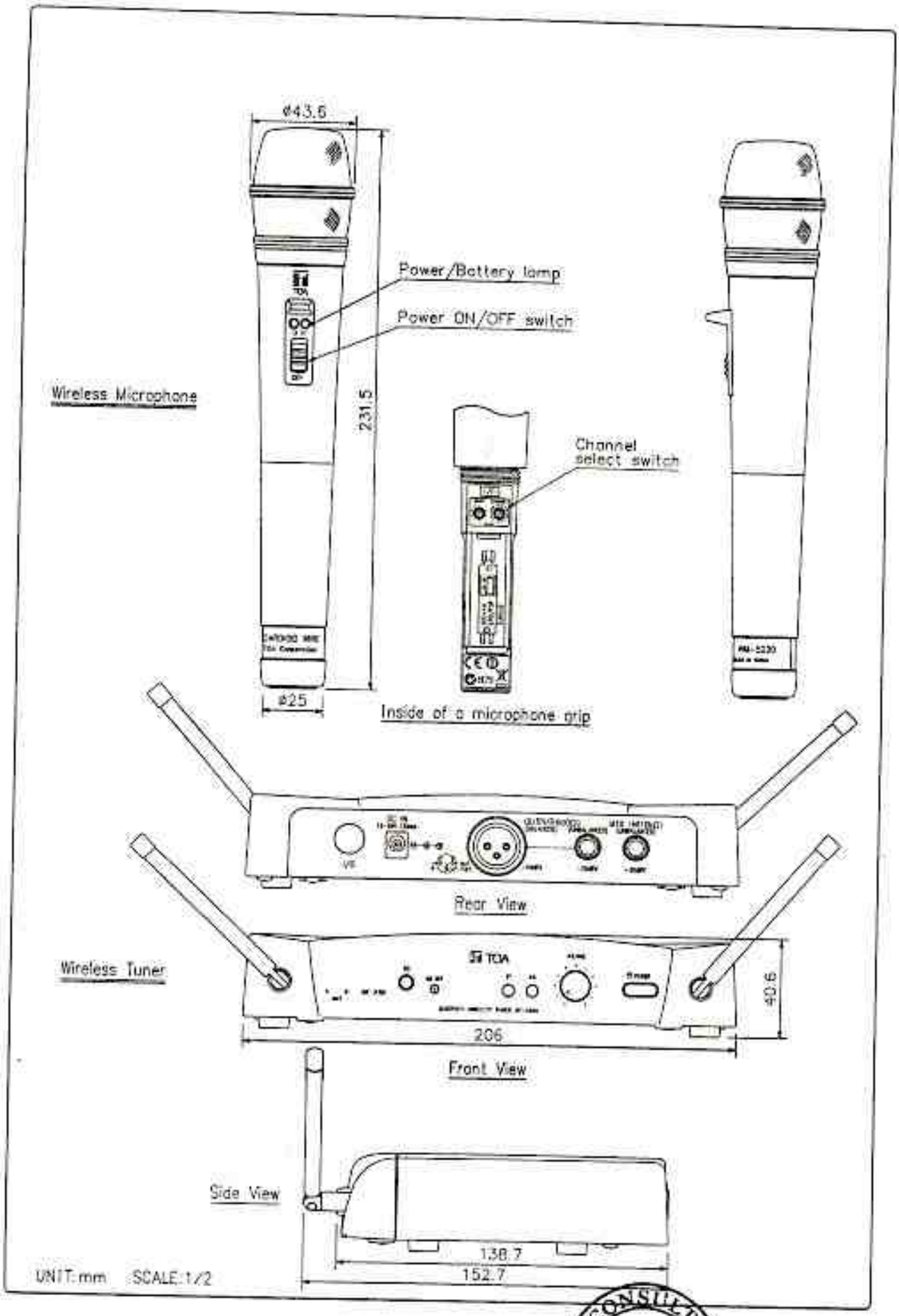
(*2)

Type	Frequency Range
A01	692 - 722 MHz, UHF
B01, B02	722 - 752 MHz, UHF
C01 - C07	794 - 830 MHz, UHF
D01 - D05	830 - 865 MHz, UHF
E01	668 - 698 MHz, UHF
F01	636 - 666 MHz, UHF

(*3)

Type	AC Adapter
US	120 V AC, 60 Hz
CN	220 V AC, 50 Hz
ER, UK, AS	230 V AC, 50 Hz

Note: No AC adapter is supplied with the B02ER.



27.6 Floor-Standing Projection Screen for Video Conferencing

It should be lightweight and easy to carry, and designed with high-low case adjustment to accommodate low ceilings. The keystone eliminator compensates for picture distortion by tilting the screen forward, and the matte-white screen surface is washable, flame retardant and mildew-resistant for impressive durability.

- **Features**

Type	Floor-standing
Operation	Manual
Aspect Ratio	AV/Square 1:1
Viewing Angle	60 degrees
Size (in.)	70 x 70
Closed Height (in.)	6.5
Closed Width (in.)	77.25
Closed Depth (in.)	3.25

27.7 Multi-Media Projector for Video Conferencing

Features:

1. A 5,000-hour lamp replacement cycle saves operating costs.
2. Intelligent Power Management function allows resistance to sudden voltage fluctuations.
3. Mobile projector, but can also be used on a desktop or mounted to the ceiling.
4. Setup is fast and easy thanks to features like Speed Start.

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➢ **Specifications:**

General	Power supply		100 - 240 V AC, 50/60 Hz
	Power consumption		290 W 0.4 W at 220-240 V AC, 0.3 W at 100-120 V AC when standby mode set to eco*[1], 15 W when standby mode set to normal, 18 W when standby mode set to normal and audio monitor out.
	Optical system		Dichroic mirror separation/prism synthesis system
	LCD panel	Panel size	16 mm (0.63") diagonal, 4:3 aspect ratio
		Display method	Transparent LCD panel (x 3, R/G/B)
		Drive method	Active matrix
		Pixels	786,432 (1,024 x 768) x 3, total of 2,359,296 pixels
		Pixel configuration	Stripe
	Lens		Manual zoom (1:1-1:1.2), manual focus, F 2.00-2.20, f 19.22-22.68 mm, throw ratio: 1.5-1.7:1
	Lamp		220 W UHM lamp (The lamp replacement cycle is 5,000 hours.*[2])
	Projection size		0.84–7.62 m (33–300 inches) diagonally (4:3 aspect ratio)
	Colors		Full color (16,777,216 colors)
	Brightness*sup3/sup		2,600 lumens
	Center-to-corner uniformity ratio*sup3/sup		85 %
	Contrast ratio*sup3/sup		600:1 (full on/full off)

	Resolution (RGB)*sup4/sup		1,024 x 768 pixels (Input signals that exceed this resolution will be converted to 1,024 x 768 pixels.)
	Scanning frequency	RGB (analog)	Horizontal: 15–91 kHz, Vertical: 50–85 Hz
		YPsubB/subPsubR/sub	480i (525i): fH 15.75 kHz; fv 60 Hz 576i (625i): fH 15.63 kHz; fv 50 Hz 480p (525p): fH 31.50 kHz; fv 60 Hz 576p (625p): fH 31.25 kHz; fv 50 Hz 720 (750)/60p: fH 45.00 kHz; fv 60 Hz 720 (750)/50p: fH 37.50 kHz; fv 50 Hz 1080 (1125)/60i: fH 33.75 kHz; fv 60 Hz 1080 (1125)/50i: fH 28.13 kHz; fv 50 Hz 1080 (1125)/60p: fH 67.50 kHz; fv 60 Hz 1080 (1125)/50p: fH 56.25 kHz; fv 50 Hz
		Video/S-Video	NTSC, NTSC4.43, PAL-M, PAL60: fH15.75 kHz; fv 60 Hz PAL, SECAM, PAL-N: fH15.63 kHz; fv 50 Hz
	Optical axis shift		5:1 (fixed)
	Keystone correction range		Vertical: approx. ±30°
	On-screen menu		17 languages: English, French, German, Spanish, Italian, Korean, Russian, Chinese, Japanese, Swedish, Norwegian, Danish, Portuguese, Polish, Hungarian, Czech, and Thai
	Installation		Front/rear, ceiling/desk (menu selection)
	Built-in speaker		1 W (monaural), Size: 4 x 2 cm (1-1/16" x 25/32") x 1, oval
	Terminals	COMPUTER (RGB) 1 IN	D-sub HD 15-pin (female) x 1 RGB signal: G: 0.7 V [p-p] (1.0 V [p-p] for sync on green signals), 75 ohms, R, B: 0.7 V [p-p], 75 ohms, HD/SYNC, VD: TTL (positive/negative polarity compatible) YPBPR signal: Y: 1.0 V [p-p] (including sync signal), 75 ohms, PB, PR: 0.7 V [p-p], 75 ohms

		COMPUTER IN 2 / MONITOR OUT	-sub HD 15-pin (female) x 1 RGB signal: G: 0.7 V [p-p] (1.0 V [p-p] for sync on green signals), 75 ohms, R, B: 0.7 V [p-p], 75 ohms, HD/SYNC, VD: TTL (positive/negative polarity compatible) YPBPR signal: Y: 1.0 V [p-p] (including sync signal), 75 ohms, PB, PR: 0.7 V [p-p], 75 ohms
		VIDEO IN	RCA pin x 1, 1.0 V [p-p], 75 ohms
		S-VIDEO IN	Mini DIN 4-pin x 1, Y: 1.0 V [p-p], C: 0.286 V [p-p], 75 ohms
		AUDIO IN	M3 (L, R) x 2, 0.5 V [rms]
		VARIABLE AUDIO OUT	M3 (L, R) x 1, 0 –2.0 V [rms]
		SERIAL	D-sub 9-pin x 1, for external control (RS-232C compliant)
		LAN	RJ-45 x 1, compatible with PJLink™ (class 1), 10BASE-T/100BASE-TX
	Power cord length		2 m (6.6&)
	Cabinet materials		Moulded plastic (PC+ABS)
	Dimensions (W × H × D)*sup5/sup		307 x 69 x 210 mm (12-3/32" x 2-23/32" x 8-9/32")
	Weight*sup6/sup		Approx. 2.3 kg (5.07 lbs.)
	Operating environment		Temperature: 0°–40°C (32°–104°F) *7 Humidity: 20%–80% (no condensation)
	Supplied accessories		Power cord, Power cord secure lock, Wireless remote control, Batteries for remote control (AAA type for North/South America, R03 type for Europe/Asia) x2, VGA cable, Carrying bag, Application software (CD-ROM)

	Optional accessories	ET-PKB2	Ceiling mount bracket
		ET-KFB2	Highly durable filter unit
		ET-RFB2	Replacement air filter for ET-KFB2
		ET-LAB2	Replacement lamp unit

28. UPS Power Backup System:

28.1 UPS/Inverter 24 Volts, 2 kVA:

- **Specifications:**

MODEL		HOMAGE VISION 500	HOMAGE VISION 1000	HOMAGE VISION 2000
CAPACITY	VA/W	500VA/300W	1000VA/600W	2000VA/1200W
BATTERY VOLTAGE		12V	12V	24V
INPUT	Nominal Voltage	220/230/240VAC		
	Voltage Range	170-280VAC (Narrow Range)		
		90-280VAC (Wide Range)		
OUTPUT	Voltage	230VAC		
	Voltage Regulation (Bat. Mode)	10% / -15%		
	Frequency	50Hz or 60Hz		
	Frequency Regulation (Bat. Mode)	+/-0.1 Hz		
	Output Waveform	Modified Sine-wave		
BUILT-IN BATTERY CHARGER	Charger Current	10 Amp +/- 1Amp	10 Amp +/- 1Amp	10 Amp +/- 1Amp
	Overcharge Protection	16V		32V
TRANSFER TIME	Typical	15ms Typical, 40ms Max.		
EFFICIENCY	AC to AC	>85%		
	DC to AC	>80%		
LED/LCD INDICATOR	AC Mode	Display input, output		
	Battery Mode	The mark [redacted] will flicker every 1second.		
	Battery Charging Mode	Display the Battery capacity		
	Overload	The mark [redacted] will flicker every 1second.		
	Fault	Display fault		
AUDIBLE ALARM	Low Battery at Battery Mode	Sounding every 2 seconds		
	Overload	Sounding every 0.5 second		
	Fault	Continuously sounding		
PROTECTION	Full Protection	Discharge, overcharge, and overload protection		
PHYSICAL	Dimension (DxWxH) mm	224 X 255 X 80		
	Net Weight (kgs)	1.8	2.1	2.3
ENVIRONMENT	Operating Environment	0- 40°C, 0-90 % relative humidity (non-condensing)		
	Noise Level	Less than 50dB		

28.2 Batteries (GEL) SBB - 12 V, 200 AH:

➢ **Specifications:**

Model	Rated Voltage (V)	Rated Capacity (Ah)	Terminal type	Dimension (mm/in) Approx				Approx Weight
				Length	Width	Height	Total Height	
				mm (inches)	mm (inches)	mm (inches)	mm (inches)	Kg (lbs)
6-GFM-150	12	150	B5	486 (19.13)	170 (6.69)	244 (9.61)	244 (9.61)	43 (94.8)
6-GFM-160	12	160	B5	522 (20.55)	207 (8.15)	215 (8.46)	220 (8.66)	49.2 (108.4)
6-GFM-180	12	180	B5	522 (20.55)	240 (9.45)	218 (8.58)	223 (8.78)	53 (116.8)
6-GFM-200A	12	200	B5	522 (20.55)	240 (9.45)	218 (8.58)	223 (8.78)	58 (127.8)
6-GFM-200B	12	200	B5	522 (20.55)	240 (9.45)	218 (8.58)	223 (8.78)	60 (132.3)
6-GFM-220	12	220	B5	522 (20.55)	209 (8.23)	203 (7.99)	206 (8.11)	63.4 (139.7)
6-GFM-250	12	250		520 (20.47)	268 (10.55)	220 (8.66)	225 (8.86)	67 (147.7)

SPECIFICATIONS

OF

INSTALLATION

INDEX

OF

SPECIFICATION FOR ELECTRICAL WORKS

C- INSTALLATION

ARTICLES DESCRIPTION

1. SPECIFICATION FOR INSTALLATION

1.1. General Instruction For Installation

1.1.1 The Contractor shall furnish all labor and materials, tools and equipment required to install, connect, test and commission all electrical equipment specified here, whether or not such equipment is furnished by him or others. The equipment and materials to be supplied by the Employer and to be installed by the contractor shall be issued to the contractor to check the equipment at the time of delivery from the site store, and to transport, load and lift it and his rates shall cover all expanses for labor and equipment required.

1.1.2 For all equipment to be installed by the contractor the contractor shall supply and install all installation materials such as foundation bolts, leveling steel, shims clamps, cable sockets, lugs, solder, wall plugs, washers, nuts and bolts etc., as required and without any additional cost.

1.1.3 The contractor shall himself set out the works are per specifications and drawings and shall properly position the equipment on given foundation/locations. In general the manufacturer's instructions for installation shall be followed. Any defect of faulty operation of equipment due to the contractor not following the manufacture's instruction shall be corrected and repaired by the contractor at his own cost. For any departures from the working drawings that are deemed necessary by the contractor due to site conditions he shall submit the details and obtain the Engineer's approval before starting such work.

1.2. Earthing Installation

1.2.1 General

1.2.1.1 A complete Earthing system as shown on drawing shall be installed by the contractor. The system shall give earth resistance, including the resistance of soil, earth leads and E.C.C. equal to or less than 1 ohm.

1.2.1.2 The contractor shall supply and install all installation materials such as sockets, thimbles, clamps, saddles, pins, nuts, bolts, Washers, copper brazing etc., without and addition cost. At all connections of earth continuity conductor to body of transformer, switch boards, cable end boxes or any other metallic body, proper size copper or brass sockets, thimbles or lug shall be used to which the copper wire shall be welded by copper brazing. Soldering of copper wire at joints or termination

shall be not allowed. At main earth loop copper conductor all tee-off connections shall be by copper brazing. After brazing the joint surface shall be protected by oxide inhibiting compound of low electrical resistance. For connections to metallic body the surface shall be thoroughly cleaned to the bright metal surface before bolting the lug or socket. Transformer body, switchboard body, bus-duct cover etc. shall be connected at least two points by two independent earth wires tapped from the earth loop or from the earth connecting point.

1.2.1.3 The copper earth wire shall be general run exposed on the surface of wall, cable trench or cable trays. For under floor runs these shall be installed in steel conduit of appropriate sizes except where laid along underground cables.

1.2.2 **Earth Electrode:-**

1.2.2.1 For Installation of earth electrode, a pit of 1500 mm. Diameter and up to the depth of 4.5 meters or as decided at site shall be first executed in the bare ground.

1.2.2.2 The earth electrode shall be installed upright in the pit and shall be surrounded of choral and slot in 3:1 ratio in 1500 diameter around the pipe & electrode up to 3000 mm depth of the pit and packed hard.

1.2.2.3 The remaining pit shall be back filled with excavated earth rammed and tamped in layers. At the ground level an inspection chamber of 1:2:4 cement concrete as shown on the drawing shall be constructed. The inspection chamber shall be covered with heavy duty R.C.C. cover to finish flush with the general ground level.

1.2.3 **Earth Continuity Conductor**

The earth continuity conductor of sizes shown on the drawing shall be installed all along the cable trenches, cable runs on over head trays and in steel conduits. This shall be connected to switch board's body at ends. The E.C.C. When installed in under floor R.C.C. cable trench shall be fixed within the power cable clamps.

1.3 Wire and Cable Installation

1.3.1 Every type of wiring system shall in general comply with the relevant requirements of Regulation B 1-78 of I.E.E. wiring Regulation.

1.3.2 The contractor shall furnish all material and Labor to install wires and cables as listed in the schedule of Quantities and as shown on drawings. A part from the material specified under heading Material Specification, the contractor shall provide, without any extra cost, material for terminating the wires and cables such as filing compound. Identification tag, Earthing cables such as straps shall likewise be furnished for a complete wiring Installation in accordance with best Latest practice.

1.3.3 All wires and cable shall be arranged to provide bends of reasonably large radius, whether they are run in conduit, radius not less than specified in Table B-1 of I.E.E. Wiring Regulation. Wiring shall be continuous between termination and use of connectors or joints will not be allowed. Looping in system shall be followed throughout.

1.3.4 Cores of the cable beyond the metallic enclosure for the purpose of termination in an Outlet etc., Shall be enclosed suitably as defined in Regulation B-69 of I.E.E. Wiring Regulations. No portion of the cable shall thus remain exposed.

1.3.5 Where joints in cable conductors and bare conductors are required, they shall be mechanically and electrically sound and, except in cables buried underground they shall be accessible for inspection. Joints in non-flexible cables shall be made either by soldering or by means of mechanical clamps or compression type socket which shall securely retain all the wires of the conductors.

1.3.6 Every joints in cable shall be provided with insulation not less effective than that of the cable cores and damage. Soldering fluxes which remain acidic or corrosive at the completion of the soldering operation shall not used.

1.3.7 Any joint in a flexible cable or flexible cord shall be effected by means of a cable coupler.

1.3.8 Cable couplers and connectors shall be mechanically and electrically sound and shrouded either in metal which can be earthed in accordance with section D of I.E.E. Wring Regulations or incombustible Insulating material. Where the apparatus to be connected requires earthing, every

cable coupler and connector shall have adequate provision for maintaining earth continuity.

1.3.9 Cables of A.C circuits Installed in steel conduit shall always be so bunched that the cable of all phases and the neutral conductor (if any) are contained in the same conduit.

SPECIFICATIONS

FOR

TESTING

INDEX

OF

SPECIFICATION FOR ELECTRICAL WORKS

D- TESTING

Articles Description

SPECIFICATON FOR TESTING

1. GENERAL

1.1 Upon completion of the installation, the contractor shall perform field tests on all equipment, materials and system. All tests shall be conducted in the presence of the Engineer for the purpose of demonstrating equipment or system compliance with specifications.

1.2 The contractor shall furnish, install and maintain all tools instruments, tests equipment, materials etc., and furnish all personnel including supervision and "stand by" labor required for the testing, setting and adjustment of all electrical facilities and their components parts, including putting the same in operation.

1.3 All tests shall be made with proper regard for the protection of the equipment and the contractor shall be responsible for adequate protection to all personnel during such tests.

1.4 The contractor shall record all rest values of the tests made by him on all equipment, giving both "as found" and "as left" conditions. Three (3) copies of all tests data shall be given to the Engineer for records purpose. The witnessing of any tests by the Engineer does not relive the contractor of his guarantees for materials, equipment and workmanship as specified in the condition of contract.

2. INSULATION RESISTANCE TESTS

2.1 Insulation resistance tests shall be made on all electrical equipment by a meager of 1000 volts.

2.2 The insulation resistance values of cables, transformers an switchgear, etc., shall be as per B.S.S. and Pakistan Electricity Rules.

2.3 Before making connections at the ends of each cable run, the insulation resistance measurement tests of each cable shall be made. Each conductor of a multi core cable shall be tasted individually with each other conductor of the group and also the earth. If insulation resistance test reading are found to be less than the specified minimum in any conductor, the entire cable shall be replaced and the new cable tests.

2.4 All (Transformers and switchgears) shall be given an insulation resistance measurement tests to ground after insulation but before any wiring is connected. Insulation test shall be made between open contracts of circuit breakers, switches and between each phase and earth. If the insulation resistance of the circuit under test is less than that specified above, The cause of the low regarding shall be determined and remove. Corrective measures shall include dry-out procedure by means of

heaters if measures become necessary and the Installation Resistance readings become necessary and the Insulation resistance readings taken after the correction has been made, satisfy the requirements specified herein, repeated insulation resistance measurements shall be made twice and at least 12 hours apart. The maximum range for each reading in the three successive tests shall exceed 20% of the average value. After all tests have been the equipment shall reconnected.

3. EARTHING RESISTANCE TESTS

3.1 Earth resistance tests shall be made by the contractor on the earthing system, separating and reconnecting each earth connecting as may be required by the Engineer.

3.2 If it is indicated at solid treatment or other corrective measure are required to lower The ground resistance values, the Engineer will determine the extent of such corrective measures.

3.3 The electrical resistance of the E.C.C. together with the resistance of the earthing load measured from the connection with earth electrode to any other position in the completed installation shall not exceed one ohm.

3.4 Earth resistance tests shall be performed as per electric Inspector's requirements, where more earthing sets than one are Installed, the earth resistance tests between two sets shall be measured by means of Resistance Bridge Instrument. The earth resistance between two sets shall not exceed one ohm.

4. TRANSFORMERS

4.1 In addition to the Insulation resistance tests on the transformer, Polarity and phase rotation test shall also be performed, Insulation resistance of the transformer oil shall be tested in accordance with B.S.S. 148 immediately before use. Auxiliary device, breather bushels relay etc, shall be tested for satisfactory operation.

5. SWITCHGEARS

5.1 Each circuit breaker shall be electrically and mechanically, ascertaining that handle mechanism are operating. All inter lock control circuit shall be checked for proper connections in accordance with the wiring diagrams given by the manufactures.

5.2 The contractor shall identify the phase of all switchgear and power cables by stenciling the switchgear and tagging the cables so that the phases can be identified for connection to give proper phase sequence.

6. PROTECTIVE RELAYS

6.1 Protective relays shall be set and calibrated and tests points recorded. Trip circuit shall be tested for proper operation. C.T. secondary circuit shall be energized and operation of the relays observed.

7. COMPLETED TESTS

7.1 After any equipment has been tested, checked for operation etc., and is accepted by the Engineer, the Contractor shall be responsible for the proper protection of the equipment so that subsequent testing of other equipment of system does not disturb the completed work.

SPECIAL NOTES

SPECIAL NOTES

1. All the quantities related with cables given in Bill of Quantities are approximate. It is the responsibility of the Contractor to determine the actual quantities. Payment shall be made against the quantities actually executed at site according to measurement.

2. The contractor will place the order for all the material to be used at site and in his scope of works well in time so that delivery of these materials should not affect the schedule of completion of works. No excuse for the late delivery of the materials by other manufacturers shall be accepted in this regard.

3. Connections on both sides of the cables shall be performed.

4. The contractor shall include in his rates the cost of the cable accessories such as copper busbars copper lugs, glands, cable end box etc, wherever required. Increase in rate(s), will not be possible after approval of the rate(s) and during execution of works.

5. For extra works carried out according to instructions of the Client and/or Consultants, or their representatives, the rates claimed for these works will be approved by the Client/Consultants after mutual discussion with contractor.

6. Quoted Tender documents, Tender Drawings and Addendum (if any) etc, shall be submitted on the date Tender opening.

7. Contractors/Bidders are advised to visit and understand the quantum of works unvalued in existing areas before filling the BOQ.

8. Contractors/Bidders may contact Consultants for clarification of each and every query before filling the BOQ. No alteration in the rates will be entertained after submission / approval of the Tender documents.

9. Contactor is required to submit list of materials required from owner, such as Power Plug etc and get the same from the owner. If the total quantity is not available with client then acquire partial quantities from client and partial from market as per site condition

BILL OF QUANTITIES

INTERNAL/EXTERNAL ELECTRIFICATION, AIR-CONDITIONING, VOICE SYSTEM, PUBLIC ADDRESSING, VIDEO CONFERENCING SYSTEM & COMPUTER DATA SYSTEM WITH BACKUP OF UPS OF INNOVATION & ENTREPRENEURSHIP CENTER AT MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY (MUET), JAMSHORO

MAIN SUMMARY

S. No.	Description	Amount (Rs.)
1	**Section-1:** Internal Electrification (Scheduled Items) **This amount carried from page no:109**	Rs. 958294-00
2	**Section-2:** Internal Electrification (Non-Scheduled Items) **This amount carried from page no:110**	Rs. 28050-00
3	**Section-3:** Light Fittings & Fixture (Scheduled Items) **This amount carried from page no:110**	Rs. 149103-00
4	**Section-4:** Light Fittings & Fixture (Non-Scheduled Items) **This amount carried from page no:111**	Rs. 124717-00
5	**Section-5:** Distribution Board & Feeders (Scheduled Items) **This amount carried from page no:113**	Rs. 498938-00
6	**Section-6:** Distribution Boxes & Cables (Non-Scheduled Items) **This amount carried from page no:115**	Rs. 453000-00
7	**Section-7:** Earthing (Non-Scheduled Items) **This amount carried from page no:115**	Rs. 50437-00 2504
8	**Section-8:** Main Distribution Board (Scheduled Items) **This amount carried from page no:116**	Rs. 85442-00
9	**Section-9:** Main Distribution Board (Non-Scheduled Items) **This amount carried from page no:116**	Rs. 129000-00
10	**Section-10:** Main 4 Core Cables (Scheduled Items) **This amount carried from page no:117**	Rs. 467925-00
11	**Section-11:** Water Pump Motor (Scheduled Items) **This amount carried from page no:117**	Rs. 6760-00
12	**Section-12:** Water Pump Motor (Non-Scheduled Items) **This amount carried from page no:118**	Rs. 13500-00
13	**Section-13:** Supply & Installation of Air-Conditioner units (Non-Scheduled Items) **This amount carried from page no:118**	Rs. 2680000-00
14	**Section-14:** Wiring for Air-Conditioner units (Scheduled Items) **This amount carried from page no:119**	Rs. 421200-00
15	**Section-15:** Wiring for Air-Conditioner units (Non-Scheduled Items) **This amount carried from page no:119**	Rs. 75000-00
16	**Section-16:** Computer Data System (Scheduled Items) **This amount carried from page no:120**	Rs. 546741-00
17	**Section-17:** Computer Data System (Non-Scheduled Items) **This amount carried from page no:120**	Rs. 53782-00 5371
18	**Section-18:** Voice System (Scheduled Items) **This amount carried from page no:121**	Rs. 65882-00
19	**Section-19:** Voice System (Non-Scheduled Items) **This amount carried from page no:122**	Rs. 88650-00
20	**Section-20:** Public Addressing & Video Conferencing System Installation (Non-Scheduled Items) **This amount carried from page no:122**	Rs. 589000-00
21	**Section-21:** Multi-Media Projector Screen Installation (Non-Scheduled Items) **This amount carried from page no:123**	Rs. 320000-00 50000
22	**Section-22:** UPS Backup System Equipment (Non-Scheduled Items) **This amount carried from page no:123**	Rs. 95000-00
23	**Section-23:** Wiring & Mounting Accessories for UPS Backup System (Scheduled Items) **This amount carried from page no:123**	Rs. 24226-00
24	**Section-24:** Wiring & Mounting Accessories for UPS Backup System (Non-Scheduled Items) **This amount carried from page no:123**	Rs. 8800-00
	TOTAL AMOUNT	Rs. 8975445-00

Amount in words: Eighty Nine Lacs Seventy Five thousand four hundred fifteen only

SIGNATURE OF BIDDER

SEAL OF BIDDER

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

MUGHAL TRADERS GOVT. CONTRACTORS HYD

Section No. 1: INTERNAL ELECTRIFICATION WORKS [Scheduled Items]

S.#	Item Description	Qty.	Unit	Unit Rate (Rs.)	Total Amount (Rs.)
1.	Providing & laying wiring for light or fan point with 2-3/0.029" PVC insulated wire in 20mm (3/4") PVC conduit recessed in the wall or column as required. (ESI # 124 Page # 15)	387	P. Point	1,130.00	437,310.00
2.	Providing & laying wiring for plug point with 2-3/0.029" PVC Insulated wire in 20mm (3/4") PVC conduit recessed in wall or column as required. (ESI # 126, Page # 15)	52	P. Point	985.00	51,220.00
3.	Providing and Laying wiring for call bell point with 2-3/0.029" PVC insulated copper wire in 20mm (3/4") PVC conduit recessed in the wall or column as required.(ESI # 128, Page # 15).	19	P. Point	1,764.00	33,516.00
4.	Providing and Laying (main or sub-mains) PVC insulated with size 3-7/0.029" copper conductor in 3/4" PVC conduit recessed in the wall or column as required. (Lighting Circuit to DB) (ESI # 24, Page # 04)	2,454	Mtr.	294.00	721,476.00
5.	Providing and Laying (main or sub-mains) PVC insulated with size 3-7/0.036" copper conductor in 3/4" PVC conduit recessed in the wall or column as required. (General Power Circuit to DB) (ESI # 25, Page # 04) (Approx length.)	921	Mtr.	338.00	311,161.40
6.	Providing & fixing of one way SP 5amp switch flush type.(ESI # 219, Page # 33)	426	No.	54.00	23,004.00
7.	Providing & fixing of two way SP 5amp switch flush type.(ESI # 220, Page # 33)	20	No.	55.00	1,100.00
8.	Providing & fixing two pin 5 amp plug & socket. (ESI # 222, Page # 33)	52	No.	80.00	4,160.00
9.	Providing and fixing of 2/3 pin 5 amp SP plug & socket flush Type (ESI # 226, Page # 33).	63	No.	151.00	9,513.00
10.	Providing and fixing of 3 pin 10amp SP plug & socket flush type. (ESI # 227, Page # 33)	29	No	162.00	4,698.00
	Total Cost of Scheduled Items (A)		Rs.		1,597,158.40

I the Contractor M/s Gul Traders, HYD
Hereby quote 40% premium ~~above~~/below on the scheduled items. 40% below (Rs= 638863-

Total Amount of SECTION-1 Scheduled Items (A+B) in Rs. 958294-00
Amount Carried over to summary at serial no - 1, Page-no: 108

Section No. 2: INTERNAL ELECTRIFICATION WORKS [Non-Scheduled Items]

S.#	Item Description	Qty.	Unit	Unit Rate (Rs.)	Total Amount (Rs.)
1.	Providing & fixing of Call Bell, installed at the marked places in the drawings. (Call Bell of M/s Opal/Clipsal or equivalent as per instruction of EI, quality, approved by Engineer Incharge)	19	No.	350/-	6650/-
2.	Providing & fixing one way Call Bell Button on a given prepared board (Call Bell Button of M/s Opal/Clipsal) or equivalent as per instruction of EI.	19	No.	150/-	2850/-
3.	Providing and fixing of plastic board, recessed in the wall or columns and covered with socket sheet to house plug-socket switch or regulator etc.				
	a) Size: 145mm×80mm×56mm (LxWxD)	52	No.	250/-	13000/-
4.	Providing and fixing of Plastic board, to accommodate mains or sub mains switches, plug socket units etc., recessed in the wall as required.				
	a) Size: 78mm×83mm×56mm (LxWxD)	92	No.	50/-	4600/-
5.	Providing and fixing of Plastic board, to accommodate Call Bell point recessed in the wall, as required.				
	a) Size: 78mm×82mm×56mm (LxWxD)	19	No.	50/-	950/-
	Total Amount of SECTION-2 Non-Scheduled Items in Rs.				28050/-

Amount Carried over to summary at serial no - 2, Page-no: 108

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

M/s Gul Traders GOVT: CONTRACTOR HYD:

Section No. 3: LIGHTING FITTINGS & FIXTURES [Scheduled Items]

S.#	Item Description	Qty.	Unit	Unit Rate (Rs.)	Total Amount (Rs.)
1.	Providing installing and connecting of Millat/Asia/Pak Fan make (or to be approved by EI), 56" sweep ceiling fan complete with fan dimer, canopy, down rod, etc, including fixing of fan dimmers in the given and making holes on both side of down rod and wiring it with 1.5 mm twin core., 450/750 V grade pvc/pvc + 1-1.5mm ECC and also providing of 16 mm dia mild steel fan hook on R.C.C roof or beam as required. Complete in all respect with all accessories (ESI # 235, Page # 34)	17	No.	3,185.00	54,145.00
2.	Providing installing and connecting of Millat / Asia/ Pak fan make Brass Bracket fan 18", wiring it with 1.5mm twin core, 450/750 v grade pvc / pvc + 1-1.5mm ECC. Complete in all respect with all accessories (ESI#236, Pg.#34)	41	No.	2,791.00	114,431.00
3.	Providing & Fixing baklite ceiling rose with two terminals. (ESI#228, Pg.#33)	80	No.	72.00	5,760.00
4.	Providing & fixing Brass bracket Lamp Holder suitable for 15 mm (5/8") dia bracket. (ESI # 231, Page # 33)	15	No.	72.00	1,080.00
	Total Cost of Scheduled Items (A)			**Rs.**	**175,416.00**

I the Contractor M/s MK Gul Trading HYD
Hereby quote 15% premium above/below on the scheduled items Below (B)= 26312/=

Total Amount of SECTION-3 Scheduled Items (A+B) in Rs. 149103/=
Amount Carried over to summary at serial no - 3, Page-no: 108

Section No. 4: LIGHTING FITTINGS & FIXTURES [Non-Scheduled Items]

S.#	Item Description	Qty.	Unit	Unit Rate (Rs.)	Total Amount (Rs.)
1.	Providing, installing, fixing and connecting of following light fixtures with lamps, chokes, starters, capacitors etc, complete with all internal connections and all fixing and mounting accessories. Jobs includes rod and wiring as given in drawing				
1.1	Philips make recessed light fitting TBS-300 with 4 x 10W LED Tube Color 54 white lamp with high efficiency or equivalent as per instruction of EI	43	No.	6000/=	258000/=
1.2	Philips Make TBS-299/288 with 2 x 10W LED Tube Post Painted Sheet Steel, High Purity Pre-Ionized Aluminium or equivalent as per instruction of EI	34	No.	7000/=	238000/=
1.3	Philips Make FCS-120 MAX with 14W LED Bulb, 220-240V, LUNAR FAMILY, or equivalent as per instruction of EI	50	No.	2000/=	100000/=
1.4	Philips make Nova QBS-050, 1x50 watts with 5.5W GU10 LED Spot Lamp or equivalent as per instruction of EI	32	No.	2500/=	80000/=
1.5	Philips Make FBH 145 2x14W LED Bulb with Frosted Glass Cover or equivalent as per instruction of EI	28	No.	4000/=	112000/=
1.6	Philips Make FBH 145 1x14W LED Bulb with Frosted Glass Cover or equivalent as per instruction of EI	41	No.	2500/=	102500/=
1.7	Philips Make 14W LED Bulb E27 220-240V or equivalent as per instruction of EI	15	No.	1199/=	3835/=
1.8	Philips Make TMS-015,1x20W with LED Tube or equivalent as per instruct: of EI	19	No.	4126/=	78017/=
1.9	Philips Make TMS-015 LED Tube Light fixture with 1x10W (Mirror Light) or equivalent as per instruction of EI	14	No.	2000/=	28000/=
1.10	Philips make BBG-150, 1x10W Warm white LED Light (Step Light) or equivalent as per instruction of EI	9	No.	8000/=	72000/=
1.11	Philips make or equivalent Wall- Bracket FCW-098 Mini Vandalite with 24W CFL lamp (Warm White). Complete in all aspects with accessories or equivalent as per instruction of EI	30	No.	2500/=	75000/=
1.12	Philips LED Bollard II Type: BCP151 (0.8m version) Landscape lighting Fixture with 8W LED Lamps. Complete in all respects. Aluminium body as per international specs. Light color Neutral white 4000K or equivalent as per instruction of EI	8	No.	7500/=	60000/=
2.	Providing, installing & connecting of following fans and accessories;				
2.1	Millat/Asia/Pak Fan make or equivalent 12" sweep exhaust fan complete with capacitors including making of hole in wall to accommodate the fan & repairing good the damages	6	No.	1500/=	9000/=
2.2	Plastic Fan Box for supply of wiring for fan with Steel Hook for support the fan and plastic cover to cover the fan box complete in all respect.	17	No.	50/=	850/=
	Total Amount of SECTION-4 Non-Scheduled Items in Rs.				241,717-00

Amount Carried over to summary at serial no - 4, Page-no: 108

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

Section No. 5: DISTRIBUTION BOARDS & CABLES [Scheduled Items]

S.#	Item Description	Qty.	Unit	Unit Rate (Rs.)	Total Amount (Rs.)
1.	Providing, installing connecting & commissioning of the following Distribution Boards (DBs) fabricated of 14 SWG steel clad, cubical design with hinged door cover, wall (recessed) mounted, factory assembled, suitable for 3 phase, 4 wire, 500 volts, 50 Hz A.C Power Supply Complete with pure copper bus bar, copper cable lugs, glands, neutral link, earth block, terminal block etc. & having following configurations. (All equipment rated to 5 kA short circuit rating and 50 °C ambient temperature at 415V). Panel enclosure to comply with IP-50.				
1.1	**DB G-1 (For L&F + Computer Power Ckt)**				
	Incoming				
	40 A, 15KA, T.P (XS -100NS)., M.C.C.B (ESI # 207, Page # 31)	1	No.	9,261.00	9,261.00
	Providing & fixing ammeter size 96/96mm Direct 50A as required & as per instruction of Engineer Incharge (ESI # 284, Page # 41)	3	No.	1,054.00	3,162.00
	Providing & fixing voltmeter size 96/96mm 500 V as required & as per instruction of Engineer Incharge (ESI # 285, Page # 41)	3	No.	999.00	2,997.00
	Outgoing				
	22-6A, 6KA S.P, M.C.B.s (ESI # 203, Page # 31)	22	No.	916.00	20,152.00
	12-10A, 6KA, S.P, M.C.B.s (ESI # 203, Page # 31)	12	No.	916.00	10,992.00
1.2	**DB G-2 (For Gen Power Ckt + Water Pump Motor)**				
	Incoming				
	50 A, 15KA, T.P (XS -100NS)., M.C.C.B (ESI # 207, Page # 31).	1	No.	9,261.00	9,261.00
	Providing & fixing ammeter size 96/96mm Direct 50A as required & as per instruction of Engineer Incharge (ESI # 284, Page # 41)	3	No.	1,054.00	3,162.00
	Providing & fixing voltmeter size 96/96mm 500 V as required & as per instruction of Engineer Incharge (ESI # 285, Page # 41)	3	No.	999.00	2,997.00
	Outgoing				
	20A, 6KA, S.P, M.C.B.s (ESI # 203, Page # 31)	14	No.	916.00	12,824.00
1.3	**DB G-3 (For A/C Load Ckt)**				
	Incoming				
	100 A, T.P (XS -100NS)., M.C.C.B (ESI # 207, Page # 31).	1	No.	9,261.00	9,261.00
	Providing & fixing ammeter size 96/96mm Direct 50A as required & as per instruction of Engineer Incharge (ESI # 284, Page # 41)	3	No.	1,054.00	3,162.00
	Providing & fixing voltmeter size 96/96mm 500 V as required & as per instruction of Engineer Incharge (ESI # 285, Page # 41)	3	No.	999.00	2,997.00
	Outgoing				
	10A, S.P, M.C.B.s (ESI # 203, Page # 31)	3	No.	916.00	2,748.00
	15A, S.P, M.C.B.s (ESI # 203, Page # 31)	10	No.	916.00	9,160.00
	20A, S.P, M.C.B.s (ESI # 203, Page # 31)	3	No.	916.00	2,748.00
1.4	**DB F-1 (L&F + Computer Power Ckt)**				
	Incoming				
	01-40 A, T.P (XS -100NS)., M.C.C.B (ESI # 207, Page # 31).	1	No.	9,261.00	9,261.00
	Providing & fixing ammeter size 96/96mm Direct 50A as required & as per instruction of Engineer Incharge (ESI # 284, Page # 41)	3	No.	1,054.00	3,162.00
	Providing & fixing voltmeter size 96/96mm 500 V as required & as per instruction of Engineer Incharge (ESI # 285, Page # 41)	3	No.	999.00	2,997.00
	Outgoing				
	6A, S.P, M.C.B.s (ESI # 203, Page # 31)	20	No.	916.00	18,320.00
	10A, S.P, M.C.B.s (ESI # 203, Page # 31)	14	No.	916.00	12,824.00
1.5	**DB F-2 (Gen Power Ckt)**				
	Incoming				
	50 A, T.P (XS -100NS)., M.C.C.B (ESI # 207, Page # 31).	1	No.	9,261.00	9,261.00
	Providing & fixing ammeter size 96/96mm Direct 50A as required & as per instruction of Engineer Incharge (ESI # 284, Page # 41)	3	No.	1,054.00	3,162.00

	Providing & fixing voltmeter size 96/96mm 500V as required & as per instruction of Engineer Incharge (ESI # 285, Page # 41)	3	No.	999.00	2,997.00
	Outgoing				
	10A, S.P, M.C.B.s (ESI # 203, Page # 31)	7	No.	916.00	6,412.00
	15A, S.P, M.C.B.s (ESI # 203, Page # 31)	7	No.	916.00	6,412.00
1.6	**DB F-3 (For A/C Ckt)**				
	Incoming				
	100 A, T.P (XS -100NS)., M.C.C.B (ESI # 207, Page # 31).	1	No.	9,261.00	9,261.00
	Providing & fixing ammeter size 96/96mm Direct 50A as required & as per instruction of Engineer Incharge (ESI # 284, Page # 41)	3	No.	1,054.00	3,162.00
	Providing & fixing voltmeter size 96/96mm 500 V as required & as per instruction of Engineer Incharge (ESI # 285, Page # 41)	3	No.	999.00	2,997.00
	Outgoing				
	10A, S.P, M.C.B.s (ESI # 203, Page # 31)	2	No.	916.00	1,832.00
	15A, S.P, M.C.B.s (ESI # 203, Page # 31)	11	No.	916.00	10,076.00
	20A, S.P, M.C.B.s (ESI # 203, Page # 31)	3	No.	916.00	2,748.00
2.	Providing laying & connecting of PVC/PVC 600/1000V grade copper conductor PVC insulated cables from Main Distribution Board (MDB) to the Distribution Boards (DBs), recessed in wall or column as required, complete in all respect with all fixing and termination accessories and entire satisfaction of consultants / owner.				
2.1	**DB-G1 (For L&F + Computer Power Ckt)**				
	Providing & laying PVC insulated & PVC sheathed with 4 core copper conductor 600/1000 volts size 16mm². (ESI # 102, Page # 12)	16	Mtr.	1,300.00	20,800.00
2.2	**DB-G2 (For Gen Power Ckt + Water Pump Motor)**				
	Providing & laying PVC insulated & PVC sheathed with 4 core copper conductor 600/1000 volts size 16mm². (ESI # 102, Page # 12)	34	Mtr.	1,300.00	44,200.00
2.3	**DB-G3 (For A/C Load Ckt)**				
	Providing & laying PVC insulated & PVC sheathed with 4 core copper conductor 600/1000 volts size 35mm². (ESI # 104, Page # 12)	40	Mtr.	2,529.00	101,160.00
2.4	**DB-F1 (L&F + Computer Power Ckt)**				
	Providing & laying PVC insulated & PVC sheathed with 4 core copper conductor 600/1000 volts size 16mm². (ESI # 102, Page # 12)	22	Mtr.	1,300.00	28,600.00
2.5	**DB-F2 (Gen Power Ckt)**				
	Providing & laying PVC insulated & PVC sheathed with 4 core copper conductor 600/1000 volts size 16mm². (ESI # 102, Page # 12)	41	Mtr.	1,300.00	53,300.00
2.6	**DB-F3 (For A/C Ckt)**				
	Providing & laying PVC insulated & PVC sheathed with 4 core copper conductor 600/1000 volts size 35mm² (Approx. length) (ESI#104, Pg#12)	46	Mtr	2,529.00	116,334.00
3	Providing, Installing, Connecting & commissioing of the following Circuit Breakers, on 5 Way Plastic Consumer units with for General power outlets, Cubical desig recessed in wall above or below the respective power outlet (As per detail given in schematic drawings)				
3.1	10A, S.P, M.C.B.s (ESI # 203, Page # 31)	7	No.	916.00	6,412.00
	15A, S.P, M.C.B.s (ESI # 203, Page # 31)	7	No.	916.00	6,412.00
	20A, 6KA, S.P, M.C.B.s (ESI # 203, Page # 31)	14	No.	916.00	12,824.00
	Total Cost of Section Scheduled Items (A)			**Rs.**	**586,986.00**

I the Contractor M/s Gul Traders
Hereby quote 15% premium above/below on the scheduled items. 15% below (Rs. 88047-00)

Total Amount of SECTION-5 Scheduled Items (A+B) in Rs. 498938/-
Amount Carried over to summary at serial no - 5, Page-no 108

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

GOVT: CONTRACTORS HYD:

Section No. 6: DISTRIBUTION BOXES & CABLES (Non-Scheduled Items)

S. No	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing, installing connecting & commissioning of the following Distribution Boards (DBs) fabricated of 14 SWG steel clad, cubical design with hinged door cover, wall (recessed) mounted, factory assembled, suitable for 3 phase, 4 wire, 500 volts, 50 Hz A.C Power Supply Complete with pure copper bus bar, copper cable lugs, glands, neutral link, earth block, terminal block etc. & having following configurations. (All equipment rated to 5 kA short circuit rating and 50 °C ambient temperature at 415V). Panel enclosure to comply with IP-50.				
1.1	**DB-G1 (For L&F + Computer Power Ckt)** **Incoming**	1	No.	25000/-	25000/-
	Phase (R.Y.B) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or equivalent as per instruction of El.	3	No.	500/-	1500/-
	ON/OFF (Green & Red) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or equivalent as per instruction of El.	2	No.	500/-	1000/-
	Control fuse with base 2/32A Model: T-0+PM-F, make: DF (Spain) or equivalent as per instruction of El.	3	No.	1000/-	3000/-
1.2	**DB-G2 (For Gen Power Ckt + Water Pump Motor)** **Incoming**	1	No.	25000/-	25000/-
	Phase (R.Y.B) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or equivalent as per instruction of El.	3	No.	500/-	1500/-
	ON/OFF (Green & Red) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or equivalent as per instruction of El.	2	No.	500/-	1000/-
	Control fuse with base 2/32A Model: T-0+PM-F, make: DF (Spain) or equivalent as per instruction of El.	3	No.	1000/-	3000/-
1.3	**DB-G3 (For A/C Load Ckt)** **Incoming**	1	No.	25000/-	25000/-
	Providing, fixing and commissioning of 4-pole contactor AC coil operation Make Chint Model NC2 - 150 (AC3) (4-pole, can be used for 1-ph 3ph 4 wire Ckts) 380/400V AC, 50Hz, standard IEC/ EN 60947-4-1, or equivalent or as approved by El.	1	No.	25000/-	25000/-
	Providing, fixing and commissioning of Relay for over voltage and under voltage protection Make Chint Model NJYB3-11 having 3 ph four wire system, (can be used for single ph load) having over voltage protection 1.3 times of 220V , under voltage protection 0.7 times of 220V + ph: failure protection or equivalent or as approved by El.	1	No.	5000/-	5000/-
	Phase (R.Y.B) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or Equivalent as per instruction of El.	3	No.	500/-	1500/-
	ON/OFF (Green & Red) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or Equivalent as per instruction of El.	2	No.	500/-	1000/-
	Control fuse with base 2/32A Model: T-0+PM-F, make: DF (Spain) or equivalent as per instruction of El.	3	No.	1000/-	3000/-
1.4	**DB-F1 (L&F + Computer Power Ckt)** **Incoming**	1	No.	25000/-	25000/-
	Phase (R.Y.B) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or equivalent as per instruction of El.	3	No.	500/-	1500/-
	ON/OFF (Green & Red) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or equivalent as per instruction of El.	2	No.	500/-	1000/-
	Control fuse with base 2/32A Model: T-0+PM-F, make: DF (Spain) or equivalent as per instruction of El.	3	No.	1000/-	3000/-

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

1.5	**DB-F2 (Gen Power Ckt)**	1	No.	25000/-	25000/-
	Incoming				
	Phase (R.Y.B) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or Equivalent as per instruction of EI.	3	No.	500/-	1500/-
	ON/OFF (Green & Red) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or Equivalent as per instruction of EI.	2	No.	500/-	1600/-
	Control fuse with base 2/32A Model: T-0+PM-F, make: DF (Spain) or equivalent as per instruction of EI.	3	No.	1000/-	3000/-
1.6	**DB-F3 (For A/C Ckt)**	1	No.	30000/-	30000/-
	Incoming				
	Providing, fixing and commissioing of 4-pole contactor AC coil operation Make Chint Model: NC2 - 150 (AC3) or equivalent as per instruction of EI, (4-pole, can be used for 1-ph: 3ph 4 wire Ckts) 380/400V AC, 50Hz, standard IEC/ EN 60947-4-1,	1	No.	25000/-	25600/-
	Providing, fixing and commissioing of Relay for over voltage and under voltage protection Make Chint Model NJYB3-11 having 3 ph four wire system, or equivalent as per instruction of EI (can be used for single ph load) having over voltage protection 1.3 times of 220V , under voltage protection 0.7 times of 220V + ph: failure protection	1	No.	6000/-	5000/-
	Phase (R.Y.B) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or equivalent as per instruction of EI.	3	No.	500/-	1500/-
	ON/OFF (Green & Red) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or equivalent as per instruction of EI.	2	No.	500/-	1000/-
	Control fuse with base 2/32A Model: T-0+PM-F, make: DF (Spain) or equivalent as per instruction of EI.	3	No.	1000/-	3000/-
2.	Providing and installing of 1 to 5 way Plastic Consumer Units (as detail given below) with transperent cover model: NX3, make: Chint Electric or equivalent as per instruction of EI, for circuit breaker housing for General Power Outlets, cubical design recessed in wall above or below the respective Power Outlets (as per detail given in Schematic Drawings) detail as below:				
	For DBG-2 , 1 way =1 No , 2 way =2 Nos., 3 way =8 Nos. , 4 way =1 No. , & 5 way = 2 Nos. For DBF-2 , 3 way =12 Nos. , 4 way =2 Nos.	28	No.	3000/-	84000/-
3.	Providing laying & connecting of hard drawn Copper wire along with the power cables from Main Distribution Board (MDB) to the Distribution Boards (DBs) in PVC conduit a detail below recessed in wall or column as required, complete in all respect and entire satisfaction of consultants / owner.				
3.1	**DB-G1**				
	Providing & laying of hard drawn bare copper wire size 10mm² as E.C.C with wiring of DB-G1 in 1.25" dia rigid PVC conduit in ground/Floor as required.	16	Mtr.	500/-	8000/-
3.2	**DB-G2**				
	Providing & laying of hard drawn bare copper wire size 10mm² as E.C.C with wiring of DB-G2 in 1.25" dia rigid PVC conduit in ground/Floor as required.	34	Mtr.	500/-	17000/-
3.3	**DB-G3**				
	Providing & laying of hard drawn bare copper wire size 25mm² as E.C.C with wiring of DB-G3 in 1.5" dia rigid PVC conduit in ground/Floor as required.	40	Mtr.	750/-	30000/-
3.4	**DB-F1**				
	Providing & laying of hard drawn bare copper wire size 10mm² as E.C.C with wiring of DB-F1 in 1.25" dia rigid PVC conduit in ground/Floor as required.	22	Mtr.	500/-	11000/-
3.5	**DB-F2**				
	Providing & laying of hard drawn bare copper wire size 10mm² as E.C.C with wiring of DB-F2 in 1.25" dia rigid PVC conduit in ground/Floor as required.	41	Mtr.	500/-	20500/-
3.6	**DB-F3**				
	Providing & laying of hard drawn bare copper wire size 25mm² as E.C.C with wiring of DB-F3 in 1.5" dia rigid PVC conduit in ground/Floor as required.	46	Mtr.	750/-	34500/-
	Total Amount of SECTION-6 Non-Scheduled Items in Rs.				453000/-

Amount Carried over to summary at serial no - 6, Page-no. 108

KAD CONSULTANTS ENGINEERING SERVICES

Section No.7: EARTHING [All items in this Section are Non-Scheduled]

S.No	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing, marking and testing of earth points with 2' x 2' x 1/8" thick copper plate buried 5 meter deep or to the depth of permanent water level whichever is less covered with charcoal and lime in specified ratio confirming to specificatin and drawing.	1	Job	15000/-	15000/-
2.	Providing drawing, connecting & testing of 1-150 mm² bare copper conductor (30 Mtr length) as earthing leads in 32 mm dia G.I pipe burried in ground or connected in R.C.C or masonary as required from Panel Board to the earth plate including making of 18"x18" cement concrete chamber duly plastered and cover with R.C.C Slab, including, providing & fixing of plug for watering, complete with all accessories and fasteners and as per drawing & specification.	1	Job	10000/-	10000/-
3.	Providing fixing and connecting of 200x200x5 mm thick copper earth terminal blocks.	1	Job	1000/-	1000/-
4.	Providing and fixing of bare copper conductor size **1-2.5mm²** as Earth Continuity Conductor (ECC) with the wiring of Lights, Fans and General Power circuits including metallic electrical accessories.	3,375	Mtr	66-50	24437/-
	Total Amount of SECTION-7 Non-Scheduled Items in Rs.				50437/-

Amount Carried over to summary at serial no - 7, Page-no. 109

=250438/-

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KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

Section No. 8: MAIN DISTRIBUTION BOARD (MDB) [Scheduled Items]

S.#	Description	Qty.	Unit	Unit Rate (Rs.)	Total Amount (Rs.)
1.	Providing, installing connecting & commissioning of the Main Distribution Boards (MDB) fabricated of 14 SWG steel clad, cubical design with hinged door cover, wall (recessed)/Floor mounted, factory assembled, suitable for 3 phase, 4 wire, 500 volts, 50 Hz A.C Power Supply Complete with pure copper bus bar, copper cable lugs, glands, neutral link, earth block, terminal block etc. & having following configurations. (All equipment rated to 5 kA short circuit rating and 50 °C ambient temperature at 415V). Panel enclosure to comply with IP-50.				
	Incoming				
	Providing & Fixing Circuit Breaker 400 amp T.P. Setting 250-400 A (XS-400 CJ), MCCB (ESI # 210, Page # 31)	1	No.	39,401.00	39,401.00
	Providing & Fixing Current Transformer Rating 400/5A (round) RLC-50 as required and as per Instruction of Engineer Incharge (EI). (ESI#274, Pg.#39)	3	No.	1,851.00	5,553.00
	Outgoing				
	40A, T.P, (XS-100NS), MCCB (ESI # 207, Page # 31)	2	No.	9,261.00	18,522.00
	50A, T.P. (XS-100NS), MCCB (ESI # 207, Page # 31)	2	No.	9,261.00	18,522.00
	100A, T.P, (XS-100NS), MCCB (ESI # 207, Page # 31)	2	No.	9,261.00	18,522.00
	Total Cost of Scheduled Items (A)			**Rs.**	**100,520.00**

I the Contractor M/s Gul Traders

Hereby quote 15% premium above/below on the scheduled items 15% below (B)= 15078-00

Total Amount of SECTION-8 Scheduled Items (A+B) in Rs. 85442-00

Amount Carried over to summary at serial no - 8, Page-no: 108

Section No.9: MAIN DISTRIBUTION BOARD (MDB) [Non-Scheduled Items]

S.#	Item Description	Qty.	Unit	Unit Rate (Rs.)	Total Amount (Rs.)
1.	Providing, installing connecting & commissioning of the Main Distribution Boards (MDB) fabricated of 14 SWG steel clad, cubical design with hinged door cover, wall (recessed)/Floor mounted, factory assembled, suitable for 3 phase, 4 wire, 500 volts, 50 Hz A.C Power Supply Complete with pure copper bus bar, copper cable lugs, glands, neutral link, earth block, terminal block etc. & having following configurations. (All equipment rated to 5 kA short circuit rating and 50 °C ambient temperature at 415V). Panel enclosure to comply with IP-50.				
	Cost of MDB	1	No.	75000/-	75000/-
	02 - Phase (R.Y.B) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy) / Chint Electric or equivalent as approved by EI.	1	No.	1000/-	1000/-
	03 - Phase (R.Y.B) indication lamps, 220V Model: 8LP2T1LM / ND16-22D4, Make: Lovato (Italy)/Chint Electric or equivalent as approved by of EI.	3	No.	1000/-	3000/-
	02-Surge Arrestors Model NU6-II, Maximum continous operational 385V, TN C, L-PE, 4 pole (1 phase, 3 phase 4 wire) Level of protection upto 1.8kV Nominal discharge current 40kA, Maximum discharge current 100kA, Make Chint or Equlaevent as approved by E.I.	2	No.	25000/-	50000/-
	Total Amount of SECTION-9 Non-Scheduled Items in Rs.				129000/-

Amount Carried over to summary at serial no - 9, Page-no: 108

Section No.10: MAIN 4 CORE CABLE [Scheduled Items]

S.#	Item Description	Qty.	Unit	Unit Rate (Rs.)	Total Amount (Rs.)
1.	Providing, laying, & connecting of following, 4 Core, Cu/PVC, 600/1000 volts, Unarmourd Cable from Sub-Station to Main Distribution Board laid in ground in 2¼" PVC conduit including digging of earth and making C.C Manholes with covers at required distance for pulling of cables job also involves refilling of earth and providing cable markers for route of L.T cable as per specifications.				

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M/S GUL TRADERS GOVT. CONTRACTOR HYD.

	Providing & laying (MAIN or SUB MAIN) PVC insulated & PVC sheathed with 4 Core copper conductor 600/1000 Volts size 185mm² (ESI # 110, Page # 13)	50	Mtr.	12,478.00	623,900.00
	Total Cost of Scheduled Items (A)			**Rs.**	**623,900.00**

I the Contractor M/s Gul Traders
Hereby quote 25% premium above/below on the scheduled items. 25% below (B)= 155975-

Total Amount of SECTION-10 Scheduled Items (A+B) in Rs. 467925-00
Amount Carried over to summary at serial no - 10, Page-no: 108

Section No. 11: WATER PUMP MOTOR [Scheduled Items]

S. No	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing and Laying (main or sub-main) PVC insulated with size 3-7/0.036" copper conductor in 3/4" PVC conduit recessed in the wall or column as required. (ESI # 25, Page # 84)	20	Mtr.	338.00	6,760.00
	Total Cost of Scheduled Items (A)			**Rs.**	**6,760.00**

I the Contractor M/s Gul Traders
Hereby quote @ Par premium above/below on the scheduled items. At Par (B)= 6760-

Total Amount of SECTION-11 Scheduled Items (A+B) in Rs.
Amount Carried over to summary at serial no - 11, Page-no: 108

Section No. 12: WATER PUMP MOTOR [Non-Scheduled Items]

S. No	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing, installing and connecting of 1 HP, Mono Block Centrifugal Water Pump Motor, 1-Phase, 240 volts, 50 Hz, AC Power Supply. Make: Meco, Lahore or equivalent as approved by E.I.	1	No.	10000/-	10000/-
2.	Providing & laying of hard drawn bare copper conductor size 2.5mm² as ECC. With wiring of 1 HP Water Pump Motor in 3/4" dia rigid PVC conduit recessed in wall/gound/floor.	20	Mtr.	50/-	1000/-
3.	Providing and installing 18 SWG sheet steel surface mounted box, anti-rust treated and painted, complete with all respect including following accessories;				
	02 - ON/OFF Push Button & indication lamps (Red, Green)				
	01 - 20 Amps. S.P, MCB	1	Jot	2500/-	2500-
	Total Amount of SECTION-12 Non-Scheduled Items in Rs.				13500-00

Amount Carried over to summary at serial no - 12, Page-no: 108

M/s GUL TRADERS GOVT: CONTRACTOR HYD:

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

Section No. 13: SUPPLY & INSTALLATION OF AIR-CONDITIONER UNITS [Non-Scheduled Items]

S. No.	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing, Installing & Connecting of Split Type Wall Mounted Air-Conditioners Units, Make: Mitsubishi/Panasonic/General or equivalent as approved by E.I. Complete in all respects with controls, accessories, mounting for outdoor units, refrigerant piping, valves, fittings, refrigerant charge and oil charge etc.				
	a) 2.0 T.R	6	No.	90000/-	540000-00
	b) 1.5 T.R	23	No.	70000/-	1610000-00
	c) 1.0 T.R	4	No.	50000/-	200000-00
2.	UPVC piping class D for equipment drain system complete with fittings, specialities & accessories for units of item # 1.	33	No.	2500/-	82500-00
3.	4 oz, weight courses and 8 oz canvas cloth for piping installation jacketing	33	No.	2500/-	82500-00
4.	Formatted plastic pipe insulation for refrigerant piping, complete with accessories	33	No.	2500/-	82500/-
5.	3" Dia UPVC conduit riser from indoor unit to outdoor unit (to be placed on roof/mounted on wall as per site requirement) for laying of refrigerant pipes and electric cable for each individual A/C units.	33	No.	2500/-	82500-00
	Total Amount of SECTION-13 Non-Scheduled Items in			Rs.	2680000-00

Amount Carried over to summary at serial no - 13, Page-no: 108

Section No. 14: WIRING FOR AIR-CONDITIONER UNITS [Scheduled Items]

S. No.	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing, Laying & Connecting of 3-7/0.0.44", single core PVC 450/750V grade cable in 1" dia rigid PVC conduit in Wall/Column/Floor/False Ceiling as required. (ESI # 26, Page # 04)	1,500	Mtr	468.00	702,000.00
	Total Cost of Scheduled Items (A)			Rs.	702,000.00

I the Contractor M/s Gul Traders
Hereby quote 40% premium above/below on the scheduled items. 40% below (B)= 280800/-

Total Amount of SECTION-14 Scheduled Items (A+B) in Rs. 421200/-

Amount Carried over to summary at serial no - 14, Page-no: 108

Section No. 15: WIRING FOR AIR-CONDITIONER UNITS [Non-Scheduled Items]

S. No.	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing, Laying & Connecting of 1-4mm² copper conductor as ECC with the wiring od A/C units	1,500	Mtr.	50/-	75000/-
	Total Amount of SECTION-15 Non-Scheduled Items in			Rs.	75000/-

Amount Carried over to summary at serial no - 15, Page-no: 108

M/s GUL TRADERS GOVT: CONTRACTOR HYD:

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Section No. 16: COMPUTER DATA SYSTEM [Scheduled Items]

S. No.	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing & Laying (MAIN or SUB-MAIN) PVC insulated with size 2-7/0.029", copper conductor in ¾" dia PVC conduit recessed in wall or column. (ESI # 24, Page # 04)	983	Mtr.	294.00	288,855.00
2.	Providing & fixing channel patti 1" required as per instruction of E.I. (from the switch or patch panel to computer outlets) (ESI # 296, Page #	6,447	Rft.	40.00	257,886.60
	Total Cost of Scheduled Items (A)			**Rs.**	**546,741.60**

I the Contractor M/s Gul Traders

Hereby quote @ Par premium above/below on the scheduled items. At Par (B)= —

Total Amount of SECTION-16 Scheduled Items (A+B) in Rs. 546741-60

Amount Carried over to summary at serial no - 16, Page-no: 100

Section No. 17: COMPUTER DATA SYSTEM [Non-Scheduled Items]

S. No.	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing & laying copper 1.5 mm² Copper Conductor as ECC with wiring of Multi-Outlet Boxes as required. Complete in all respects	983	Mtr.	100/-	98300/-
2.	Proving, Installing & Connecting Wi-Fi Router, speed of up to 300 Mbps in 2.4 GHz with 100+ concurrent users capacity. Make: UBIQUITI, Model: Unifi-AP UBNT or equivalent as approved by E.I. Complete in all respects & accessories including mounting kits, Power Supply 24V 1A PoE Adapter etc.	6	No.	15000/-	90000/-
3.	Supply & Installing of Fibre Panel (16 Way) to Connect the Patch Panels to the main Fibre Cable.	1	Mtr.	25000/-	25000/-
4.	Supply and Installation of Schneider Actassinr equivalent as per instruction of EI, 24 - Port CAT-6 UTP Patch Panel Built-in Rear Cable Management, Complete in all respect.	4	No.	15000/-	60000/-
5.	Supply and Installation of Arkite or equivalent as per instruction of EI, 15U 19" Communication Rack 780×600×500 mm with PDU, Complete in all respect.	2	No.	30000/-	60000/-
6.	Supply & installation of Schneider Actassi or equivalent as per instruction of EI, front cable organizer.	5	No.	2000/-	10000/-
7.	Supply and installation of CAT-6 (AT&T / IBM Campatable or equivalent as per instruction of EI) cable in already laid in channel patti on surface from Switch / Patch Panel to the respective Outlet Boxes, including termination of CAT-6 cable, complete in all respect.	1,965	Mtr.	50/-	98250/-
8.	Schneider Actassi or equivalent as per instruction of EI, 4-Pair CAT-6 UTP Patch Cord (3 Meter Each)	11	No.	500/-	5500/-
9.	Providing and lying of the 3" dia PVC conduit in ground before final flooring for Main Fibre Cable from main gate to Fibre Patch Panel in Communication Rack at ground floor. Complete in all respect with all required accessories.	100	Mtr.	150/-	15000/-
10.	Providing and installing of following Multi-outlet boxes on Floor/Wall/Column of appropriate size for Power for Computer Data Voice outlets.				
	a) Multi-Outlet Box "Type-A"	5	No.	1892/-	9464/-
	b) Multi-Outlet Box "Type-B"	23	No.	2220/-	51069/-
	b) Multi-Outlet Box "Type-C"	6	No.	1276/-	7660/-
11.	Providing and fixing of Plastic board to accommodate Multi-Outlet Boxes for power, Voice and Data outlets, recessed in the wall, as required.				
	a) Size 145mm × 83mm × 56mm (L×W×D)	57	No.	77/-	4389/-
	b) Size 78mm × 83mm × 56mm (L×W×D)	57	No.	56/-	3192/-
	Total Amount of SECTION-17 Non-Scheduled Items in			**Rs.**	537820/-

Amount Carried over to summary at serial no - 17, Page-no: 100

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Section No. 18: VOICE SYSTEM [Scheduled Items]

S.No.	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing & Fixing channel patti 1" required as per instruction of E.I. (from the switch or patch panel to computer outlets) (ESI#296, Pg.#43)	1647	Rft.	40.00	65,882.48

Total Cost of Scheduled Items (A)	Rs.	65,882.48

I the Contractor M/s Gul Traders
Hereby quote At par premium above/below on the scheduled items At par (B)= —

Total Amount of SECTION-18 Scheduled Items (A+B) in Rs. 65882-00
Amount Carried over to summary at serial no - 18, Page-no: 108

Section No. 19: VOICE SYSTEM [Non-Scheduled Items]

S.No.	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing installing and connection of one pin telephone socket outlet with back box recessed on wall complete with all accessories. *(Cost of Voice Point Outlet is covered with Multi-Outlet Box in the Computer Data System Section "A(b)". Point*				
2.	Providing & lying of Schneider Actassi / 3M make or equivalent as approved by E.I. 4-Pair CAT-5 UTP Cable.	502	Mtr.	75/-	37650/-
3.	Providing and lying of the 3" dia PVC conduit concealed in ground before final flooring from main gate to Main TJB. Complete in all respect with all required accessories.	100	Mtr.	150/-	15000/-
5.	Providing and installing Telephone Junction Box 50 pair with krone strips	1	No.	25000/-	25000
6.	Providing and connecting Voice patch cords	22	No.	500/-	11000
	Total Amount of SECTION-19 Non-Scheduled Items in		Rs.		=88650

Amount Carried over to summary at serial no - 19, Page-no: 108

M/S GUL TRADERS GOVT. CONTRACTOR HYD.

KAD CONSULTANTS ENGINEERING SERVICES HYD. CBAD.

Section No. 20: PUBLIC ADDRESSING & VIDEO CONFERENCING SYSTEM INSTALLATION [Non-Scheduled Items]

S. No.	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
	PUBLIC ADDRESSING (P.A.) SYSTEM				
1.	Providing & Installation of **Public Addressing Mixer & Amplifier**, Model: A-1724 (240W), Make: TOA, Japan or equivalent as approved by E.I. Complete in all respects & accessories.	4	No.	40000/-	160000/-
2.	Provideing & Installation of **Wall Mounted Speakers** with two way bass reflex design features, 4.72" (12 cm) cone woofer, 1" (2.5cm) Dome Tweeter & Built-in Multi-tap Tansformer with screw driver - adjustable power taps, Off White Color, 90 Watts Power Handling (continuous program), Model: BS-1030, Make: TOA, Japan or equivalent as approved by E.I. Complete in all respects and mounting accessories.	10	No.	9000/-	90000/-
3.	Providing & Installation of **Pendant/Hanging Speakers**, 5" (12.5cm), Cone type, balanced Dome Tweeter with 30 watt input power, Enclosure type: HIPS, Resin Off White, surface treated steel plate net grill, off white paint, Model: PE-304, Make: TOA, Japan or equivalent as approved by E.I. Complete in all respects and mouting accessories.	2	No.	15000/-	30000/-
4.	Providing & Connecting **Unidirectional Dynamic Microphone** with 3 Meters single core shielded cable with an unbalanced ¼" Phone Plug, Die Cast Aluminum, Painted Black body, ABS resin Black/Zinc platted, steel wire black painted head, W 5/6", W 5/8" Microphone HolderModel: DM-1100, Make: TOA, Japan or equivalent as approved by E.I. Complete in all respectes & Accessories.	4	No.	9000/-	36000/-
5.	Providing & Connecting of **Stand for DM-1100 Microphone**, Make: TOA, Japan or equivalent as approved by E.I. Complete in all respects.	4	No.	2000/-	8000/-
6.	Providing & Connecting **UHF Wireless Microphone**, with Three (03) Wireless Microphones, Model: WS-5200, Make: TOA, Japan or equivalent as approved by E.I. complete in all respects with Microphone Battery Chargers, Wireless Tuner & Transmitter etc.	1	Set	50000/-	50000/-
7.	Providing, Installation & Connecting **Cable for Microphone** (10 Meter set). Complete in all respects with connecting pins.	4	Set	2500/-	10000/-
8.	Providing, Installation & Connecting **Cable for Speakers** (150 feet roll). Complete in all respects with connecting pins.	4	Roll	2500/-	10000/-
	VIDEO CONFERENCING SYSTEM				
9.	Providing, Installating & Connecting 46" LED Screen with computer & internet connectivity & P.A. System compatibility, Make: SAMSUNG or equivalent as approved by E.I. Complete in all respects & accessories with Floor/Wall//Ceiling mounting stand.	3	No.	65000/-	195000/-
	Total Amount of SECTION-20 Non-Scheduled Items in		Rs.		589000/-

Amount Carried over to summary at serial no - 20, Page-no: 108

Section No. 21: MULTI-MEDIA PROJECTOR & PROJECTOR SCREEN INSTALLATION [Non-Scheduled Items]

S. No.	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing, Installing & Connecting **Multi-Media Projector**, Model: PTL B2, Make: Panasonic or equivalent as approved by E.I. Complete in all respects & accessories	4	No.	75000/-	300000-00
2.	Providing & Installing **Tripod Projector Screen** Electrically Operated, 150x150cm (6'x6'), Make: Gaylord, China or equivalent as approved by E.I. Complete in all respects & accessories includint remote controller.	4	No.	25000/-	100000/-
3.	Providing, Installing & Connecting **Ceiling Mounting Kit** for Multi-Media Projector. Complete in respects & accessories including VGA cable, Power Cable, A/V Cable (35ft)	4	Job	25000/-	100000/-
	Total Amount of SECTION-21 Non-Scheduled Items in		Rs.		=500000/-

Amount Carried over to summary at serial no - 21, Page-no: 108

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD

M/S GUL BUILDERS GOVT: CONTRACTOR HYD:

Section No. 22: UPS BACKUP SYSTEM EQUIPMENT [Non-Scheduled Items]

S.#	Item Description	Qty.	Unit	Unit Rate (Rs.)	Total Amount (Rs.)
1.	Providing, Installing & Connecting the **UPS/Inverter (Homage or equivalent as approved by E.I.) 24 V, 2kVA.** Complete in all respects including connecting terminals, cable for connecting batteries, mounting kits etc.	1	No.	25000/-	25000/-
2.	Providing, Installing & Connecting **Batteries (GEL) 12V, 200AH,** make: Sun Bright Power, China or equivalent as approved by E.I.	2	No.	35000/-	70000-00
	Total Amount of SECTION-22 Non-Scheduled Items in			**Rs.**	95000-00

Amount Carried over to summary at serial no - 22, Page-no 108

Section No. 23: WIRING & MOUNTING ACCESSORIES FOR UPS BACKUP SYSTEM [Scheduled Items]

S.#	Item Description	Qty.	Unit	Unit Rate (Rs.)	Total Amount (Rs.)
1.	Providing & Laying (MAIN or SUB-MAIN) PVC insulated with size 2-7/0.029" copper conductor in ¾" dia PVC conduit recessed in wall or column as required. (ESI # 10, Page # 02)	105	Mtr.	222.00	23,310.00
2.	15A, S.P, M.C.B.s (ESI # 203, Page # 31)	1	No.	916.00	916.00
	Total Cost of Scheduled Items (A)			**Rs.**	**24,226.00**

I the Contractor M/s Gul Traders
Hereby quote @ par premium above/below on the scheduled items. As Per (B)= -

Total Amount of SECTION-23 Scheduled Items (A+B) In Rs 24226-00
Amount Carried over to summary at serial no - 23, Page-no: 108

Section No. 24: WIRING & MOUNTING ACCESSORIES FOR UPS BACKUP SYSTEM [Non-Scheduled Items]

S. No.	Description	Qty.	Unit	Rate (Rs.)	Amount (Rs.)
1.	Providing and fixing of bare copper conductor size **1-2.5mm²** as Earth Continuity Conductor (ECC.) with the wiring of UPS Backup Power circuits including metallic electrical accessories.	105	Mtr.	60/-	6300/-
2.	Providing and installing of 5 way Plastic Consumer Units with transparent cover model: NX8, make: Chint Electric or equivalent as approved by E.I. for circuit breaker housing for UPS wiring, cubical design recessed in wall.	1	No.	1000/-	1000/-
3.	Providing, Installing & Connecting the Metal Mounting frame for Inverters and Batteries	3	No.	500/-	1500/-
	Total Amount of SECTION-24 Non-Scheduled Items in			**Rs.**	8800/-

Amount Carried over to summary at serial no - 24, Page-no: 108

M/s GUL TRADERS

KAD CONSULTANTS ENGINEERING SERVICES LAHORE

TENDER DRAWINGS
(NOT VALID FOR CONSTRUCTION)

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO - SINDH - PAKISTAN

INTERNAL & EXTERNAL ELECTRIFICATION FOR INNOVATION AND ENTREPRENEURSHIP CENTRE

TENDER DRAWINGS
NOT VALID FOR CONSTRUCTIO

(CONSULTANTS ELECTRICAL DESIGN DRAWINGS)

MAIN CONSULTANTS

NAQVI AND SIDDIQUE
INC. ARCHITECTS & ENGINEERS
BLOCK NO. 18, FIRST FLOOR
MARKAZ F-6, ISLAMABAD
TEL: 2876769 - 2270268

STRUCTURAL ENGINEERS

GLOBAL CONSULTING
ENGINEERING SERVICES
H.NO NE 122/F ST.NO.7, CHAMANZAR
COLONY , RAWALPINDI Ph: 5765514

ELECTRICAL ENGINEERS

KAD CONSULTANTS
ELECTRICAL ENGINEERS
F-1, ZAIB RESIDENCY, HUSSAIN HOUSING
SCHEME, NEAR SUMMIT BANK, WADHU
WAH, QASIMABAD, HYDERABAD
TEL: +92 22 2652274, FAX: +92 22 2652275
CELL: +92 334 9377556
E-MAIL: kad.consultants@hotmail.com

PLUMBING ENGINEERS

DESIGN DEVELOPERS
OFFICE @ 22, 3rd FLOOR, BS-5&6,
BLOCK 4, F.B AREA, SOHNI CENTRE,
KARACHI
Ph: 021-36345191-8

INNOVATION AND ENTREPRENEURSHIP CENTER OF MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY JAMSHORO,

LIST OF DRAWINGS

S.NO	DWG.NO		TITLE	REMARKS
1.	E-01		LEGEND, GENERAL NOTES & EARTHING DETAIL	REV. 0
2.	E-02		LIGHTING LAYOUT - GROUND FLOOR PLAN	REV. 0
3.	E-02 (A)		DIMENSION LIGHTING LAYOUT - GROUND FLOOR PLAN	REV. 0
4.	E-03		LIGHTING LAYOUT - FIRST FLOOR PLAN	REV. 0
5.	E-03 (A)		DIMENSION LIGHTING LAYOUT - FIRST FLOOR PLAN	REV. 0
6.	E-04		EXTERNAL LIGHTING LAYOUT - GROUND FLOOR PLAN	REV. 0
7.	E-05		GENERAL POWER LAYOUT - GROUND FLOOR PLAN	REV. 0
8.	E-06		GENERAL POWER LAYOUT - FIRST FLOOR PLAN	REV. 0
9.	E-07		COMPUTER POWER LAYOUT - GROUND FLOOR PLAN	REV. 0
10.	E-08		COMPUTER POWER LAYOUT - FIRST FLOOR PLAN	REV. 0
11	E-09		COMPUTER DATA LAYOUT - GROUND FLOOR PLAN	REV. 0
12.	E-10		COMPUTER DATA LAYOUT - FIRST FLOOR PLAN	REV. 0
13.	E-11		VOICE SYSTEM LAYOUT - GROUND FLOOR PLAN	REV. 0
14.	E-12		VOICE SYSTEM LAYOUT - FIRST FLOOR PLAN	REV. 0
15.	E-13		A / C SYTEM LAYOUT - GROUND FLOOR PLAN	REV. 0
16.	E-14		A / C SYSTEM LAYOUT - FIRST FLOOR PLAN	REV. 0
17.	E-15		PUBLIC ADDRESSING SYSTEM LAYOUT - GROUND FLOOR PLAN	REV. 0
18.	E-16		PUBLIC ADDRESSING SYSTEM LAYOUT - FIRST FLOOR PLAN	REV. 0
19.	E-17		MULTIMEDIA & VIDEO CONFERNECE SYSTEM - GROUND FLOOR PLAN	REV. 0
20.	E-18		MULTIMEDIA & VIDEO CONFERNECE SYSTEM - FIRST FLOOR PLAN	REV. 0
21	Sc-E-01		MAIN DISTRIBUTION BOARD	REV. 0
22.	Sc-E-02		LIGHTING DISTRIBUTION BOARD - GROUND FLOOR - FIRST FLOOR PLAN	REV. 0
23.	Sc-E-03		GENERAL POWER DISTRIBUTION BOARD - GROUND FLOOR PLAN	REV. 0
24.	Sc-E-04		GENERAL POWER DISTRIBUTION BOARD - FIRST FLOOR PLAN	REV. 0
25.	Sc-E-05		A/C DISTRIBUTION BOARD - GROUND FLOOR - FIRST FLOOR PLAN	REV. 0

TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION

KAD CONSULTANTS ENGINEERING SERVICES LARKANA

MAIN LEGEND

SYMBOLS	DESCRIPTION	MOUNTING HEIGHT F.F.L.
	PHILIPS MAKE TBS ... 4X18W, T-5, FLUORESCENT LAMP	FALSE CEILING
	[illegible]	CEILING/FALSE CEILING
	PHILIPS MAKE TMS ... WITH 2X36W	CEILING
	PHILIPS MAKE ... WITH 1X36W	ABOVE MIRROR
	PHILIPS MAKE CFL ...	AS PER SITE
	[illegible] LAMP TYPE ...	CEILING
	[illegible]	FALSE CEILING
	[illegible]	FALSE CEILING
	... CFL WITH FROSTED GLASS COVER	FALSE CEILING
	... EXIT LIGHTS	AS PER SITE
	WALL BRACKET ... FLUORESCENT LAMP	AS PER SITE
	LANDSCAPE LIGHT ... LED LAMP	AS PER SITE
	WALL BRACKET FAN	7'-6"
	EXHAUST FAN 12" SWEEP	AS PER SITE
	CEILING FAN 56" SWEEP WITH ...	CEILING
	WALL-MOUNTED SPLIT-TYPE AC INDOOR UNIT (...)	AS PER SITE
	WALL-MOUNTED SPLIT-TYPE AC INDOOR UNIT (...)	AS PER SITE
	WALL-MOUNTED SPLIT-TYPE AC INDOOR UNIT (...)	AS PER SITE
	[illegible]	AS PER SITE
	WALL-MOUNTED SPLIT-TYPE AC INDOOR UNIT (...)	AS PER SITE
	TELEPHONE OUTLET	1'-6"
	... TYPE SPEAKERS	AS PER SITE
	MICROPHONE	AS PER SITE
	PENDANT TYPE SPEAKERS	AS PER SITE
	P.A. AMPLIFIER	AS PER SITE
	PROJECTION SCREEN	AS PER SITE
	[illegible]	AS PER SITE
	... DEVICE	1'-6"
	CALL BELL	AS PER INSTRUCTION OF ...
	BELL PUSH	AS PER INSTRUCTION OF ...
	5A, ONE-WAY SWITCH / TWO-WAY SWITCH	4'-0"
	5A, ... PIN SWITCH SOCKET OUTLET	1'-6"
	15A, 3 PIN SWITCH SOCKET OUTLET	1'-6"
	[illegible] UNIT	1'-?"
	MULTI OUTLET BOX	AS PER SITE
	... RACK	AS PER SITE
	WATER PUMP MOTOR	AS PER SITE
	TELEPHONE JUNCTION BOX (TJB)	AS PER SITE
	DISTRIBUTION BOARD	6'-0"
	MAIN DISTRIBUTION BOARD	AS PER SITE
	MAIN TELEPHONE JUNCTION BOX (MTJB)	AS PER SITE
	[illegible]	AS PER SITE

GENERAL NOTES.

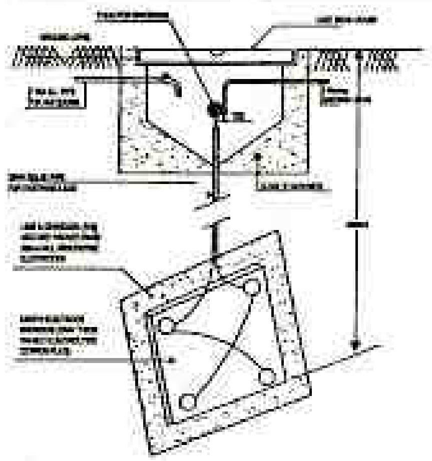
1) THE TABLE SHOWS THE MAXIMUM PERMISSIBLE NUMBER OF ... CABLES THAT CAN BE DRAWN INTO EACH CONDUIT.

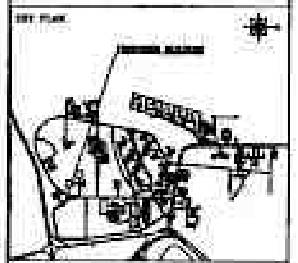
[illegible]

NOTE: THE COLUMNS HEADED "S" APPLY TO RUNS OF CONDUIT WHICH HAVE DISTANCE NOT EXCEEDING 4.25m BETWEEN DRAWING BOXES AND WHICH DO NOT DEFLECT FROM THE STRAIGHT BY AN ANGLE OF MORE THAN 15°. THE COLUMNS HEADED "B" APPLY TO RUNS FOR CONDUIT WHICH DEFLECT FROM THE STRAIGHT BY AN ANGLE OF MORE THAN 15°.

2)–12) [illegible]

EARTHING DETAIL WITH PLATE





GENERAL NOTES & CONSENTS

TENDER DRAWING

TITLE:
LEGEND GENERAL NOTES & EARTHING DETAIL

PROJECT TITLE:
INNOVATION & ENTREPRENEURSHIP CENTER

TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION

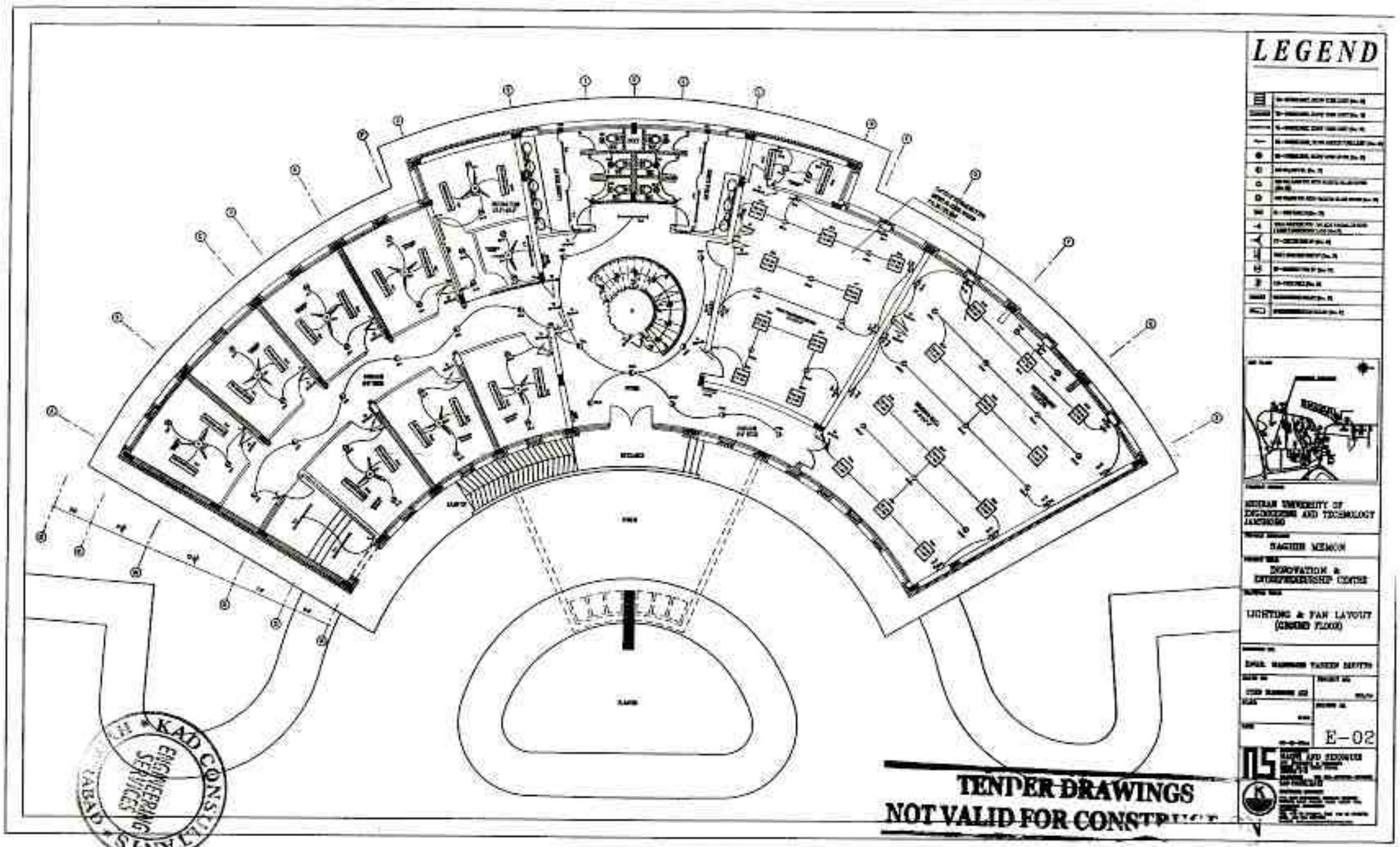
PROJECT:
MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY JAMSHORO

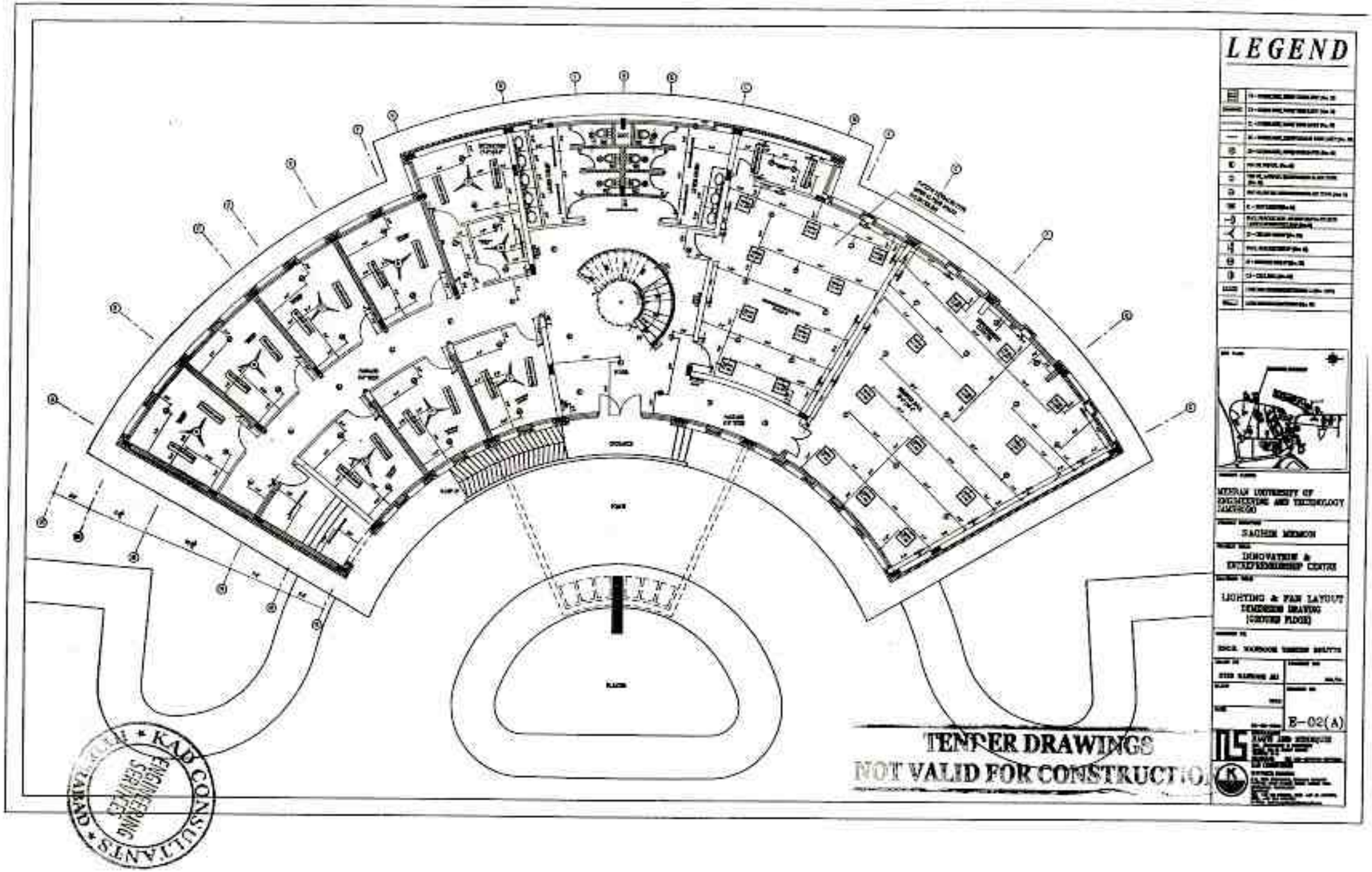
DESIGNED BY: ENGR. SANAULLAH MEMON

DRAWN BY:	PROJECT NO.
S.MANSOOR ALI	018/14
SCALE: N.T.S	DRAWING NO.
DATE: 20-01-2014	E-01

NAQVI AND SIDDIQUI

KAD CONSULTANTS ENGINEERING SERVICES HYDERABAD


LEGEND
NED UNIVERSITY OF ENGINEERING AND TECHNOLOGY KARACHI
NAGHMA MEMON
INNOVATION & ENTREPRENEURSHIP CENTRE
LIGHTING & FAN LAYOUT (GROUND FLOOR)
E-02
TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION
KAD CONSULTANTS
ENGINEERING SERVICES
KARACHI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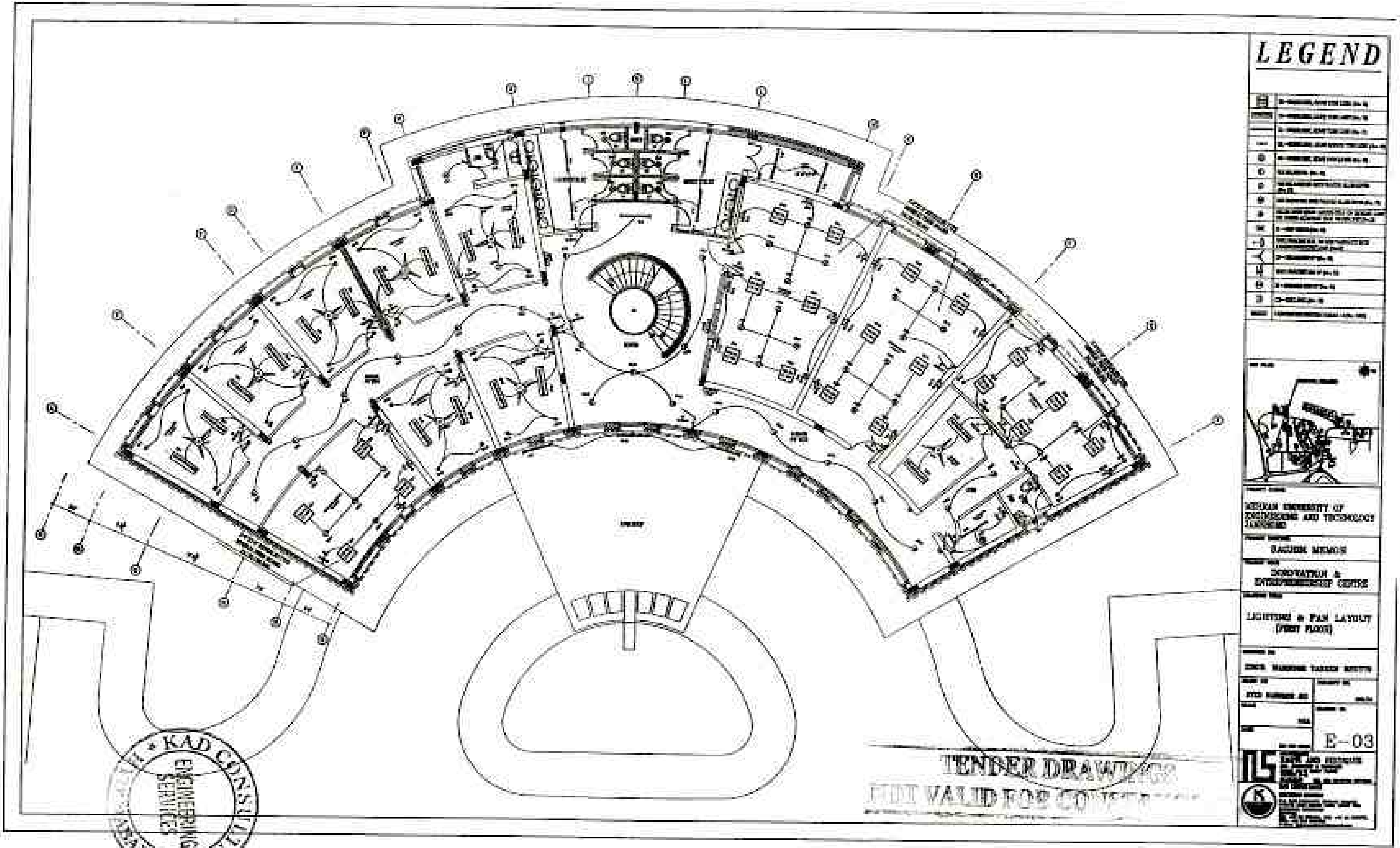
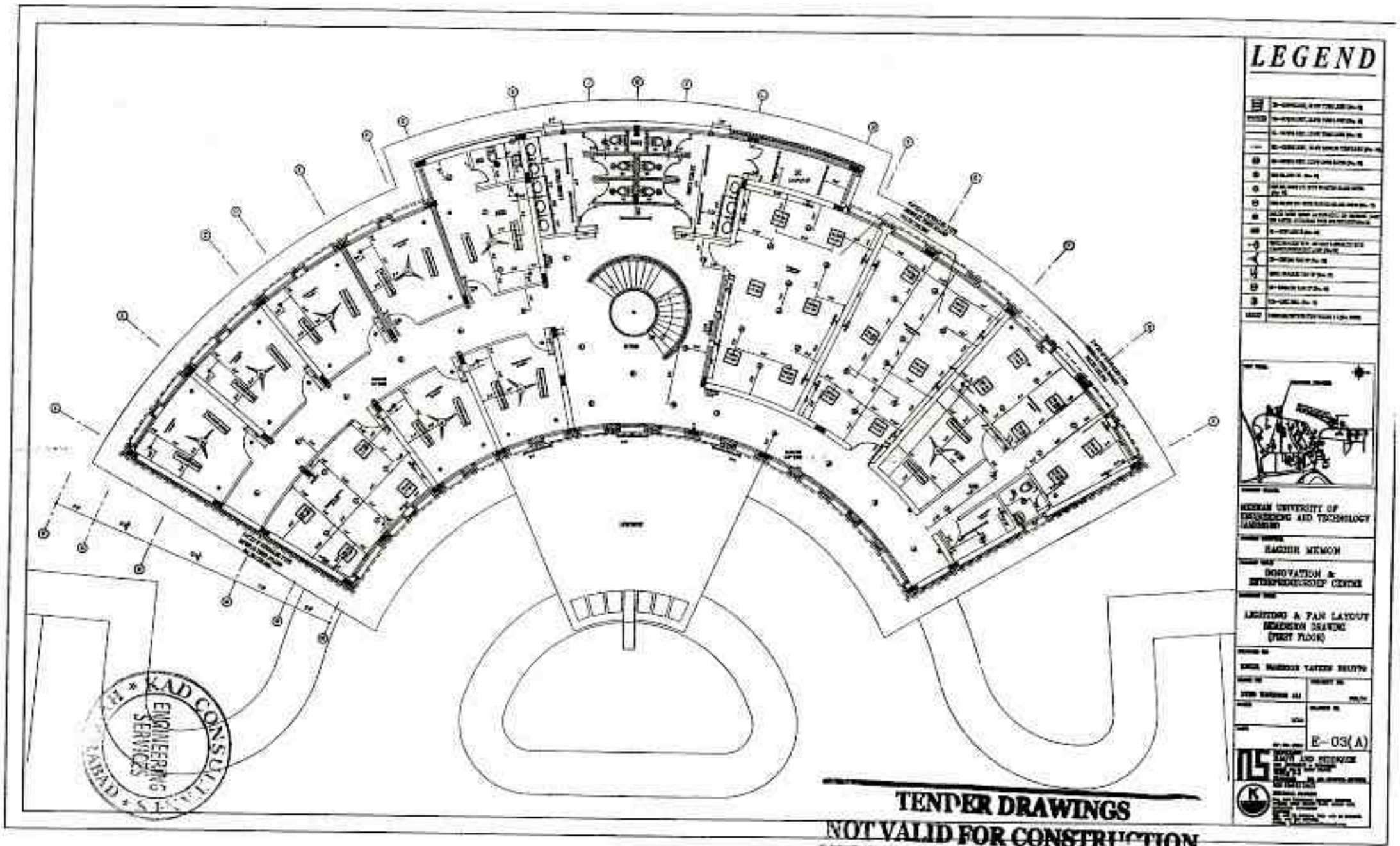
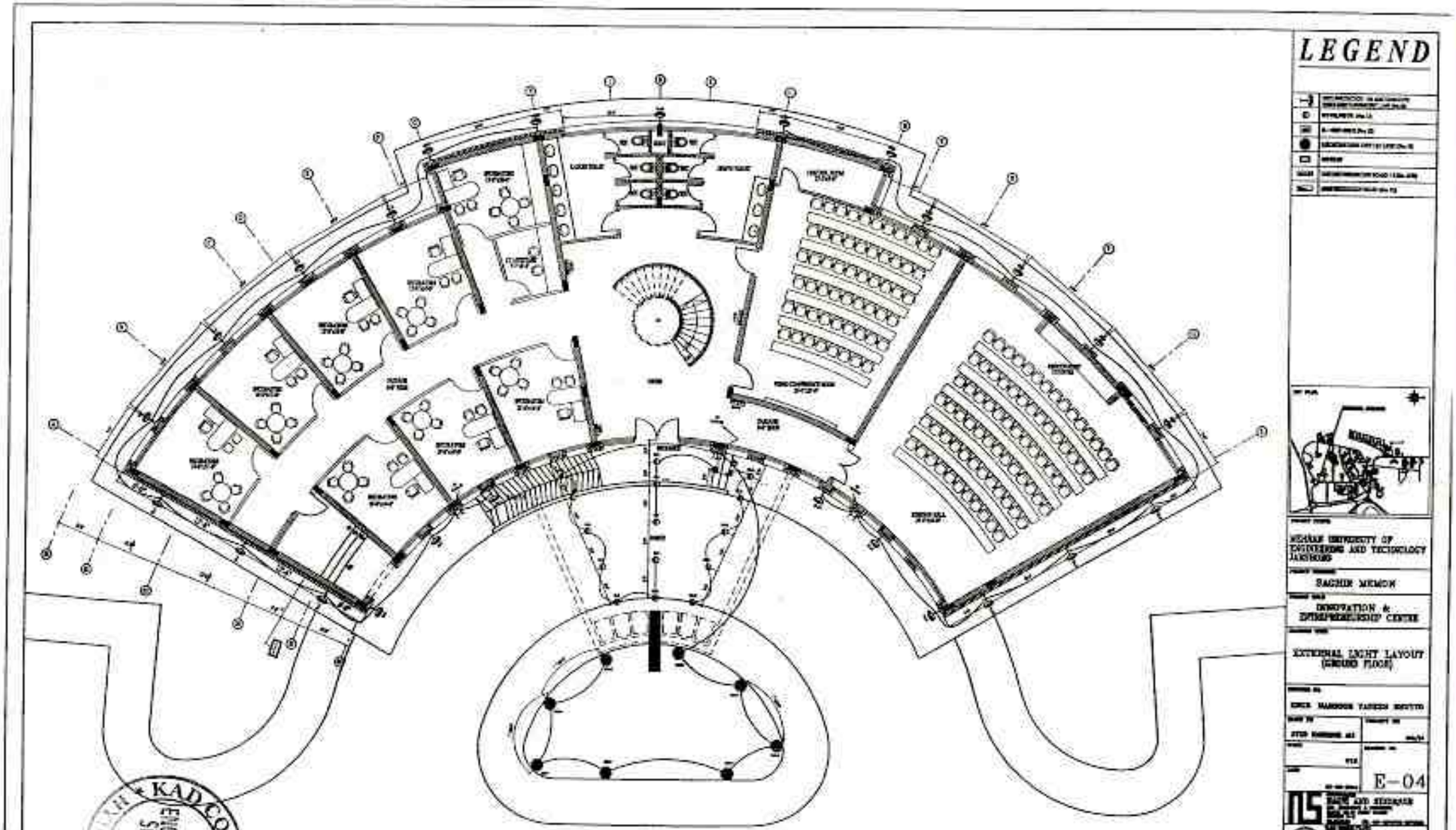
SACHIN MEMON
INNOVATION & ENTREPRENEURSHIP CENTER
LIGHTING & FAN LAYOUT DIMENSION DRAWING (GROUND FLOOR)
E-02(A)
TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION
KAD CONSULTANTS
ENGINEERING SERVICES


LEGEND
INNOVATION &
ENTREPRENEURSHIP CENTRE
LIGHTING & FAN LAYOUT
(FIRST FLOOR)
E-03
TENDER DRAWINGS
KAD CONSULTANTS
ENGINEERING
SERVICES


LEGEND
NED UNIVERSITY OF ENGINEERING AND TECHNOLOGY
KARACHI
MAZHAR MEMON
INNOVATION & ENTREPRENEURSHIP CENTER
LIGHTING & FAN LAYOUT
SUBMISSION DRAWING
(FIRST FLOOR)
E-03(A)
TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION
ENGINEERING SERVICES



LEGEND

MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY JAMSHORO

SAGHIR MEMON

INNOVATION & ENTREPRENEURSHIP CENTER

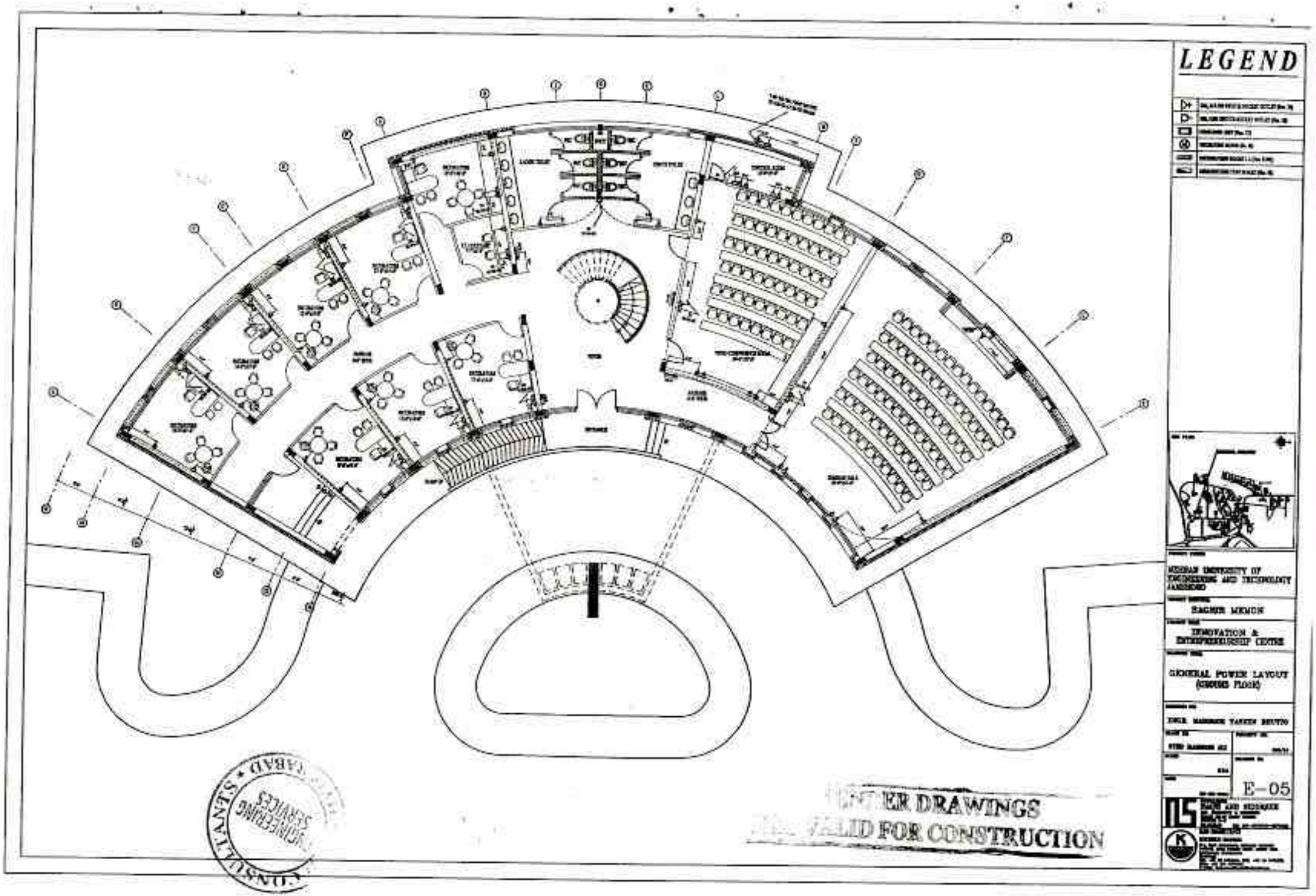
EXTERNAL LIGHT LAYOUT (GROUND FLOOR)

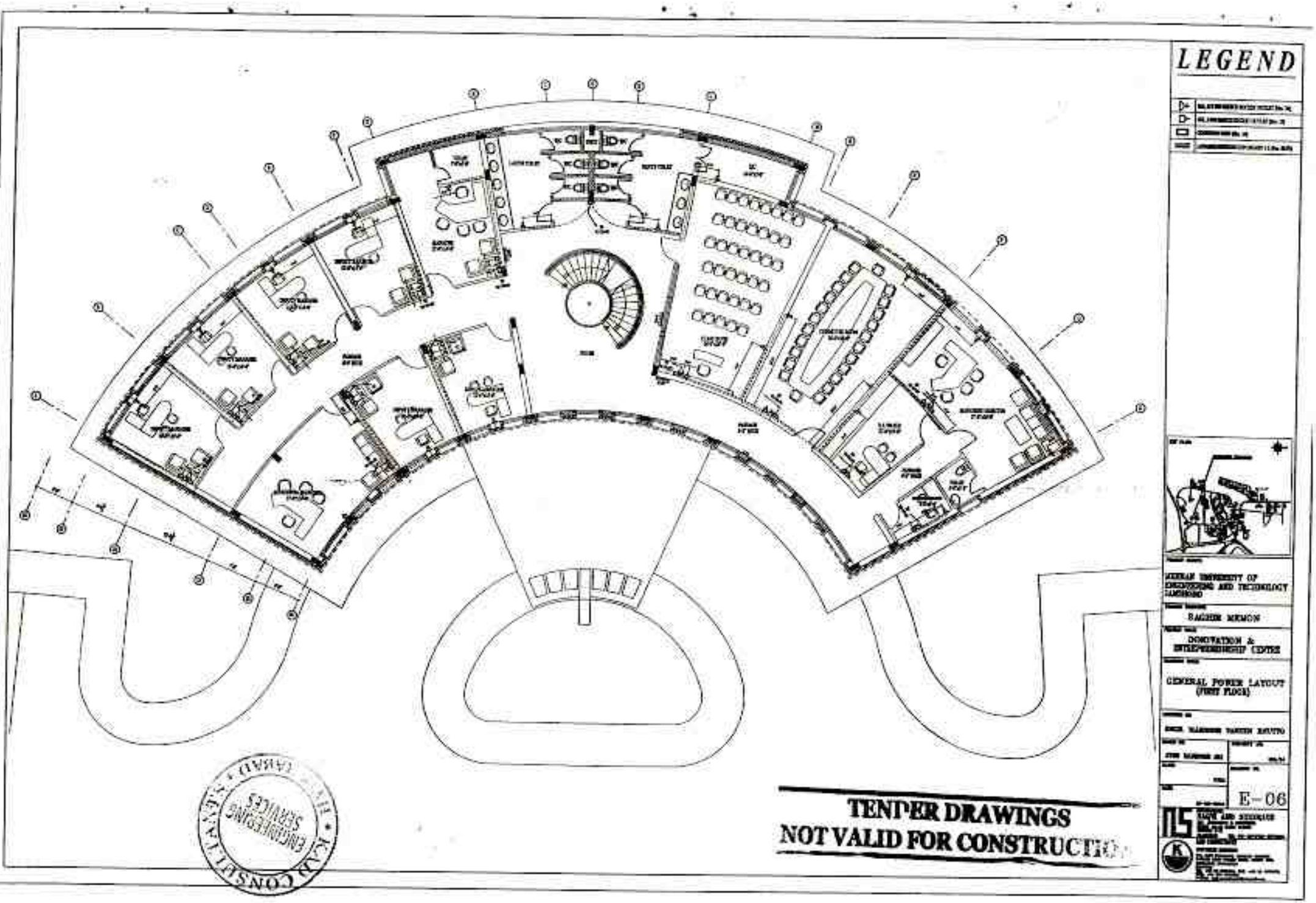
E-04

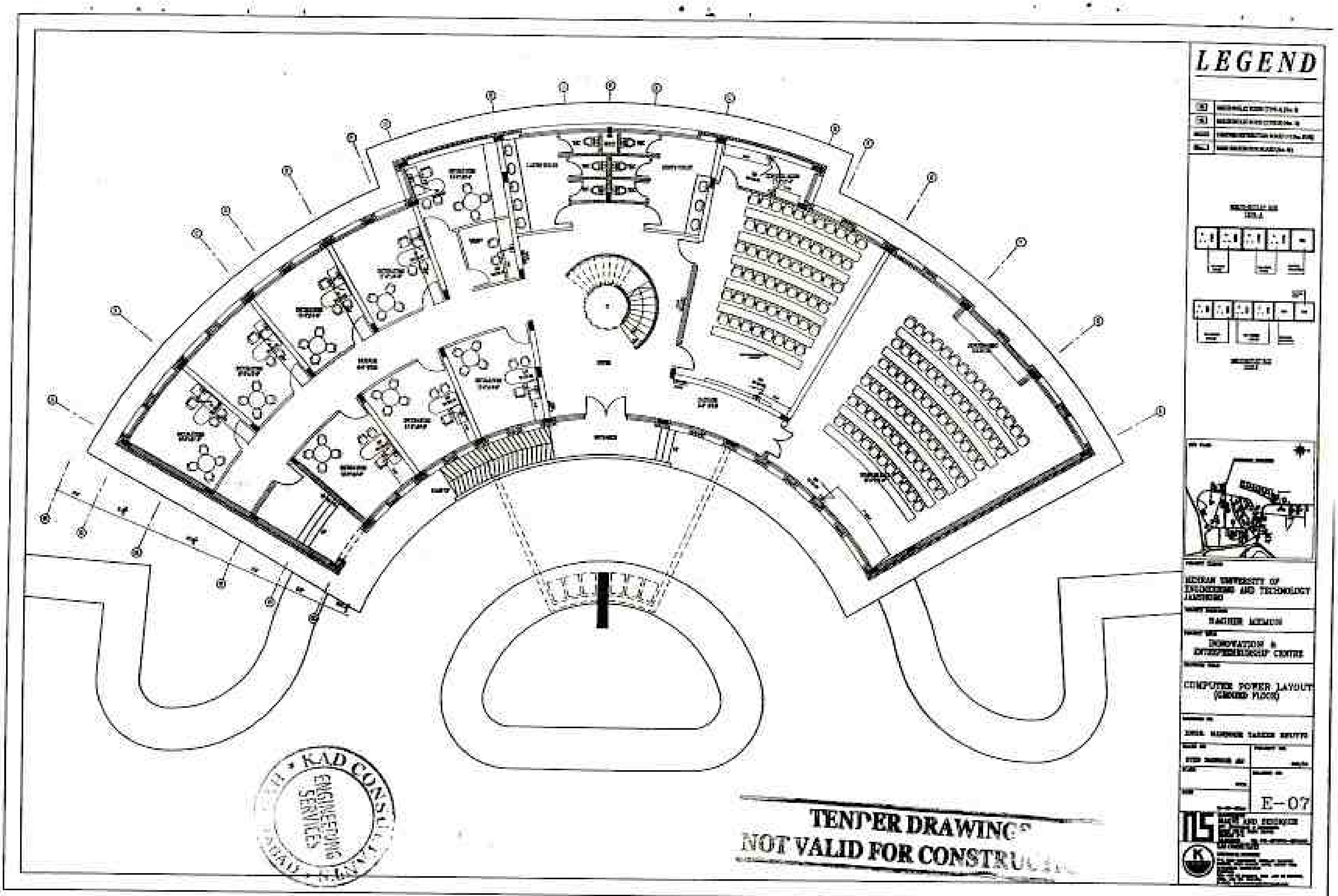
KAD CONSULTANTS ENGINEERING SERVICES

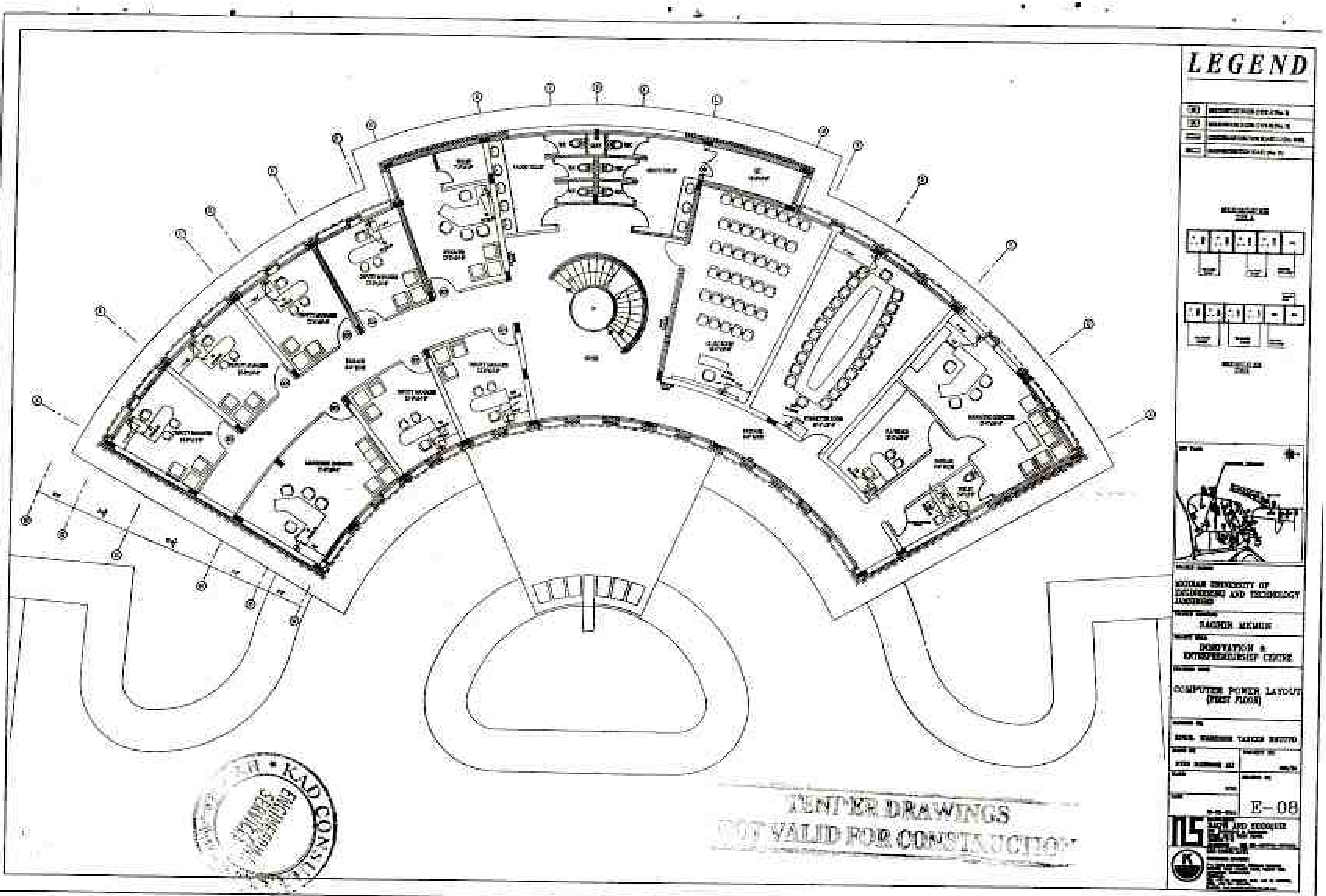
TENDER DRAWINGS

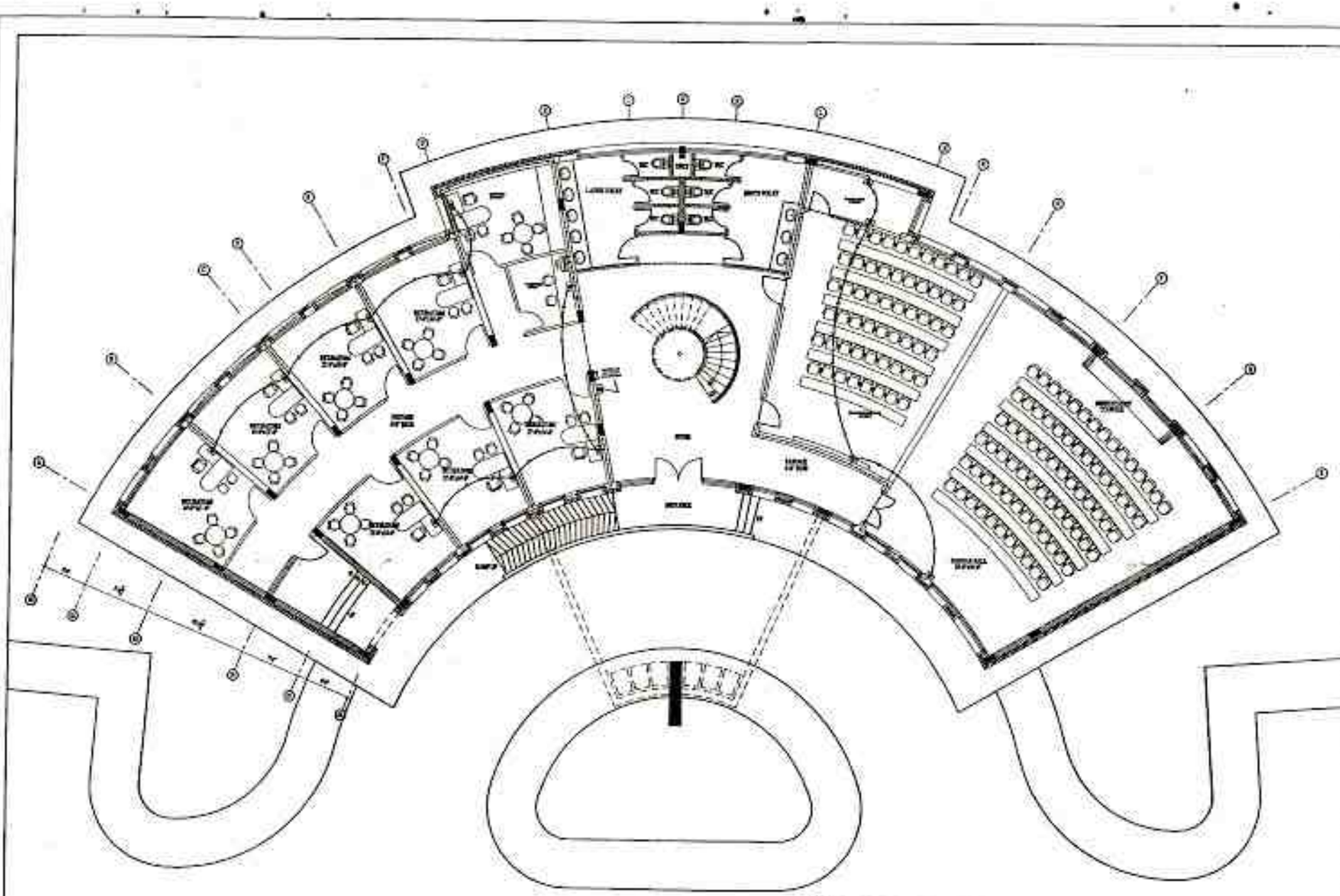
NOT VALID FOR CONSTR


LEGEND
E-05
ER DRAWINGS
VALID FOR CONSTRUCTION


LEGEND
BANQUET MEMON
INNOVATION &
GENERAL POWER LAYOUT
(FIRST FLOOR)
E-06
TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION
ENGINEERING
SERVICES


LEGEND
MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY JAMSHORO
TAGHIR MEMON
INNOVATION & ENTREPRENEURSHIP CENTRE
COMPUTER POWER LAYOUT (GROUND FLOOR)
E-07
TENDER DRAWING
NOT VALID FOR CONSTRU
KAD CONSULTANT
ENGINEERING SERVICES


LEGEND
MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY JAMSHORO
SAGHIR MEMON
INNOVATION & ENTREPRENEURSHIP CENTRE
COMPUTER POWER LAYOUT (FIRST FLOOR)
E-08
TENDER DRAWINGS
VALID FOR CONSTRUCTION



LEGEND

TENDER DRAWINGS
NOT VALID FOR CONSTRU

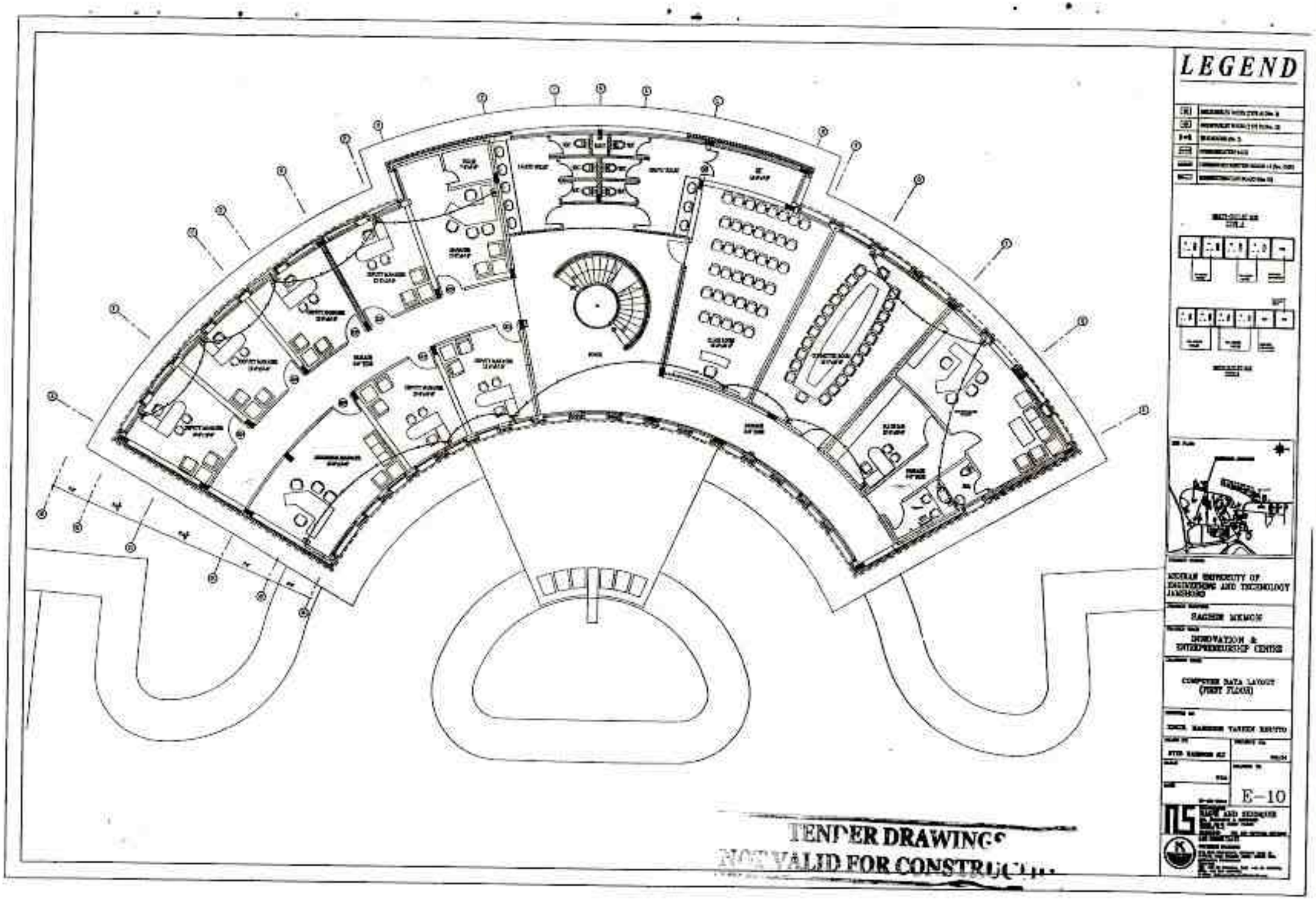
KUMASI UNIVERSITY OF SCIENCE AND TECHNOLOGY KUMASI

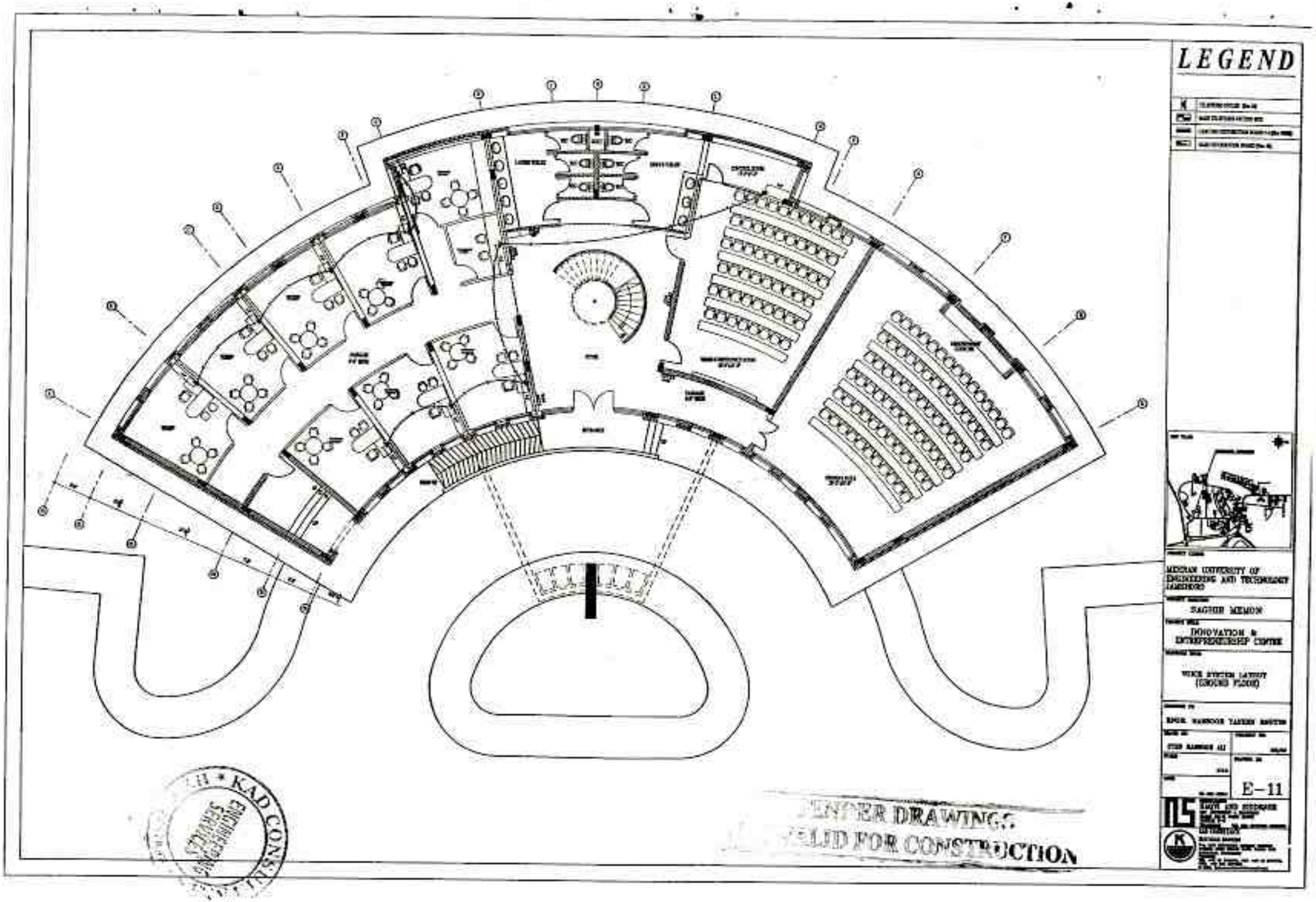
KAGISER MEMOON

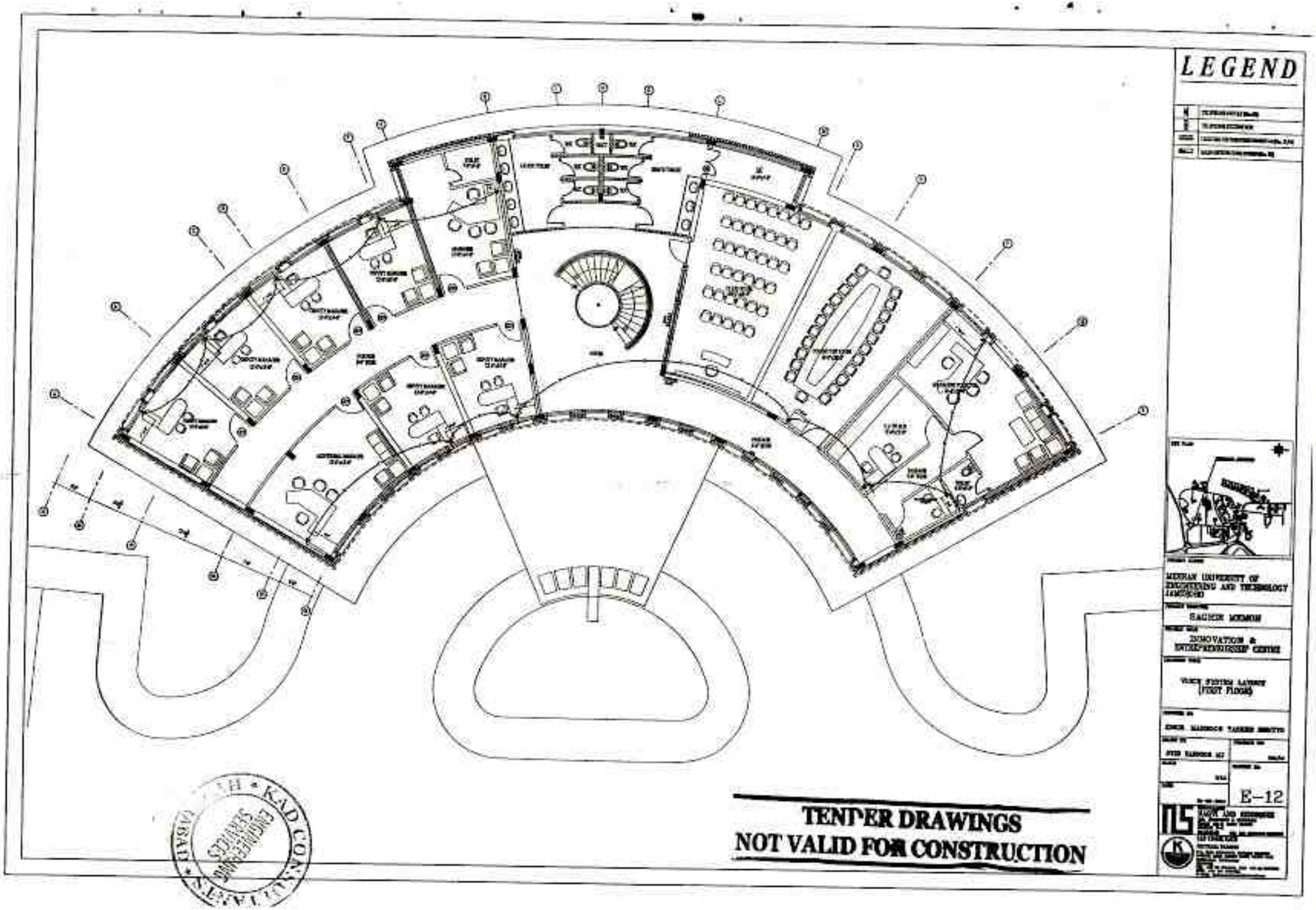
INNOVATION & ENTREPRENEURSHIP CENTRE

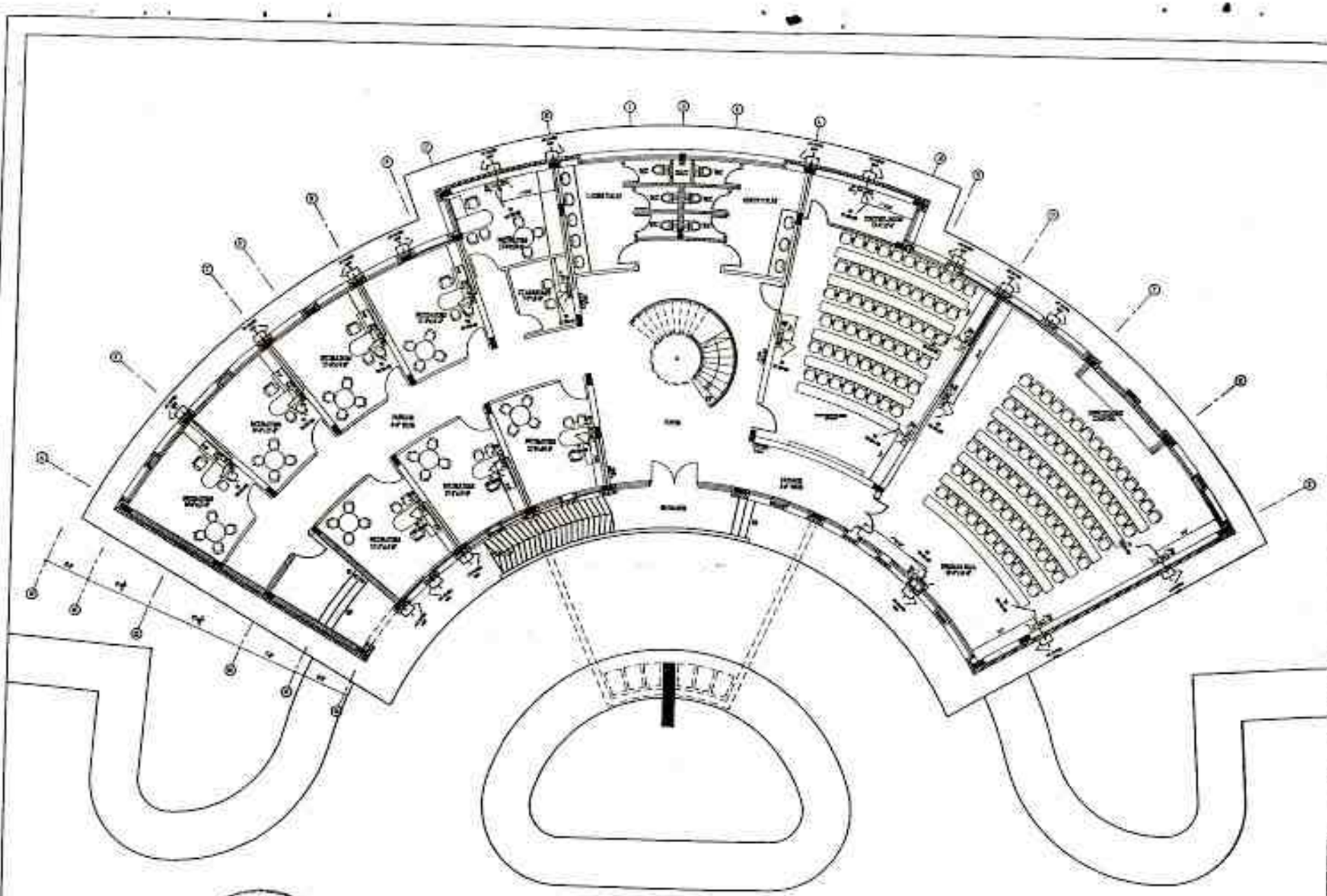
COMPUTER DATA LAYOUT (GROUND FLOOR)

E-09


LEGEND
TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION
QUAID UNIVERSITY OF ENGINEERING AND TECHNOLOGY JAMSHORO
NAGHAN MEMON
INNOVATION & ENTREPRENEURSHIP CENTER
COMPUTER DATA LAYOUT (FIRST FLOOR)
E-10


LEGEND
MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY JAMSHORO
JAGHIR MEMON
INNOVATION & ENTREPRENEURSHIP CENTRE
WORK STATION LAYOUT (GROUND FLOOR)
E-11
KAD CONSULTANTS
ENGINEERING SERVICES
FOR CONSTRUCTION


LEGEND
MURANG'A UNIVERSITY OF TECHNOLOGY
E-12
TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION



LEGEND

[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]
[illegible]	[illegible]

MURRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY JAMSHORO

SAGHIR MEMON

INNOVATION & ENTREPRENEURSHIP CENTRE

A/C SYSTEM LAYOUT (GROUND FLOOR)

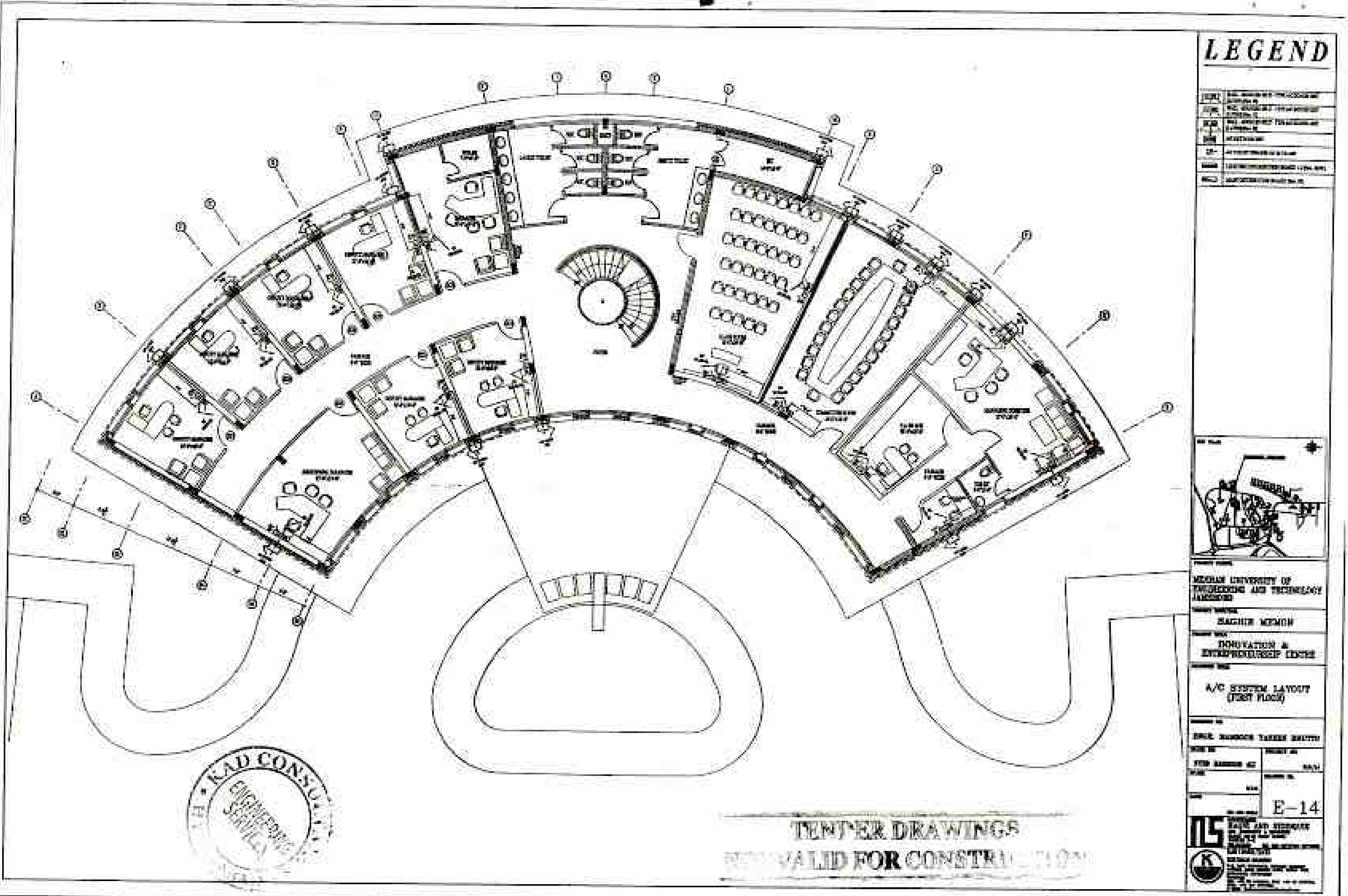
[illegible]

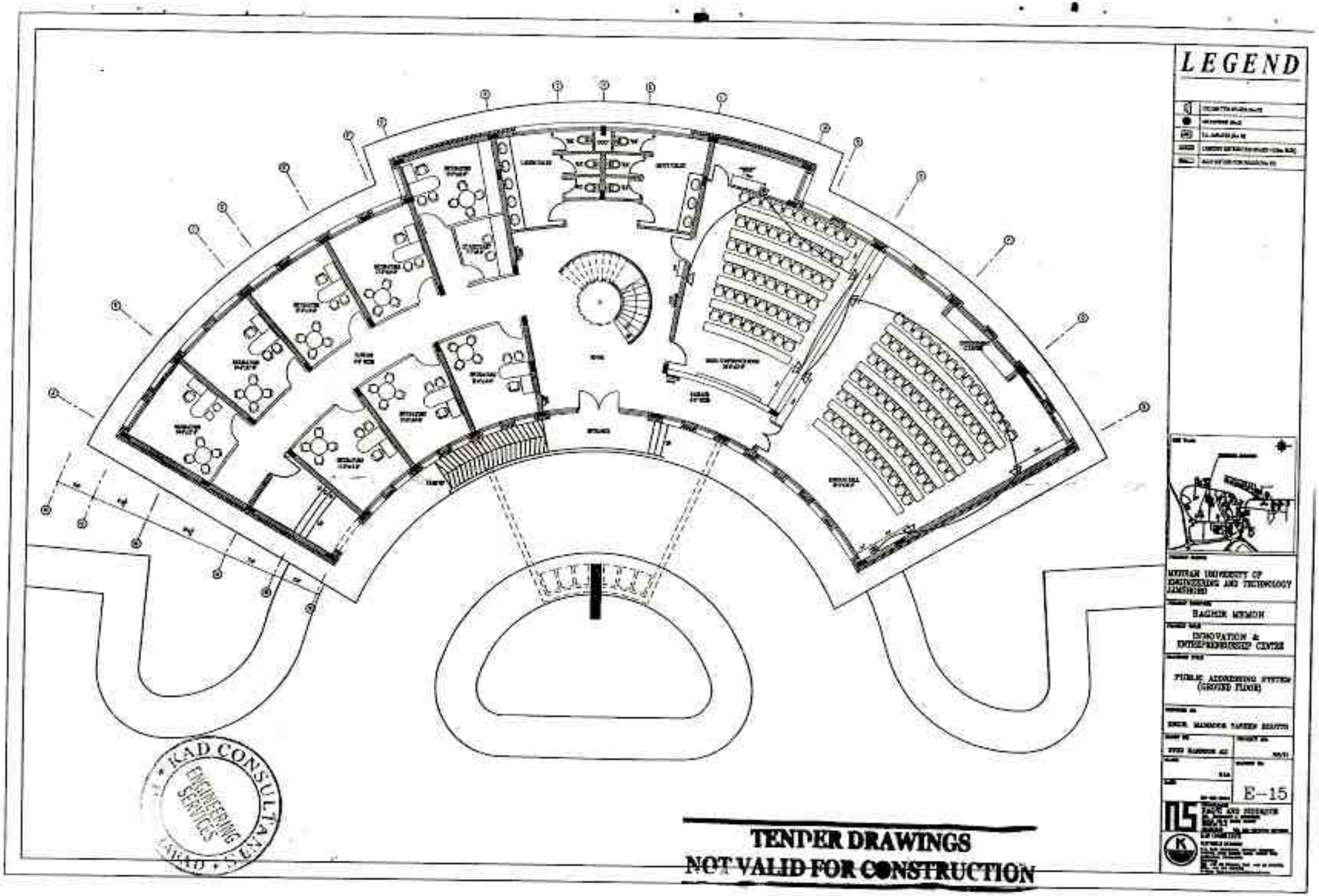
E-13

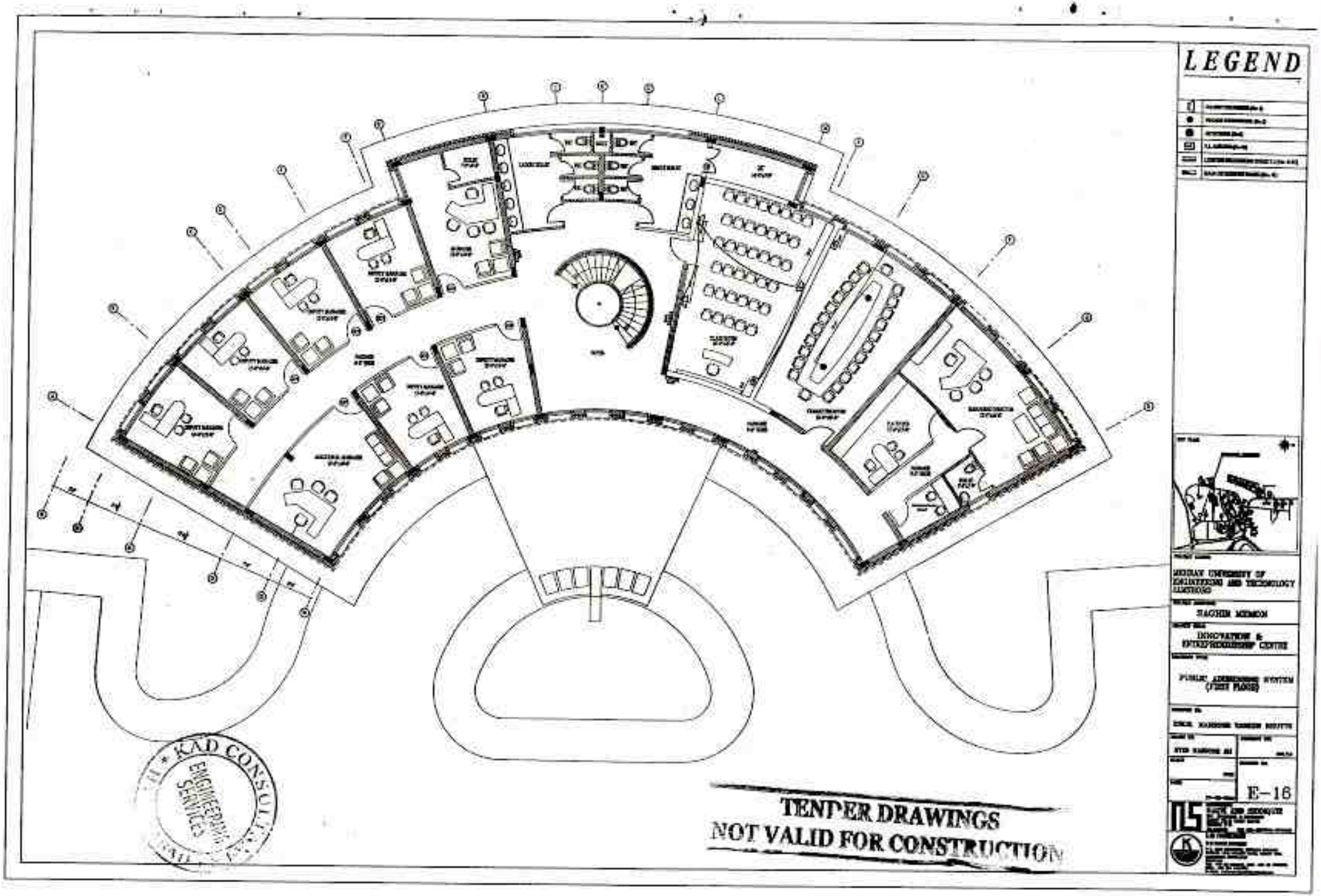
[illegible]

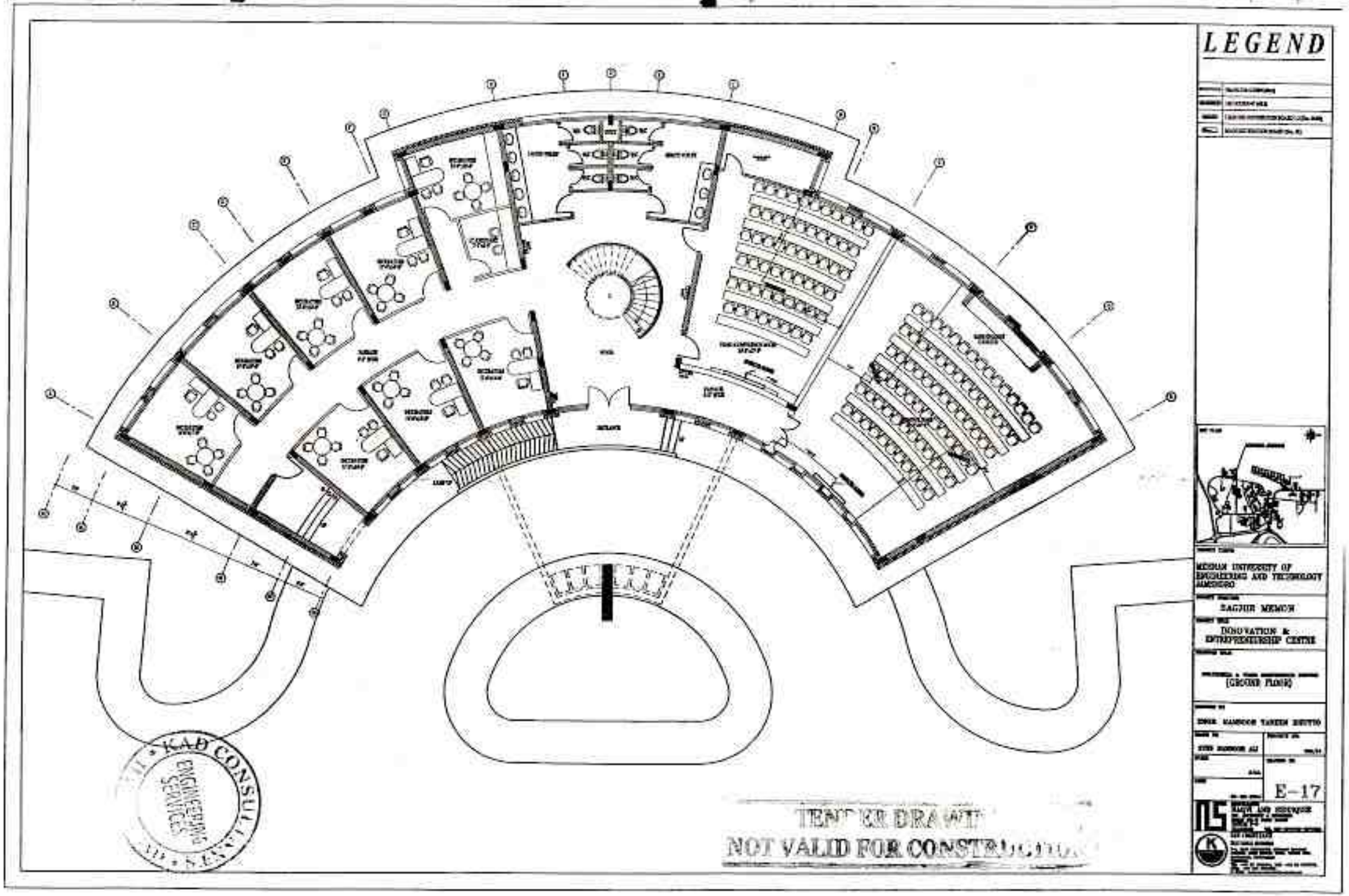
KAD CONSULTANTS ENGINEERING SERVICES

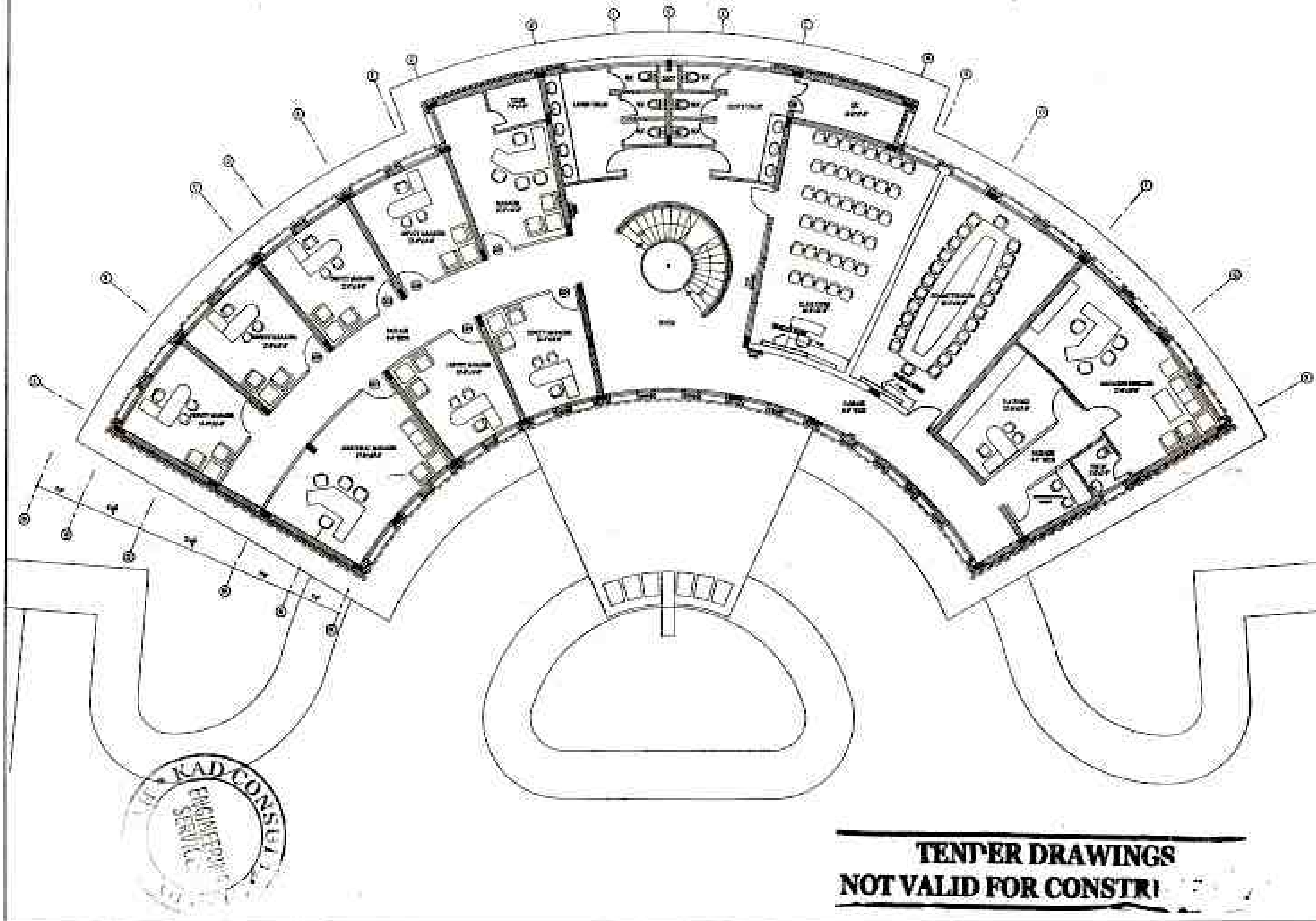
TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION


LEGEND
MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY JAMSHORO
SAGHIR MEMON
INNOVATION & ENTREPRENEURSHIP CENTRE
A/C SYSTEM LAYOUT (FIRST FLOOR)
ENGR. MANSOOR TAREEN BHUTTO
E-14
TENDER DRAWINGS
VALID FOR CONSTR
KAD CONSU
ENGINEERING SERVICES


LEGEND
JOMO KENYATTA UNIVERSITY OF AGRICULTURE AND TECHNOLOGY JUJA, KENYA
BAGHDIR MEMORIAL
INNOVATION & ENTREPRENEURSHIP CENTRE
PUBLIC ADDRESSING SYSTEM (GROUND FLOOR)
E-15
KAD CONSULTANTS
ENGINEERING SERVICES
TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION


LEGEND
TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION
E-16


LEGEND
MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY JAMSHORO
SAGHIR MEMON
INNOVATION & ENTREPRENEURSHIP CENTRE
[GROUND FLOOR]
E-17
KAD CONSULTANTS
ENGINEERING SERVICES
NOT VALID FOR CONSTRUCTION



LEGEND

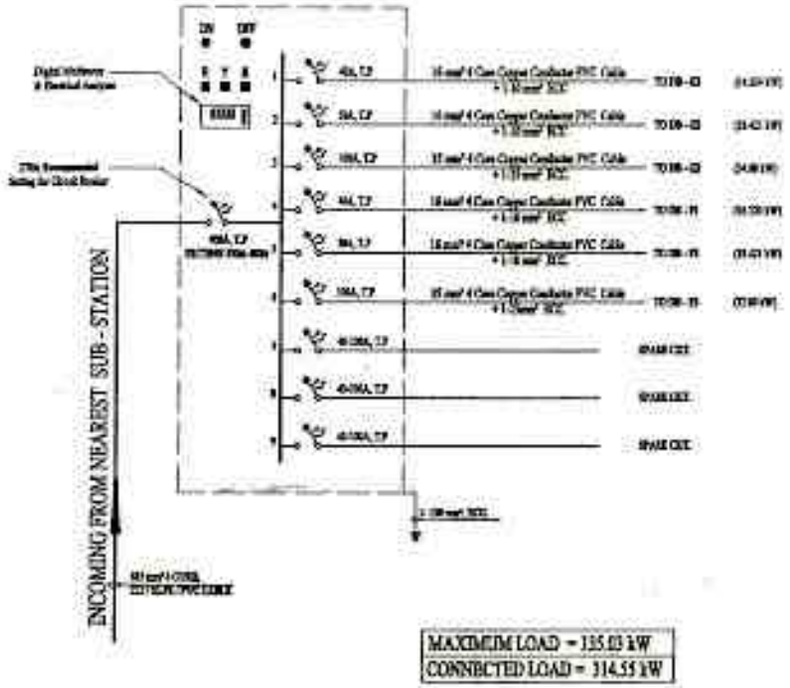
MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY JAMSHORO

SAGHIR MEMON

INNOVATION & ENTREPRENEURSHIP CENTRE

(FIRST FLOOR)

E-18



MAXIMUM LOAD = 135.03 kW
CONNECTED LOAD = 314.55 kW

MAIN DISTRIBUTION BOARD

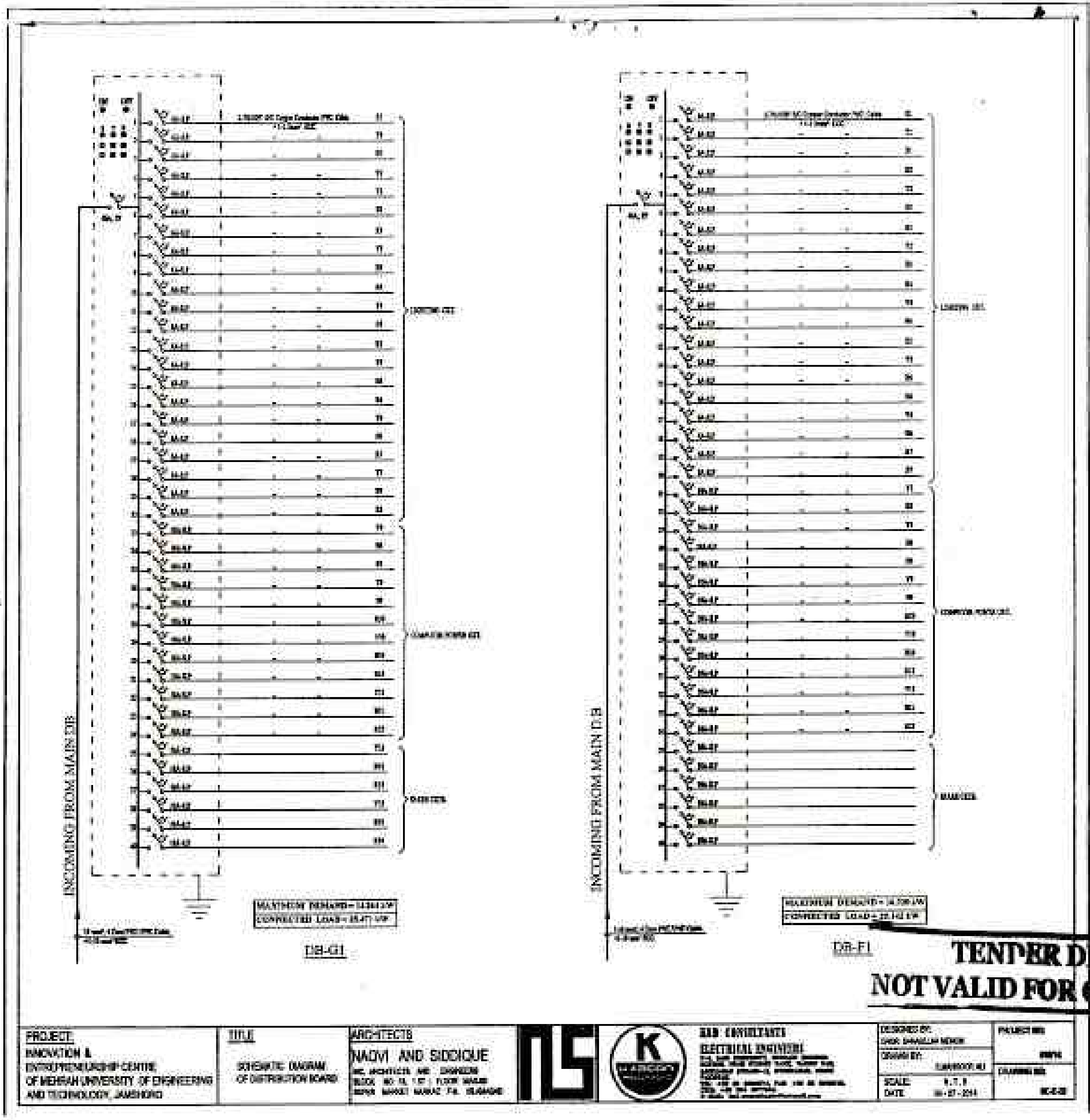
OUTGOING CABLES FROM MAIN DISTRIBUTION BOARD

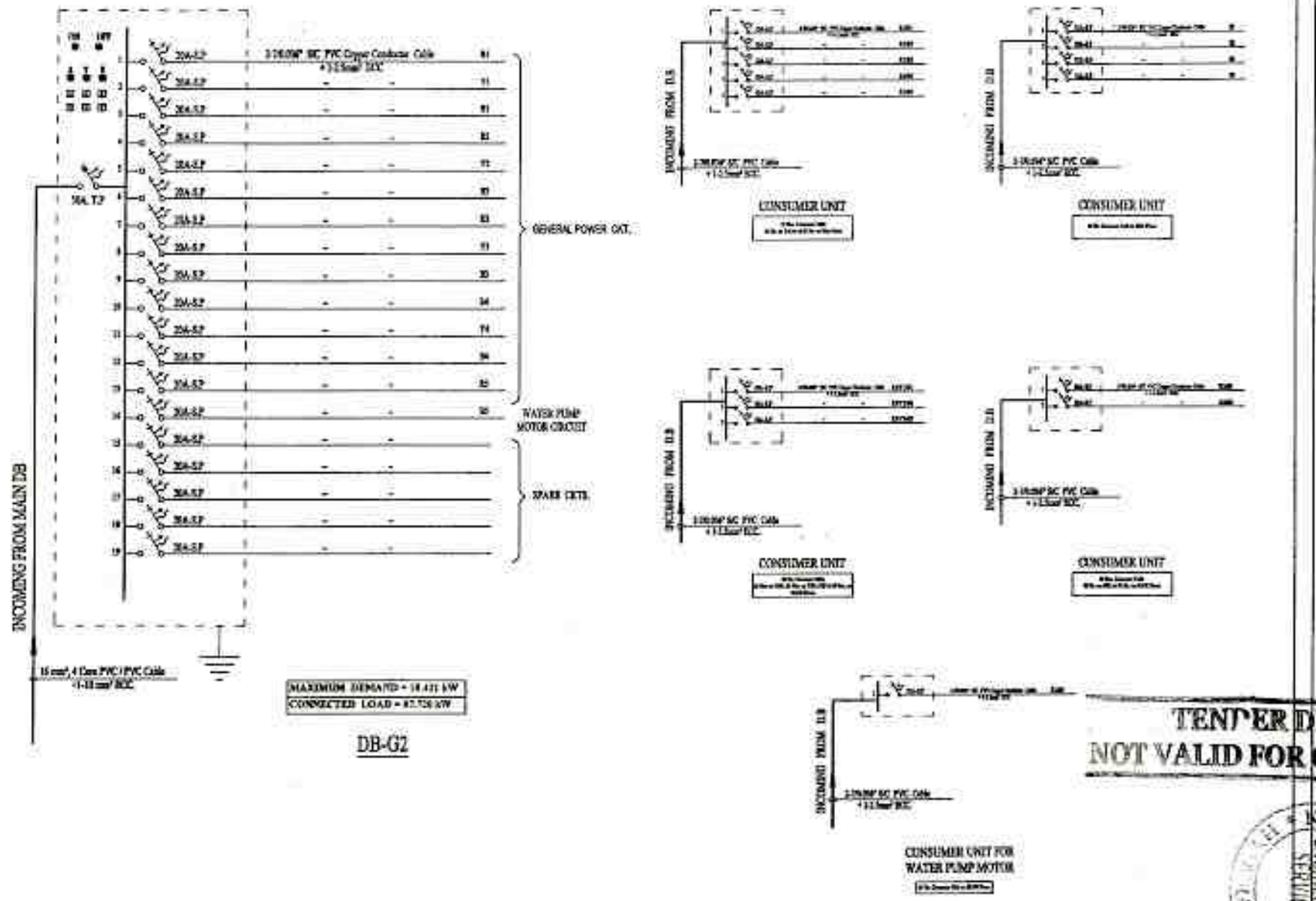
S. No.	CABLE ROUTE	SIZE			TOTAL LENGTH
		CABLE (PVC / PVC)	ECC. (mm²)	CONDUIT SIZE DIA (Inch/mm)	CABLE / ECC / PVC CONDUIT (Mtr.)
01.	FROM S/STN. TO MDB	185 mm², 4 core	--	3" (76.2)	50 Mtr.
02.	FROM MDB TO DB-G1	16 mm², 4 core	1 - 10 mm²	1.5" (38.1)	16 Mtr.
03.	FROM MDB TO DB-G2	16 mm², 4 core	1 - 10 mm²	1.5" (38.1)	34 Mtr.
04.	FROM MDB TO DB-G3	35 mm², 4 core	1 - 25 mm²	1.75" (43.75)	40 Mtr.
05.	FROM MDB TO DB-F1	16 mm², 4 core	1 - 10 mm²	1.5"(38.1)	22 Mtr.
06.	FROM MDB TO DB-F2	16 mm², 4 core	1 - 10 mm²	1.5"(38.1)	41 Mtr.
07.	FROM MDB TO DB-F3	35 mm², 4 core	1 - 25 mm²	1.75" (43.75)	46 Mtr.

PROJECT: INNOVATION & ENTREPRENEURSHIP CENTRE OF MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY, JAMSHORO	TITLE: MAIN DISTRIBUTION BOARD	ARCHITECTS: NAQVI AND SIDDIQUE PVT. ARCHITECTS AND ENGINEERS BLOCK NO 18, 1ST FLOOR MASJID SUPER MARKET MARKAZ F-8 ISLAMABAD	KAD CONSULTANTS ELECTRICAL ENGINEERS	DESIGNED BY: ENGR. SHAKILAH MEMON DRAWN BY: S.MANSOOR ALI SCALE: N. T. S DATE: 15 - 07 - 2014	PROJECT NO: 018/14 DRAWING NO: SC-E-01

KAD CONSULTANTS ENGINEERING SERVICES

TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION


INCOMING FROM MAIN DB
INCOMING FROM MAIN D.B
MAXIMUM DEMAND
CONNECTED LOAD
DB-G1
DB-F1
TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION
PROJECT:
INNOVATION &
ENTREPRENEURSHIP CENTRE
OF MEHRAN UNIVERSITY OF ENGINEERING
AND TECHNOLOGY, JAMSHORO
TITLE
SCHEMATIC DIAGRAM
OF DISTRIBUTION BOARD
ARCHITECTS
NADVI AND SIDDIQUE
ELECTRICAL ENGINEERS
DESIGNED BY:
DRAWN BY:
SCALE:
DATE
PROJECT NO.
DRAWING NO.



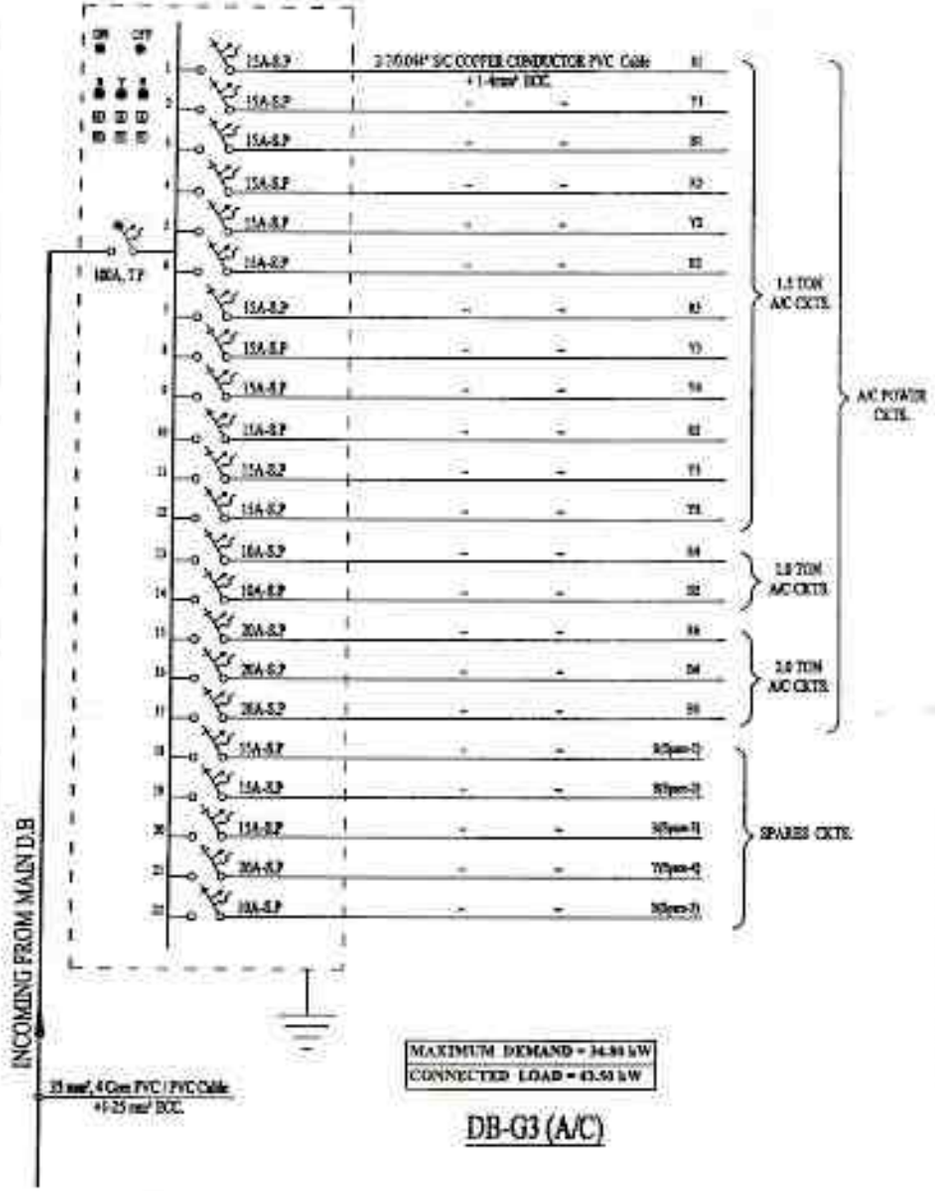
MAXIMUM DEMAND = 18.421 kW
CONNECTED LOAD = 82.726 kW

DB-G2

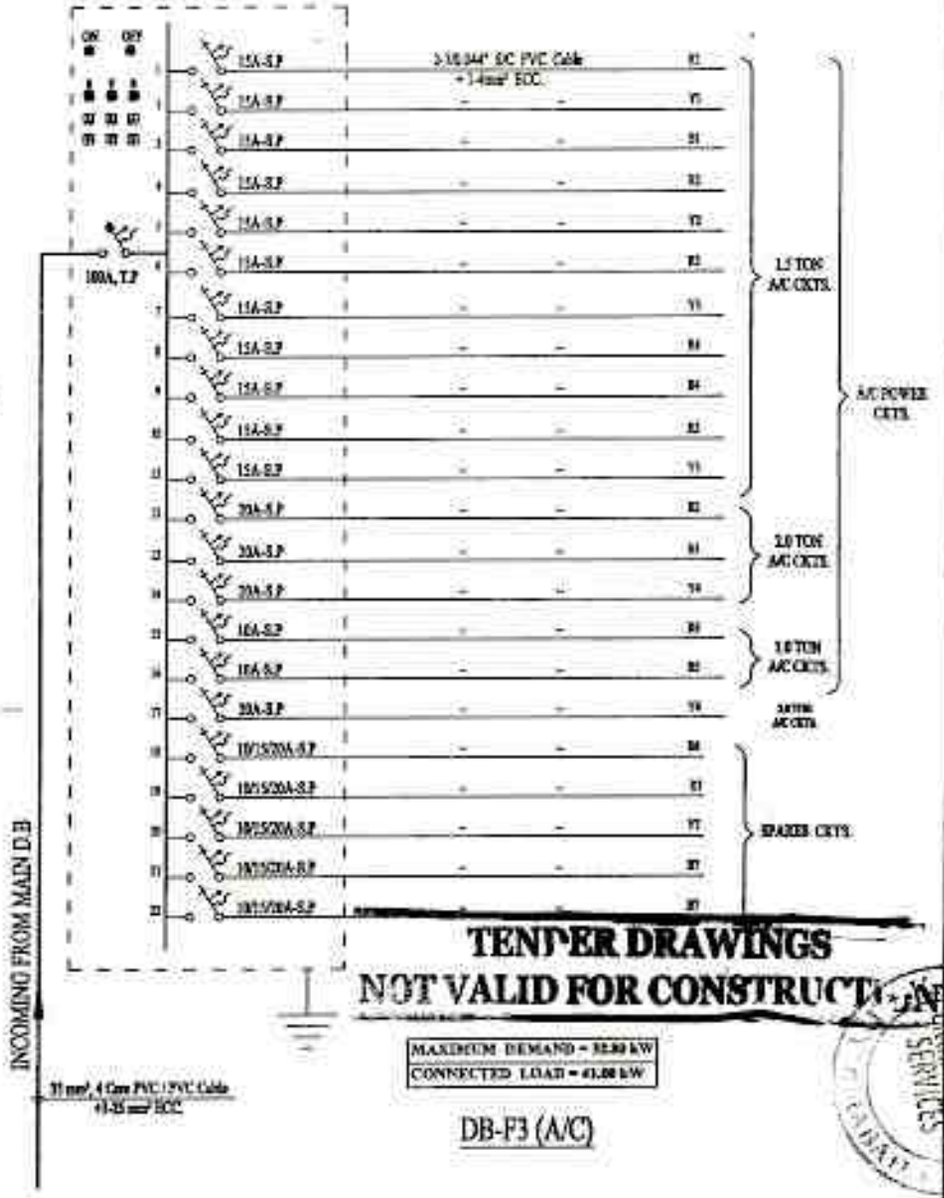
TENDER DRAWINGS
NOT VALID FOR CONSTRUC

KAD CONSULTANTS ENGINEERING SERVICES (PVT.) LTD. KARACHI

PROJECT: INNOVATION & ENTREPRENEURSHIP CENTRE OF MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY, JAMSHORO	TITLE: SCHEMATIC DIAGRAM OF DISTRIBUTION BOARD	ARCHITECTS: NAQVI AND SIDDIQUE INC. ARCHITECTS AND ENGINEERS BLOCK NO 18, 1ST : FLOOR MASJID SUPER MARKET MARAZ F-6, ISLAMABAD	KAD CONSULTANTS ELECTRICAL ENGINEERS	DESIGNED BY: ENGR. SANAULLAH MEMON DRAWN BY: S.MANSOOR ALI SCALE: N. T. S DATE: 07 - 07 - 2014	PROJECT NO: 01814 DRAWING NO: SC-E-03



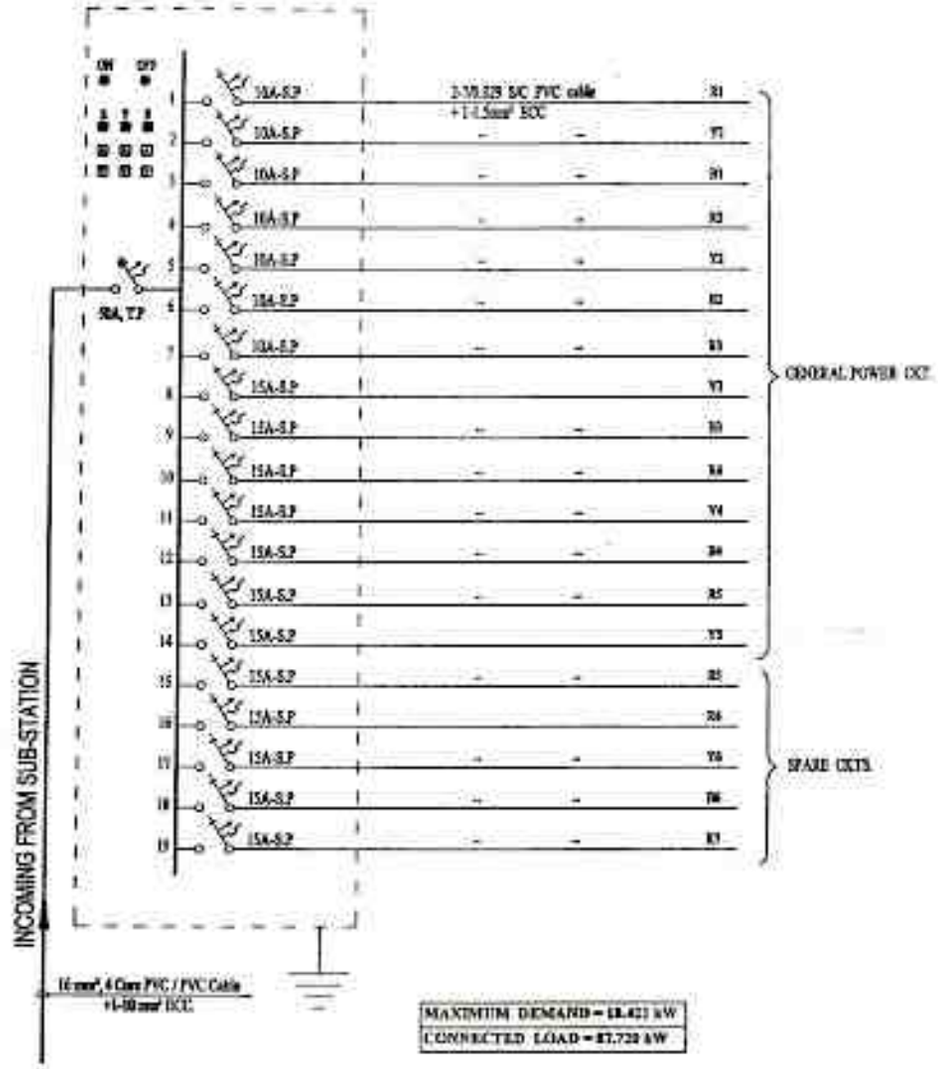
DB-G3 (A/C)



DB-F3 (A/C)

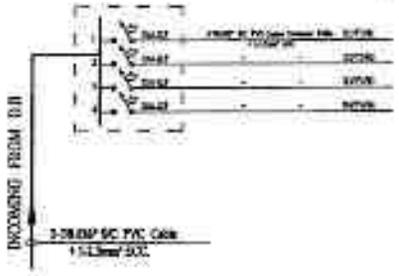
TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION

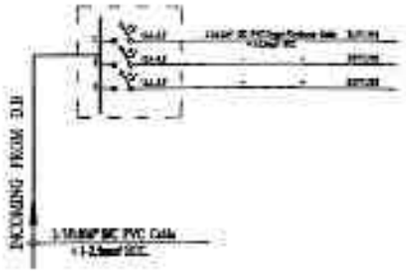
PROJECT: INNOVATION & ENTREPRENEURSHIP CENTRE OF MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY, JAMSHORO	TITLE: SCHEMATIC DIAGRAM OF DISTRIBUTION BOARD	ARCHITECTS: NAQVI AND SIDDIQUE INC. ARCHITECTS AND ENGINEERS BLOCK NO 19, 1 ST : FLOOR MASJID SUPER MARKET MARKAZ F-6, ISLAMABAD		KAD CONSULTANTS ELECTRICAL ENGINEERS	DESIGNED BY: ENGR. SANAULLAH MEMON DRAWN BY: S.MANSOOR ALI SCALE: N. T. S. DATE: 09 - 07 - 2014	PROJECT NO: 018/14 DRAWING NO: SC-E-04

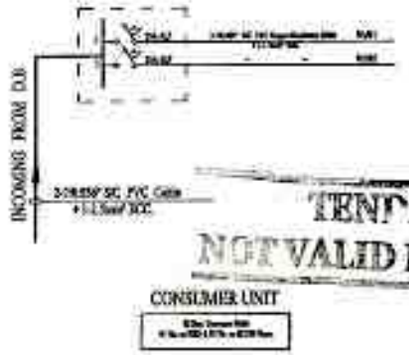


MAXIMUM DEMAND = 68.421 kW
CONNECTED LOAD = 87.720 kW

DB-F2







TENDER DRAWINGS
NOT VALID FOR CONSTRUCTION

KAD CONSULTANTS ENGINEERING SERVICES

PROJECT: INNOVATION & ENTREPRENEURSHIP CENTRE OF MEHRAN UNIVERSITY OF ENGINEERING AND TECHNOLOGY, JAMSHORO	TITLE: SCHEMATIC DIAGRAM OF DISTRIBUTION BOARD	ARCHITECTS: NAQVI AND SIDDIQUE INCL. ARCHITECTS AND ENGINEERS BLOCK NO 16, 1ST FLOOR MASJID SUPER MARKET MARKAZ F-6, ISLAMABAD	KAD CONSULTANTS ELECTRICAL ENGINEERS	DESIGNED BY: ENGR: DANIALLAH MEMON DRAWN BY: S.MANSOOR ALI SCALE: N.T.S DATE: 11-07-2014	PROJECT NO: 018/14 DRAWING NO: SC-E-05

SINDH PUBLIC PROCUREMENT REGULATORY AUTHORITY

CONTRACT EVALUATION FORM

TO BE FILLED IN BY ALL PROCURING AGENCIES FOR PUBLIC CONTRACTS OF WORKS, SERVICES & GOODS

1) NAME OF THE ORGANIZATION / DEPTT: Mehran University of Engineering & Technology, Jamshoro
2) PROVINCIAL / LOCAL GOVT / OTHER: Autonomous
3) TITLE OF CONTRACT: Internal/ External Electrification Works of Innovation & Ent.....
4) TENDER NUMBER: No. DD(Proc.)/MUET/JAM/-62, Dated: 09-12-2014
5) BRIEF DESCRIPTION OF CONTRACT: Internal/ External Electrification Works of Innovation & Ent.....
6) FORUM THAT APPROVED THE SCHEME: Establishment of Innovation & Entrepreneurship Centre (IEC)
7) TENDER ESTIMATED VALUE: Rs:13.999 (Millions)
8) ENGINEER'S ESTIMATE (For civil works only): ---
9) ESTIMATED COMPLETION PERIOD (AS PER CONTRACT): 18 Months
10) TENDER OPENED ON (DATE & TIME): 31-12-2014 @ 12:30 NOON
11) NUMBER OF TENDER DOCUMENTS SOLD (Attach list of buyers): 03 Nos.
12) NUMBER OF BIDS RECEIVED: 03 Nos
13) NUMBER OF BIDDERS PRESENT AT THE TIME OF OPENING OF BIDS: Three Nos
14) BID EVALUATION REPORT (Enclose a copy): Already Sent
15) NAME AND ADDRESS OF THE SUCCESSFUL BIDDER: M/s Gul Traders, Hyderabad.
16) CONTRACT AWARD PRICE: Rs.9,914,488.00
17) RANKING OF SUCCESSFUL BIDDER IN EVALUATION REPORT (i.e. 1st, 2nd, 3rd EVALUATION BID):
    - M/s Gul Traders, Hyderabad (Rs.9,914,488.00) 1st
    - M/s Pakistan Electric Works, Hyd. (Rs.10,283,260.00) 2nd
    - M/s Sungreen Electric & Const. Co., Kar.(Rs.14,454,717.00) 3rd
18) METHOD OF PROCUREMENT USED : - (Tick one)

a)	SINGLE STAGE - ONE ENVELOPE PROCEDURE	Domestic/ Local
b)	SINGLE STAGE – TWO ENVELOPE PROCEDURE	No
c)	TWO STAGE BIDDING PROCEDURE	No
d)	TWO STAGE – TWO ENVELOPE BIDDING PROCEDURE	No

PLEASE SPECIFY IF ANY OTHER METHOD OF PROCUREMENT WAS ADOPTED i.e. EMERGENCY, DIRECT CONTRACTING ETC WITH BRIEF REASONS:

19) APPROVING AUTHORITY FOR AWARD OF CONTRACT: Vice Chancellor

20) WHETHER THE PROCUREMENT WAS INCLUDED IN ANNUAL PROCUREMENT PLAN?

Yes		No	✔

21) ADVERTISEMENT :

i) SPPRA Website
(If yes, give date and SPPRA Identification No.)

Yes	SPPRA Sr. No. 22098, Dated: 15-12-2014
No	

ii) News Papers
(If yes, give names of newspapers and dates)

Yes	Daily Dawn on 13-12-14, Daily Jang on 12-12,14 & Daily Hilal Pakistan, 12-12-14
No	

22) NATURE OF CONTRACT

[illegible]	✔	Int	

23) WHETHER QUALIFICATION CRITERIA WAS INCLUDED IN BIDDING / TENDER DOCUMENTS?
(If yes, enclose a copy)

Yes		No	✔

24) WHETHER BID EVALUATION CRITERIA WAS INCLUDED IN BIDDING / TENDER DOCUMENTS?
(If yes, enclose a copy)

Yes		No	✔

25) WHETHER APPROVAL OF COMPETENT AUTHORITY WAS OBTAINED FOR USING A METHOD OTHER THAN OPEN COMPETITIVE BIDDING?

Yes	✔	No	

26) WAS BID SECURITY OBTAINED FROM ALL THE BIDDERS?

Yes	✔	No	

27) WHETHER THE SUCCESSFUL BID WAS LOWEST EVALUATED BID / BEST EVALUATED BID (in case of Consultancies)

Yes	✔	No	

28) WHETHER THE SUCCESSFUL BIDDER WAS TECHNICALLY COMPLIANT?

Yes	✔	No	

29) WHETHER NAMES OF THE BIDDERS AND THEIR QUOTED PRICES WERE READ OUT AT THE TIME OF OPENING OF BIDS?

Yes	✔	No	

30) WHETHER EVALUATION REPORT GIVEN TO BIDDERS BEFORE THE AWARD OF CONTRACT?
(Attach copy of the bid evaluation report)

Yes	✔	No	

31) ANY COMPLAINTS RECEIVED
(If yes, result thereof)

Yes	
No	√

32) ANY DEVIATION FROM SPECIFICATIONS GIVEN IN THE TENDER NOTICE / DOCUMENTS
(If yes, give details)

Yes	
No	√

33) WAS THE EXTENSION MADE IN RESPONSE TIME?
(If yes, give reasons)

Yes	
No	√

34) DEVIATION FROM QUALIFICATION CRITERIA
(If yes, give detailed reasons.)

Yes	
No	√

35) WAS IT ASSURED BY THE PROCURING AGENCY THAT THE SELECTED FIRM IS NOT BLACK LISTED?

Yes	✔	No	

36) WAS A VISIT MADE BY ANY OFFICER/OFFICIAL OF THE PROCURING AGENCY TO THE SUPPLIER'S PREMISES IN CONNECTION WITH THE PROCUREMENT? IF SO, DETAILS TO BE ASCERTAINED REGARDING FINANCING OF VISIT, IF ABROAD.
(If yes, enclose a copy)

Yes		No	✔

37) WERE PROPER SAFEGUARDS PROVIDED ON MOBILIZATION ADVANCE PAYMENT IN THE CONTRACT (BANK GUARANTEE ETC.)?

Yes	✔	No	

38) SPECIAL CONDITIONS, IF ANY
(If yes, give Brief Description)

Yes	
No	√

Signature & Official Stamp of
Authorized Officer

Executive Engineer Works
MUET, JAMSHORO

FOR OFFICE USE ONLY

MEHRAN UNIVERSITY OF ENGINEERING & TECHNOLOGY, JAMSHORO, SINDH, PAKISTAN.

Tel: Off: +92-222-771212, Fax: +92-222-771403

E-mail: aftab.rajpar@admin.muet.edu.pk

No. XEN(Works)/MUET/JAM/2015/-22,
Dated: 20-01-2015.

M/s Gul Traders,
Hyderabad

WORK ORDER.

SUBJECT: INTERNAL/ EXTERNAL ELECTRIFICATION WORKS OF INNOVATION AND ENTREPRENEURSHIP CENTRE AT MUET, JAMSHORO.

Reference: Your Percentage / Item Rate Tender, Dated: 31-12-2014.

C.C. To.

1. The Director Finance, MUET, Jamshoro.
2. The Director (Works & Services), MUET, Jamshoro.
3. The Secretary to the Vice Chancellor, MUET, Jamshoro.
4. The Assistant Engineer (Civil), MUET, Jamshoro.
5. The I.T. Supervisor, MUET, Jamshoro.
6. The Sub-Engineer (Electrical), MUET, Jamshoro.

They are further directed to intimate the undersigned about the actual date of start of the work.

7. ✓The Director (A&F), Sindh Public Procurement Regular Authority (SPPRA), Karachi.

Your percentage/item rate tender for execution of the above subjected work at the cost of **Rs.9,914,486.00** on tender amount has been accepted by the University Authorities, as being the lowest rate tender in competition.

- ***NO PREMIUM SHALL BE ALLOWED ON NON-SCHEDULE ITEMS.***
- ***NO CARTAGE SHALL BE PAID SEPARATELY.***
- ***NO ESCALATION ON ANY MATERIAL SHALL BE PAID SEPARATELY.***

You are therefore, requested to please attend the office of the undersigned within seven days for executing the agreement (with duly adhesive stamps), and complete the other formalities to start the work at site and complete the work within **18 (Eighteen) months** according to the drawing, design & specifications under the Supervision of the Sub-Engineer (Electrical) and I.T. Supervisor, Mehran University of Engineering & Technology, Jamshoro

The completion time period shall be reckoned from the actual date of start of the work.

EXECUTIVE ENGINEER (WORKS)
MUET, JAMSHORO.

Bid Evaluation Report

1. Name of Procuring Agency: **Mehran University of Engineering & Technology, Jamshoro.**

2. Tender Reference No: **No. DD(Proc.)/MUET/JAM/-62, Dated: 09-12-2014**

3. Tender Description/Name of work/Item: **INTERNAL/ EXTERNAL ELECTRIFICATION WORKS OF INNOVATION AND ENTREPRENEURSHIP CENTRE AT MUET, JAMSHORO.**

4. Method of Procurement: **Domestic/ Local.**

5. Tender Published: **MUET Web Site on 12-12-2014, SPPRA Web Site Sr. 22098 on 15-12-2014.**
Print & Electronic Media (SPPRA ID Sr. No. 22098 Dated: 15-12-2014).
(News Paper published in "Daily Dawn" on 13-12-2014, "Daily Jang" on 12-12-2014 & "Daily Hillal Pakistan" on 12-12-2014.

6. Total Bid documents Sold: **03 Nos.**

7. Total Bids Received: **03 Nos.**

8. Technical Bid Opening date: (if applicable) N/A

9. No. of Bid technically qualified (if applicable): N/A

10. Bid(s) Rejected: **Nil**

11. Financial Bid Opening date: **31-12-2014**

12. Bid Evaluation Report:

Estimated Cost: **Rs.13,998,704.00**

S No	*Name of Firm or Bidder*	*Cost offered by the Bidder*	*Ranking in terms of cost*	*Comparison with Estimated cost Above/ Below*	*Reasons for acceptance/ rejection*	*Remarks*
0	1	2	3	4	5	6
1.	**M/s Gul Traders, Hyderabad.**	**Rs. 9,914,486.00**	**1st**	**-29.18% (Below)**	**Acceptable due to 1st lowest.**	
2.	M/s Pakistan Electric Works, Karachi.	Rs. 10,283,260.00	2nd	-26.54% (Below)	**2nd Lowest**	
3.	M/s Sungreen Electric & Construction Co., Karachi.	Rs. 14,454,717.00	3rd	+3.26% (Above)	**3rd Lowest**	

(Engr. Aftab Ahmed Rajpar)
Executive Engineer (Works)
MUET, Jamshoro

(Abdul Ghafoor Kandhir)
Deputy Director (Procurement)
MUET, Jamshoro

(Engr. Qamar-ul-Hassan Memon)
Project Director
University of Sindh
31/12/14

me of Work: **INTERNAL/ EXTERNAL ELECTRIFICATION WORKS OF INNOVATION AND ENTREPRENEURSHIP CENTRE AT MUET, JAMSHORO.**

MINUTES OF MEETING:

A meeting for opening of Financial Proposals for the work "**Internal/ External Electrification works of Innovation and Entrepreneurship Centre at MUET, Jamshoro**" was held on 31-12-2014 at 12:30 P.M in the Office of the Executive Engineer (Works). The following members of tender opening Committee were present.

1. Engr. Aftab Ahmed Rajpar,
   Executive Engineer (Works), MUET, Jamshoro. — Member/ Convener
2. Abdul Ghafoor Kandhir,
   Deputy Director (Procurement), MUET, Jamshoro. — Member
3. Engr. Qamar-ul-Hassan Memon,
   Project Director, University of Sindh. — Member

The Executive Engineer (Works) briefed the Committee members that the Sealed / Percentage/ Item Rate Tenders were invited as per Rule 46(2) of SPP Rules, 2010 for the said work vide letter No. & Dated: DD(Proc.)/MUET/JAM/-62, 09-12-2014. He further briefed that the estimated cost of tender was Rs.13.999 (M) and Purchasing Date starting from 15-12-2014 to 30-12-2014, Submission Date on 31-12-2014 upto 12:00 Noon, whereas, Opening Date of the tender was 31-12-2014 @ 12:30 P.M. The Executive Engineer (Works) further briefed that three (03) bidders purchased the Bidding Documents and submitted the same in-time. Then all the Contractors were called in the Office of the Executive Engineer (Works), so that bidding documents can be opened in their presence under ***Rule-41 of SPP Rules, 2010***. Following Contractors took part in the bidding process as under:

S#.	Name of Firm Or Bidder	Contractor Quoted Bid Amount (Rs.)	Remarks
1.	M/s Sungreen Electric & Const. Co., Karachi.	**Rs.8,975,415.00**	**Copy of Attendance Sheet Attached.**
2.	M/s Pakistan Electric Works, Karachi.	Rs.10,283,260.00	
3.	M/s Gul Traders, Hyderabad.	Rs.14,454,717.00	

The Committee started the proceedings of opening of tender in-front of aforementioned bidders and read aloud the names of each bidder one by one by opening their respective bids and also read aloud bid amount and other details and corrected the arithmetic errors as depicted under:

S.No.	Name of Firm or Bidder	Estimated Cost in Rs.	Mathematically corrected Bid amount in Rs.	% Above/ Below Estimated Cost
1.	**M/s Gul Traders, Hyderabad.**	**13,998,704.00**	**9,914,486.00**	**-29.18% Below**
2.	M/s Pakistan Electric Works, Karachi.		10,283,260.00	-26.54% Below
3.	M/s Sungreen Electric & Construction Co., Karachi.		14,454,717.00	+3.26% Above

After detail discussion & deliberation, the Committee recommended that to award the "**Internal/ External Electrification works of Innovation and Entrepreneurship Centre at MUET, Jamshoro**" to **M/s Gul Traders, Hyderabad** at the Cost of **Rs.9,914,486.00**

The meeting ended with the vote of thanks to all members.

Executive Engineer (Works)
MUET, Jamshoro