Tender Fee: Rs. 3,000/-
(Non-Refundable)

TENDER FORM

Tender # CW/06/25-26

Supply & Installation of Fire Hydrant System at IBA Main Campus

Date of Issue	**:**	**November 05, 2025**
Last Date of Submission	**:**	**November 19, 2025 at 3:00 PM**
Date of Opening	**:**	**November 19, 2025 at 3:30 PM**

Company Name:_____

NTN: _____

SRB / GST Registration Number: _____

Pay Order / Demand Draft # _____, Drawn on Bank_____

Amount of Rs. _____, Dated: _____

SUMMARY OF CONTENTS

Stamp & Signature

INVITATION FOR BIDS

Stamp & Signature

Notice Invitation Tender (NIT)

Tender Notice

The Institute of Business Administration, Karachi (IBA) invites electronic bids on EPADS from active taxpayers of manufacture / firm / companies / supplier registered with SPPRA EPADS and relevant tax authorities for the following tender.

Tender Title (Ref. No.)	Procedure	Bid Security
Supply & Installation of Fire Hydrant System at IBA Main Campus ***(CW/06/25-26)***	Single Stage One Envelop	2% of bid security
• Fee: Rs.3,000/- each • Issuance start date: November 05, 2025 at 9 AM • Issuance end date & time: November 19, 2025 at 3 PM • Submission date & time: November 05, 2025 to November 19, 2025 from 9 AM to 3 PM • Opening date & time: November 19, 2025 at 3:30 PM • **Site Visit:** November 14, 2025 at 11 AM at IBA Main Campus		

Tender Document containing detailed terms and conditions are available at Office of **Head of Procurement, Fauji Foundation Building, IBA Main Campus, University Enclave, Karachi** on any working day (Monday to Friday). The tender document can also be downloaded from IBA and SPPRA EPADS system. The Tender fee challan is to be generated from the IBA website https://www.iba.edu.pk/tenders/ which may be deposited in any branch of Meezan Bank Ltd. Bidders are required to submit their bids (duly signed and stamped) on the uploaded Tender Document (along with a copy of Earnest Money and all supporting documents) through SPPRA EPADS system (www.eprocure.gov.pk). The original bid security along with the Original Bid (duly signed and stamped) must be delivered to IBA, Karachi on below mentioned address before bid opening and will be opened on same date & venue in the presence of the bidders' representatives who may wish to attend. Bid Security in the form of Pay Order or Demand Draft has to be submitted in favour of "**IBA Karachi**".

N.B.

(1) IBA Karachi reserves the right to reject any bid or cancel the bidding process subject to relevant provision of SPP Rules 2010.

(2) Only uploaded bid along with supporting documents will be accepted. In case there is a contradiction between bidder's EPADS submitted bid and manually submitted bid, bid submitted on EPADS will be considered valid for evaluation purpose.

REGISTRAR
IBA, Main Campus, Univeristy Enclave, Karachi 75270
111-422-422 Fax (92-21) 99261508
Contact Person Assistant Manager Procurement on 38104700 ext: 2150
Email tenders@iba.edu.pk
Website https://www.iba.edu.pk/tenders/
SPPRA EPADS: https://portalsindh.eprocure.gov.pk/#/

Stamp & Signature

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.*

Stamp & Signature

TABLE OF CONTENTS

INSTRUCTIONS TO BIDDERS

Stamp & Signature

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. Site visit will be held on November 14, 2025 at IBA Main Campus at 11am with Sr. Manager Security for understanding the exact nature of the job.

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 Cat C-6 or above. In the event that prequalification of potential bidders has been undertaken, only bids from prequalified bidders will be considered for award of Contract.

b) 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 Minimum 3 Nos performed in last 5 years. Documentary evidence in the form of work order /agreement or experience certificate is mandatory.

(iii) construction equipment . Scaffolding Pipes & Joints.

(iv) qualification and experience of technical personnel and key site management.

(v) Bank 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).

Stamp & Signature

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).

Stamp & Signature

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.

Stamp & Signature

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 favor 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 2%.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.

Stamp & Signature

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 authorizing 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.

Stamp & Signature

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.

Stamp & Signature

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;

Stamp & Signature

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,

Stamp & Signature

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.

Stamp & Signature

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.

Stamp & Signature

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 nonresponsive (SPP Rule 89).

Stamp & Signature

BIDDING DATA

(a) Name of Procuring Agency: Institute of Business Administration, Karachi

(b) Brief Description of Works: Supply & Installation of Fire Hydrant System at IBA Main Campus

(c) Procuring Agency's address:-Main Campus, University Enclave, Karachi

(d) Amount of Bid Security:- Bid Security of 2% of total amount/cost will be submitted along with Tender Documents in shape of PAY ORDER / DEMAND DRAFT only in the name of Institute of Business Administration, Karachi.

(e) Period of Bid Validity (days): Ninety Days

(f) Performance Security Deposit: Successful bidder should provide 5% Performance Security of total value of Work Order in the form of Pay Order or bank guarantee after acceptance of the Work Order. The Performance Security shall extend at least three months beyond the Date of Delivery/Completion of work / Contract.

(g) Deadline for Submission of Bids along with time: The last date of submit the Tender Document in sealed envelope in November 19, 2025 by 3:00 PM in the Office of Head of Procurement, Ground Floor, Fauji Foundation Building, IBA Main Campus, University Enclave, Karachi. The Tender will be opened on same day at 3:30 PM in the presence of representatives who may care to attend.

(h) Venue, Time, and Date of Bid Opening: Tender will be opened on November 19, 2025 on 3:30 PM at IBA, Main Campus, University Enclave, Karachi.

(i) Time for Completion from written order of commence: 60 days.

(j) Liquidated damages: 2% liquidated damages of the total amount will be imposed per week for which the company/firm/agency failed to complete work within the delivery/execution period and maximum up to 10%.

(k) Deposit Receipt No: Date: Amount:(in words and figures) **Pay Order / Demand Draft**

 # _____, Amount Rs_____ Drawn on Bank_____ Dated_____.

_____

Stamp & Signature

16.4 **Responsiveness of Bids**

(i) Bid is valid till required period,

*(ii) Bid prices are firm during currency of contract/Price adjustment;

(iii) Completion period offered is within specified limits,

(iv) Bidder is 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.

*Procuring agency can adopt either of two options. (*Select either of them)*

(a) **Fixed Price contract:** In these contracts no escalation will be provided during currency of the contract and normally period of completion of these works is upto 12 months.

(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.

Stamp & Signature

FORM OF BID AND SCHEDULES TO BID

Stamp & Signature

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 favor 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.

Stamp & Signature

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: _____

_____

Stamp & Signature

[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]

Stamp & Signature

SCHEDULE – A TO BID

SCHEDULE OF PRICES

Stamp & Signature

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 System International 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

Stamp & Signature

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.

**(Procuring Agency may modify as appropriate)*

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.

Stamp & Signature

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.

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 similar to be Sub-Contracted previously	Name and address of Sub-Contractors	Statement of works 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.

Stamp & Signature

D TO BID

PROPOSED PROGRAMME OF WORKS

Bidder shall provide a program 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 program 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.

E TO BID

METHOD OF PERFORMING WORKS

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

- The sequence and methods in which he proposes to carry out the Works, including the number of shifts per day and hours per shift, he expects to work.

- A list of all major items of 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.

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

Stamp & Signature

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]

Stamp & Signature

CONDITIONS OF CONTRACT

Stamp & Signature

TABLE OF CONTENTS

CONDITIONS OF CONTRACT

Stamp & Signature

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.

Stamp & Signature

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 organizations. Words importing singular or one gender shall include plural or the other gender where the context requires.

1.3 **Priority of Documents**

Stamp & Signature

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 **Authorized Person**

Stamp & Signature

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.

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

Stamp & Signature

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) ionizing 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**;**
Pressure waves caused by aircraft or other aerial devices travelling at sonic or supersonic speeds**;**

e) use or occupation by the Procuring Agency of any part of the Works, except as may be specified in the Contract**;**

f)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;

Stamp & Signature

g) a suspension under Sub-Clause 2.3 unless it is attributable to the Contractor‘s failure; and

h) 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 Program

Within the time stated in the Contract Data, the Contractor shall submit to the Engineer/Procuring Agency a program 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.

Stamp & Signature

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

Stamp & Signature

(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 minimize any delay,

Stamp & Signature

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 itemized 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).

Stamp & Signature

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

Stamp & Signature

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 demobilize 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 demobilize 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 demobilization together with a sum equivalent to ten percent (10%) of the value of parts of the works not executed at the date of termination.

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

Stamp & Signature

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 SubClause 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.

Stamp & Signature

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.

Stamp & Signature

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

(Note: Except where otherwise indicated, all Contract Data should be filled in by the Procuring Agency prior to issuance of the Bidding Documents.)

Sub-Clauses of Conditions of Contract

1.1.3 Procuring Agency's Drawings, if any
(To be listed by the Procuring Agency)

1.1.4 **The Procuring Agency** means
_____
_____

1.1.5 **The Contractor** means
_____ _____

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

1.1.9 **Time for Completion** _____ days

(The time for completion of the whole of the Works should be assessed by the Procuring Agency)

1.1.20 **Engineer (mention the name along with the designation including whether he belongs to department or consultant) and other details**

Stamp & Signature

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

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

(*The Procuring Agency may add, in order of priority, such other documents as form part of the Contract. Delete the document, if not applicable)*

2.1 **Provision of Site:** On the Commencement Date

3.1 **Authorized person:**_____

3.2 **Name and address of Engineer's/Procuring Agency's representative**

_____

4.4 **Performance Security:**

Amount_____

Validity_____

(Form: As provided under Standard Forms of these Documents)

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

Specification Clause No's_____

7.2 **Program:**

Time for submission: Within fourteen (14) days* of the Commencement Date. **Form of program:** _____ *(Bar Chart/CPM/PERT or other*)

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

(Usually the liquidated damages are set between 0.05 percent and 0.10 percent per day.)

Stamp & Signature

7.5 **Early Completion**

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**

_____

_____

10.2 (e) **Variation procedures:**

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:

(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.

OR

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;

Stamp & Signature

(ii) 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;

(iii) 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;

(iv) 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;

(v) 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;

(vi) The sum payable for such materials on Site shall not exceed 75 % of the (i) landed cost of imported materials, or (ii) ex-factory / ex-warehouse price of locally manufactured or produced materials, or (iii) 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 2 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 two months (even if unutilized); other conditions.

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

Stamp & Signature

(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:**

i) Lump sum price_____(details), or

ii) Lump sum price with schedules of rates _____ (details), or iii) Lump sum price with bill of quantities_____(details), or iv) Re-measurement with estimated/bid quantities in the Schedule of Prices or on premium above or below quoted on the rates mentioned in CSR _____(details), or/and

v) Cost reimbursable_____(details)

11.3 **Percentage of retention*:** *five (5%)*

11.6 **Currency of payment:** Pak. Rupees

14.1 **Insurances:** *(Procuring Agency may decide, keeping in view the nature and the scope of the work)*

Type of cover

The Works

Amount of cover

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

Type of cover

Contractor's Equipment:

Amount of cover

Full replacement cost

Stamp & Signature

Type of cover

Third Party-injury to persons and damage to property

_____

(The minimum amount of third party insurance should be assessed by the Procuring Agency and entered).

Workers:

_____

_____ Other

cover*:

_____

(In each case name of insured is Contractor and Procuring Agency)

14.2 **Amount to be recovered**

Premium plus _____ percent (____%).

15.3 **Arbitration****

Place of Arbitration:_____

***** *(Procuring Agency to specify as appropriate)*

** *(It has to be in the Province of Sindh)*

Stamp & Signature

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).

Stamp & Signature

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 _____, (hereinafter 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

Stamp & Signature

(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 with drawal 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. Signature _____

1_____ 2. Name _____

.

_____ 3. Title _____

Corporate Secretary (Seal)

2_____

_____
(Name, Title & Address) Corporate Guarantor (Seal)

Stamp & Signature

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 and it is a condition of any liability attaching to us under this Guarantee that the claim for payment in writing shall be received

Stamp & Signature

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)

Stamp & Signature

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 witnessed 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.

Stamp & Signature

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)

Stamp & Signature

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

Stamp & Signature

on such first written demand payment shall be made by the Guarantor of all sums then due under this Guarantee without any reference to the Contractor and without any objection.

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

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

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

_____
Guarantor (Scheduled Bank)

Witness:

1. _____ 1. Signature _____

_____ 2. Name _____ Corporate Secretary (Seal)
3. Title _____

2. _____

_____ _____
(Name, Title & Address) 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]

Stamp & Signature

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.l7.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

Stamp & Signature

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

Stamp & Signature

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.

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

Stamp & Signature

Seal
1st witness 2nd witness

Signed, sealed and delivered by* In the presence of
Seal

1st Witness 2nd witness

SPECIFICATIONS

[Note for Preparing the Specifications]

A set of precise and clear specifications is a prerequisite for bidders to respond realistically and competitively to the requirements of the user without qualifying their Bids. The specifications must be drafted to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials, performance of the works. Only if this is done objectives of economy, efficiency, and fairness in procurement will be realized and responsiveness of Bids can be ensured, and the subsequent task of bid evaluation can be facilitated. The specifications should require that materials to be incorporated in the works be new, unused, and of the most recent or current models, and incorporated all recent improvements in design and materials unless provided for otherwise in the contract.

Samples of specifications from similar to previous procurements are useful in this respect. The use of metric units is encouraged. Depending on the complexity of the works and the repetitiveness of the type of procurement, it may be advantageous to standardize the Technical Specifications that should cover all classes of workmanship, materials and equipment although not necessarily to be used in a particular procurement.

Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for equipment, materials, and workmanship, recognized international standards should be used as much as possible. The specifications shall consider all conditions but not limited to seismic conditions, weather conditions and environmental impact. The specifications should state that equipment, materials, and workmanship that meet other authoritative standards, and which ensure at least a substantially equal quality than the standards mentioned, will also be acceptable. The following clause may be inserted in the Specifications.

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Specifications to specific standards and codes to be met by Works to be furnished and tested, the provisions of the latest current edition or revision of the relevant shall

Stamp & Signature

apply, unless otherwise expressly stated in the Contract. Other authoritative standards that ensure equivalence to the standards and codes specified will be acceptable.]

FORM OF BID AND SCHEDULES TO BID

FORM OF BID

(LETTER OF OFFER / LETTER OF ACCEPTANCE)

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 favor 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.

Stamp & Signature

5. We agree to abide by this Bid for the period of day from the date 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: _____

_____

_____

_____

Stamp & Signature

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]

Stamp & Signature

SCHEDULE – A TO BID SCHEDULE OF PRICES:

* *[To be prepared by the Engineer/IBA, Karachi]*

Stamp & Signature

SCHEDULE - A TO BID

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 System International d' Unites (SI Units).

_____

_____

(Note: The abbreviations to be used in the Schedule of Prices to be defined by the IBA, Karachi).

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

Stamp & Signature

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

SCHEDULE - A TO BID

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 IBA, Karachi 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.

**(IBA, Karachi may modify as appropriate)*

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 IBA, Karachi 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.

Stamp & Signature

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/IBA, Karachi. The Contractor will only receive payment in respect of Provisional Sums, if he has been instructed by the Engineer/IBA, Karachi 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.

Stamp & Signature

SCHEDULE – A TO BID

S C O P E O F W O R K

Supply & Installation of Fire Hydrant System at IBA Main Campus

				Material		Labour	
S. No	**Description of work**	**Unit**	**Qty**	**Rate**	**Amount**	**Rate**	**Amount**
1.0	**FIRE PUMP SET**						
1.1	Supply and Installation of Fire Pump 1 No. Electrical Motor Driven 500 GPM at 140 PSI & 1 No. Electric Motor Driven Jockey pump 20 GPM at 150 PSI Complete With Controller including supply of all consumables required for installation with Supply & Installation of Diesel tank complete with high & low level controller, Supply and installation of waste cone, pressure relief valve, flow meter, etc. including supply of all consumables required for installation complete in all respects. (Detailed Specifications - attached)	Job	1				
1.2	Foundation & Support for Electric Engine Fire Pumps and Jockey Pump	Lot	1				
1.3	Supply and Installation of Wiring between Electric Fire Pump Sets and Controller	Lot	1				
1.4	Supply and Installation of Wiring between Jockey Pump Set and Controller	Lot	1				
1.5	**SUPPLY & INSTALLATION FIRE PUMPS WATER PRESSURE SENSING LINES**						

Stamp & Signature

1.5.1	Stainless Steel tubing & their hookup with controller As Per NFPA	Job	1				
1.5.2	Stainless Steel Globe Valve - Ø 1/2 inch	Nos	8				
1.5.3	Stainless Steel Tee - Ø 1/2 inch With 1/4 Inch Plug	Nos	4				
1.5.4	Ø1/2 inch - Stainless Steel Check Valve with 3/32 Inch Orifice in Clapper	Nos	4				
2.0	**SUPPLY & INSTALLATION OS & Y GATE VALVE**						
2.1	Ø6 inch	Nos	8				
2.2	Ø 2 1/2 inch	Nos	4				
3.0	**SUPPLY & INSTALLATION CHECK VALVE**						
3.1	Ø 6 inch	No.	1				
3.2	Ø2 1/2 inch	No.	1				
4.0	**SUPPLY & INSTALLATION STRAINERS WITH BALL VALVE WITH MATERIAL / FLANGES/UNIONS ETC**						
4.1	Ø 2 ½ inch	Nos	1				
5.0	**SUPPLY & INSTALLATION FLEXIBLE CONNECTOR**						
5.1	Ø 8 inch		Rate Only				
5.2	Ø 6 inch	Nos	2				
6.0	**SUPPLY & INSTALLATION DOYMA SLEEVE**						
6.1	Ø 8 inch		Rate Only				
6.2	Ø 6 inch	Nos	2				
7.0	**SUPPLY & INSTALLATION BLACK STEEL SCHEDULE 40 PIPING**						
7.1	Ø 6 inch	Rft	150				

Stamp & Signature

7.2	Ø 4 inch	Rft	300				
7.3	Ø 2 1/2 inch	Rft	20				
8.0	**SUPPLY & INSTALLATION HYDRANT VALVES**						
8.1	Ø 2 1/2 inch Hydrant Valve with Quick Coupling	Nos.	2				
8.2	2 x 100Ft , Ø 2 1/2 inch Quick Coupling Hose, 2 Nos. Diffuser Nozzle	Nos.	2				
9.0	**SUPPLY & INSTALLATION FIRE HYDRANT SYSTEM ACCEPTANCE TEST**						
9.1	Fire Hydrant System Acceptance Test	Job	1				
10.0	**PAINTING COATING & STENCILING**						
	Painting, Coating						
10.1	Ø 6 inch	Rft	150				
10.2	Ø 4 inch	Rft	300				
10.3	Ø 2 1/2 inch	Rft	20				
10.4	Stenciling & Identification Tags of Valves	Job	1				
11	**MISCELLANEOUS**						
11.1	Hydrostatic Testing	Job	1				
11.2	Shop Drawings	Job	1				
11.3	As Built Drawings	Job	1				
11.4	Pipe Sleeves	Job	1				
11.5	Isolation / Gate Valves Locks (Wire / Chain Type)	Nos	8				
11.6	Structural Openings & Core Cuts	Job	1				
11.7	Operation & Maintenance Manuals	Job	1				
11.8	Stainless Steel Vortex Plate - As per Pipe Dia mentioned in drawing and detail	Job	1				

Stamp & Signature

11.9	Engineering Support System for Fire Protection System	Job	1				
Total Amount							
18% GST						SRB 15%	
Total Amount After Tax							
Grand Total Including Material + Labour With Tax							

Grand Total Amount in Words:

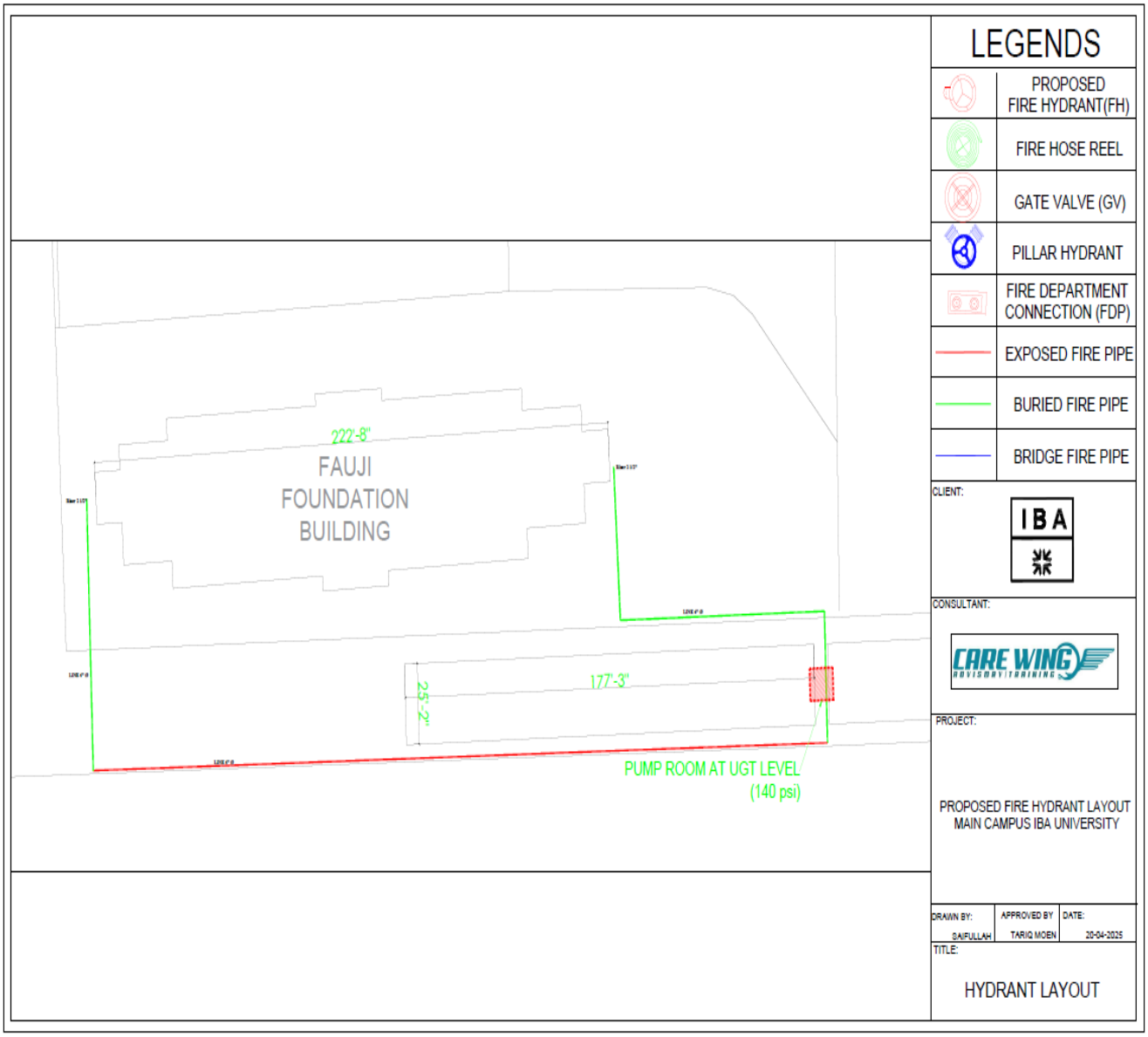
Rupees: _____

_____

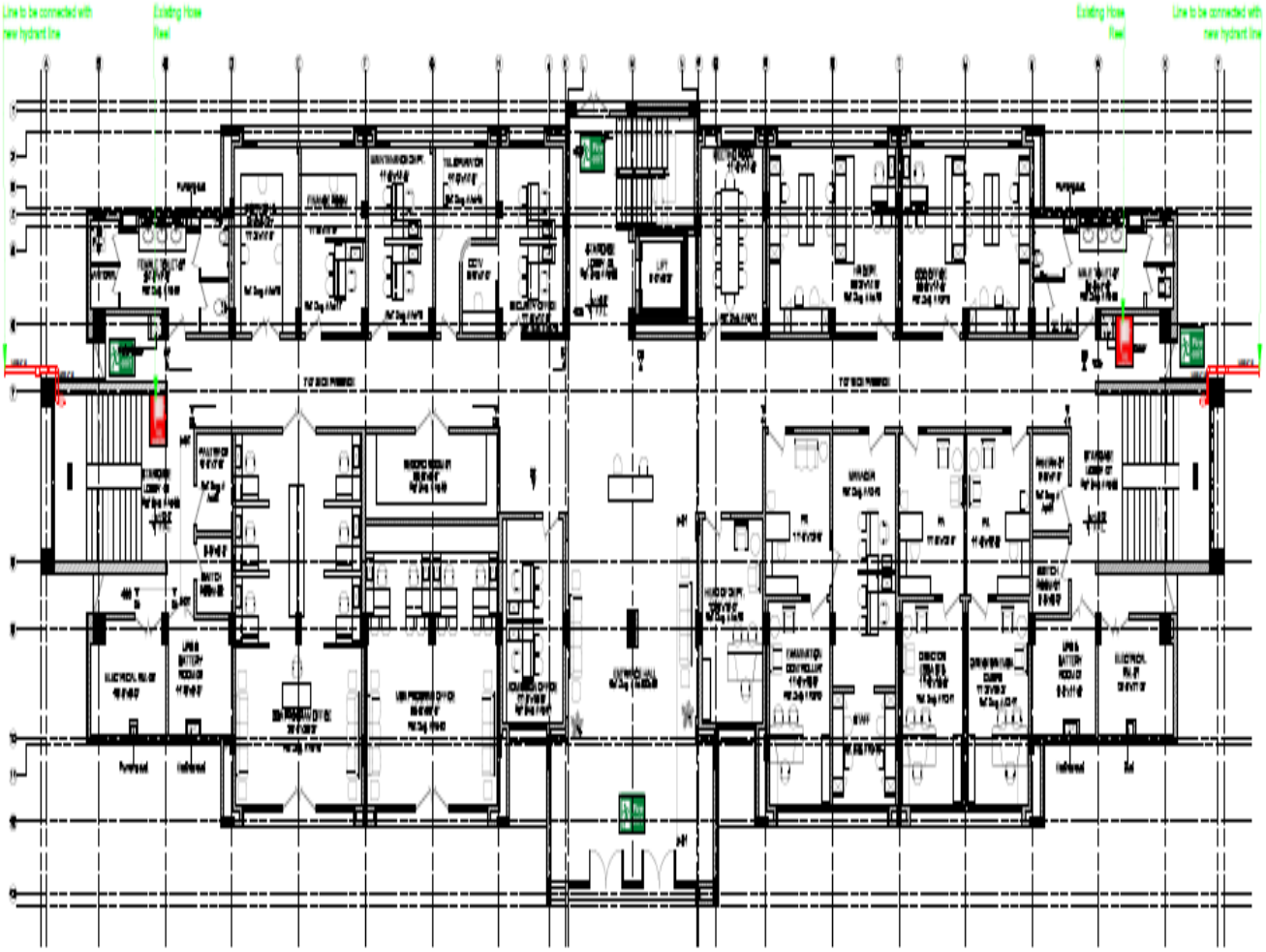
Stamp & Signature

DRAWINGS

Stamp & Signature

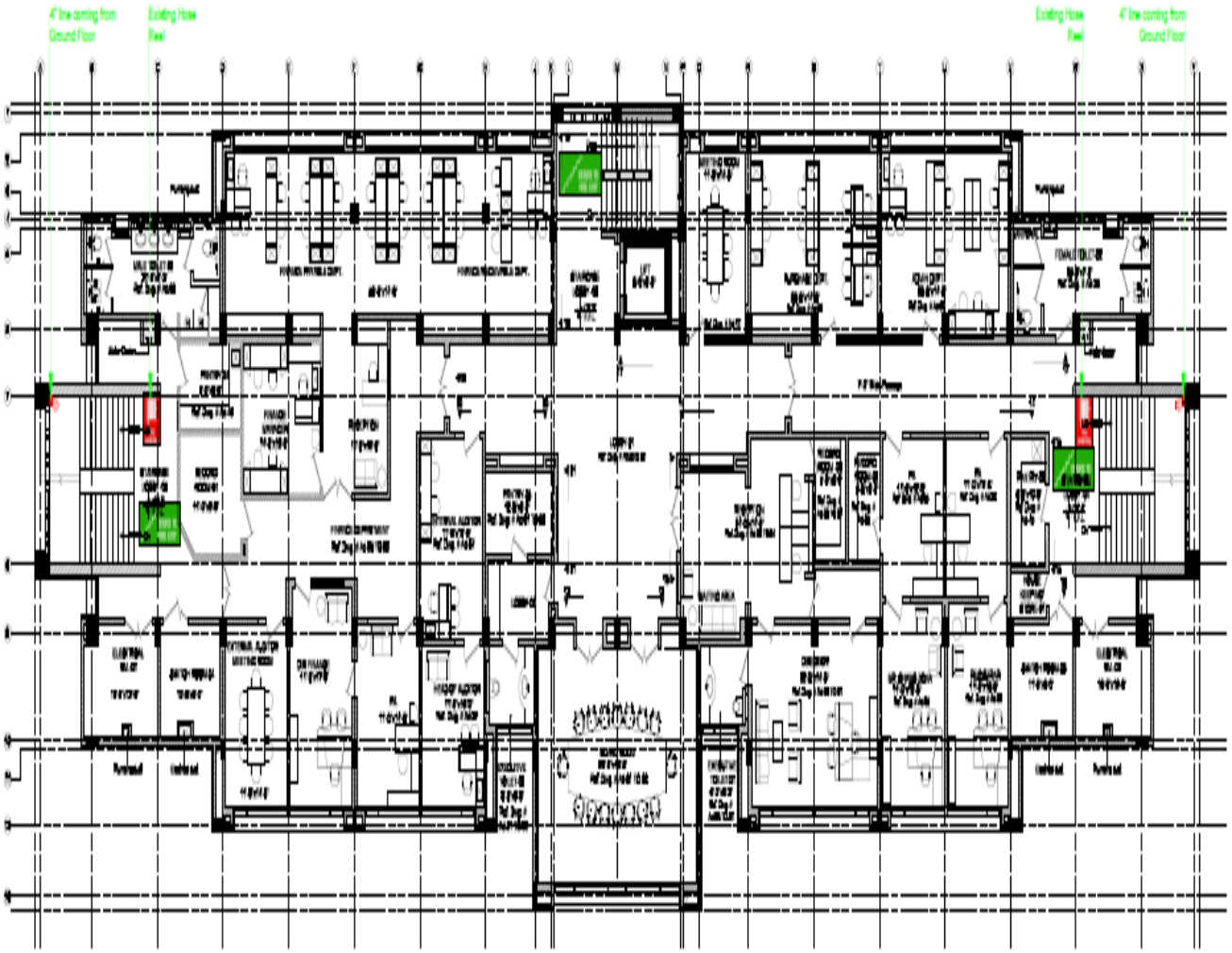


Stamp & Signature



GROUND FLOOR

Stamp & Signature



FIRST FLOOR

Stamp & Signature

WATER BASED FF SYSTEM - DETAILED SPECS TO BOQ

w1-SUPPORTS & ANCHORS

PART-1: GENERAL

1.1 Scope:

A. The work in this section includes the supply & installation of supports & anchors.

1.2 Submittals:

A. Tendering Stage Submittal

1. The tenderer shall indicate the supplier/manufacturer of the support & anchor he intends to use and shall provide their source.

B. Construction Stage Submittal

1. The contractor shall provide complete details of all the support & anchor, and shall obtain Consultants approval.

1.3 Quality Assurance:

A. During installation & during operation checking shall be carried out to ensure that all support & anchors are installed as per the good engineering practices & manufacturer recommendations.

1.4 Warranty:

A. Manufacturer shall guarantee the equipment and components against defects in materials and/or workmanship for a period of one year from date of initial operation or 18 months from date of shipment, whichever occurs first, unless otherwise stated elsewhere in this document.

1.5 Payments:

A. Unless otherwise indicated in the BOQ, no separate payment shall be made for supports, hangers, sleeves, etc. and cost for these shall be part of the price quoted for the supported piping, equipment, etc. Payment shall however be made for 'Doyma Sleeves' and 'Pipe Bridges' as indicated in the BOQ.

PART-2: PRODUCTS

2.1 Description:

A. All pipe supports shall be approved supports manufactured by specialist pipe supports manufacturers, such as Hilti, Sikla, Fisher, or other manufacturers indicated in the List of Approved Manufacturer's.

B. Pipe hangers, brackets, saddles, inserts, clamps and pipe rolls including rods, bolts, turn buckles, bases and protection shields shall conform to standard recommended engineering practice and shall be all sourced from approved manufacturers of support system. Design generally accepted as exemplifying good engineering practice, using stock or production parts shall be utilised wherever possible.

Stamp & Signature

C. Chain, wire, strap or other make shift devices will not be permitted as hangers or supports.

D. Pipe hangers shall be capable of supporting the pipe in all conditions of operations. Hangers shall be supported with beam-clamps, concrete inserts, Phillips concrete fasteners, or rawl-bolts. Concrete inserts when used shall be installed in the exact location prior to the pouring of the concrete.

PART-3: EXECUTION

3.1 Suspended Piping Supports:

A. Piping shall be supported by adjustable hangers or supports, which shall provide a means of vertical adjustment after erection. Unless otherwise indicated on drawings maximum spacing between pipe supports for straight runs of steel pipe shall be in accordance with recommended spacing shown in the table given below OR as per the manufacturer recommendation (Contractor to provide details, calculation & analysis of support system):

	Nominal Pipe Size, Ø mm											
	13	20	25	40	50	65	75	100	125	150	200	250
Maximum Span, m	1.5	1.8	2.1	2.7	3	3.3	3.6	4.2	4.8	5.1	5.2	6.7
Rod Size, Ø mm	10	10	10	10	10	13	13	16	16	19	22	22

3.2 Pipe Sleeves:

A. Pipes passing through concrete or masonry walls or concrete floors or roofs shall be provided with pipe sleeves fitted into place at the time of construction or afterwards if necessary. Each sleeve shall extend through its respective wall, floor or roof and shall be cut flush with each surface. Sleeves shall be of such size as to provide a minimum of 6mm all around clearance between bare pipe and sleeve or between jacket over insulation and sleeve. Sleeves shall be of steel pipe or cast iron pipe.

B. Sleeves in exterior below ground, walls, pits and tanks shall be similar to 'Doyma' sleeves consisting of a galvanised steel sleeve to be embedded in concrete, with the pipe passing through synthetic rubber rings that are compressed using galvanised steel pressure plates on both sides of the rubber ring as shown on drawings.

3.3 Other Supports:

A. Equipment and any other component requiring supporting and anchoring shall be provided with properly engineered supports and anchors, as shown on the drawings, or as per manufacturer's recommendation or as directed by the Consultant/Engineer. In all cases drawings & submittals for supports & anchor system shall be submitted to the consultant and approval obtained.

3.4 External pipe Bridges & Supports:

A. Where shown on the drawings, External Pipe Bridges shall be fabricated & constructed as per the approved shop drawings. Contractor shall ensure that all necessary measurements have been obtained from the site and are correct.

Stamp & Signature

3.5 Installation:

A. Pipe hangers and supports shall be spaced not over 1.5m apart at heavy fittings and valves. A hanger shall be installed at not over 300mm from each change in direction of piping.

B. Vertical Piping shall be guided or supported in the centre of each riser but not over 4.5m on centres and shall be supported at the base of the riser on a base elbow or tee with a pipe stand only where required.

C. Installation of the External Pipe Bridges & Supports shall include all civil works, such as excavation, disposal of surplus earth, concrete re-enforced foundations, and all steel fabricated bridges & support shown on the drawings. After construction of the foundation, the excavated areas shall be finished as it was before the excavation.

END OF SECTION W1

w2-PAINTING AND COATING

General:

A. Painting shall include furnishing labour, materials, equipment, ladders, scaffolding, protective covers, other items required to prepare and finish surfaces of work specified herein or in any of the other sections. Paint colour scheme shall be specified at the time of painting or earlier and shall be based on American Standard “Scheme for Identifications of Piping System” ASA A-13.1 of 1975 & shown on detail drawing which form part of these specifications.

Surface Preparation:

A. Surface to be painted shall be dry and free from burrs, weld spatter, flux, dirt, dust, rust, loose mill scale, grease, oil and other foreign matter before any paint is applied.

B. All rust and loose mill scale etc. shall be removed by thoroughly chipping, scraping and wire brushing. Oil, grease, dust etc. shall be removed by washing down with a suitable solvent, as recommended by the paint manufacturer, and wiping with clean rags.

C. The minimum acceptable standard for surface preparation shall be SSPC-SP2, ‘Hard Tool Cleaning’.

D. All tools shall be used in such a manner so as not to leave rough or sharp surfaces. No cuts shall be made on steel surfaces.

E. Before applying the finish coat the primed surface shall be scuffed lightly with sand paper recommended by the paint manufacturer.

Application:

A. All material shall be applied in strict accordance with the paint manufacturer’s directions unless otherwise specified.

B. Paint shall be applied by brush, spray or any other paint manufacturer’s approved method in such a manner that a uniform thickness (as per manufacturer’s recommendation) is maintained in each coat and no defects are produced in the previous coats.

C. Each coat shall preferably be of a different colour so as to produce a contrast assuring complete covering by the next coat. Sufficient time shall be allowed between coats to permit drying. A

Stamp & Signature

minimum of 24 hours between applications on any one surface shall be allowed unless otherwise specified by the manufacturer.

D. No painting work shall be done on exterior surfaces during rainy, damp, foggy or dusty weather and no painting material shall be applied if the temperature is above 122°F (50°C) or below 41°F (5°C). Painting work shall be avoided in cases where the surface is damp or when there is dirt and dust deposition due to blowing winds. The Owner's representative shall determine whether the conditions are suitable for painting or not.

E. The primer coat of paint shall be applied as soon as possible after the surface preparation but, in any case, on the same day.

F. Before application of painting material, the Owner's/Engineer's representative shall inspect and approve the quality of surface preparation and the preparation of painting material.

Paint System:

A. Materials & Equipment: All materials & equipment factory fabricated, imported or otherwise shall be provided with a fresh coat of paint of same colour as the original factory paint, if in the opinion of the Consultant the same has deteriorated to an extent to require fresh painting. Paint shall be applied as per the accepted norms and as directed by the Consultant. The items covered under this head shall include fire pumps and other equipment that are a part of this contract.

B. Un-insulated Surfaces: including piping, valves, and fittings, tanks, etc., shall be painted with two coats of primer followed by two coats of enamel paint.

C. Hangers & supports for ducting and piping shall be galvanised, and need not be painted.

Paint:

A. Primer for Iron Surfaces shall be Dulux Synthetic Red Primer as manufactured by ICI. This shall be Lead free.

B. Primer for Galvanised Surfaces shall be ETCH PRIMER AND "ZINC CHROMATE YELLOW PRIMER" as manufactured by ICI.

C. Finishing Paint shall be generally enamel paint, unless the application requires special paint, in which case suitable special paint shall be used.

D. All paint supplied from factory shall be ready for application. The application of thinners or any other material shall be subject to approval by the Consultant. In any case all instructions of the paints manufacturer shall be strictly followed.

Galvanising:

A. Galvanising shall comply with BS 729. The term 'galvanised' shall apply to hot dip or electrolytic galvanising, zinc spraying or cadmium plating. All surfaces shall be degreased, washed with mineral turpentine and given a coat of latex based primer prior to the application of final coats.

B. After fabrication, pickle or abrasive blast clean all steelworks to be hot dipped galvanised

Powder Coating:

A. All surfaces to be powder coated shall be cleaned as for galvanising. Powder shall be applied by using an electrostatic gun in a clean atmosphere to ensure that no dust particles or other impurities blemish the final product.

Stamp & Signature

B. Coated components shall be baked in special ovens at controlled and accurately predetermined temperatures, and powder applied to a thickness of 0.0125mm on wearing surfaces and 0.01mm on non-wearing surfaces, unless otherwise specified.

END OF SECTION W2

W3-MECHANICAL IDENTIFICATION

General:

A. The Contractor shall install mechanical identification tags, shield, plates, etc., where specified below, shown on drawings, or directed by the Consultants. All components of the identification system shall be submitted to the Consultants for approval & approval obtained prior to installation.

Manufacturer's Equipment Name Plates:

A. All equipment shall be provided by manufacturer installed metal nameplate with operational data engraved or stamped; permanently fastened to equipment at an accessible & visible location. Nameplate shall have name of manufacturer, product name, model number, serial number, capacity, operating and power characteristics, labels of tested compliances and similar essential data.

B. Manufacturer's standard pre-printed, permanent adhesive, color-coded, pressure-sensitive vinyl pipe markers, conforming to ASME A13.1 shall also be accepted.

Equipment Data Plates:

A. Contractor shall install Equipment Data Plates on all equipment; Equipment Data Plates shall be permanently fastened at a suitable accessible and visible location of the equipment. Data plates shall be of minimum 3mm thick laminated plastic of suitable size (min. 150mm x 100mm) fastened securely to the equipment. The plates shall generally display the following data:

1. Consultant's equipment identification symbol/number.
2. Fluid flow rates.
3. Pressure, pressure drops.
4. Motor data.
5. Any other matter required by the Consultants.

Stamp & Signature

B. Size of Name Plate: Name plates shall be 200mm x 150mm or as approved by the Consultant.

C. Lettering Size: Main identification letters shall be 20mm high, with smaller size for subsequent text, as approved by the Consultant.

D. Text of Signs: Provide text as approved by the Consultant. Text shall inform operator of operational requirements, indicate safety and emergency precautions and warn of hazards and improper operations, in addition to name of identified unit.

Labelling & Identifying Piping:

A. The Contractor shall attach a stencil near each valve on the pipe, indicating the name of the fluid. Also an arrow should be painted next to the legend indicating the direction of flow in pipe. The legend shall be placed in a location so that it can be easily read from the floor. The legend shall conform in size of letters and colour to ASA A-13.1 of 1975, "Scheme for the Identification of Piping System", but shall not be less than 32mm letters for duct work, and not less than 19mm letters for access door sign & similar operational instructions.

B. Install pipe markers as follows on each system, wherever piping is exposed in finished spaces, machine rooms, accessible maintenance spaces (shafts, tunnels, plenums) and exterior non-concealed locations. Include arrows showing normal direction of flow:

1. Near each valve and control device.
2. Near each branch, excluding short take-offs for fixtures and terminal units. Mark each pipe at branch, where flow pattern is not obvious.
3. Near locations where pipes pass through walls, floors, ceilings or enter non-accessible enclosures.
4. At access doors, and similar access points that permit view of concealed piping.
5. Near major equipment items and other points of origination and termination.
6. Spaced at a maximum of 15 meters intervals along each run. Reduce intervals to 8 meters in congested areas of piping and equipment.
7. On piping above removable acoustical ceilings, except omit intermediately spaced markers.

Labelling & Identifying Valves:

A. Identification Tags shall be installed on all valves, controls and other parts of the system where necessary. Tags shall be either of engraved laminated plastic as approved by Consultant, 3mm thick (black in front and white behind) 1.6 inches (40mm) round or square with letters or numbers 0.5 inches (12mm) high and fastened securely with brass "S" hooks or chains.

B. The Contractor shall further provide charts, diagrams, of size and type as approved designating numbers, service or function and location of each tagged item.

END OF SECTION W3

Stamp & Signature

W4-FIRE PROTECTION SYSTEM PIping & specialties

Piping Material:

a) Seamless Black Steel Piping: Seamless black-steel piping, Schedule 40 conforming to ASTM A53.

b) Black Steel Pipe: Electrode Resistance Welded, conforming to BS 1387 (medium series).

c) Galvanised Iron Pipe: G.I. Pipe shall conform to BS 1387 of 1957 (Medium Series), welded type. Fittings shall be of galvanised malleable iron. Fittings upto 100mm shall be screwed.

d) **uPVC Pipe**: uPVC pipe shall be only used for underground applications. Pipes shall conform to ASTM D1785 or BS 3505 of 1968 and shall have Class'D' wall thickness. Fittings shall be injection moulded of high density & shall be imported.

Application:

a) Fire Protection shall be of material as specified under PIPING SCHEDULE in EQUIPMENT DATA SHEETS.

Fittings & Flanges:

a) Fittings shall be forged, compatible to the pipe. Welded fittings shall be butt-welding type. Galvanised piping shall be provided with galvanised fittings with threads. All fittings shall be rated for minimum 10 bars SWP.

b) Flanges shall be slip-on type & shall conform to ANSI B16.5. Galvanised piping shall be provided with galvanised threaded flanges. All flanges shall be rated for minimum 10 bars SWP.

c) All joints shall be welded, except the sprinkler fitting.

Valves & Strainers:

Refer Section 21 05 23, VALVES & STRAINERS.

Automatic Air Vents:

Automatic air vents shall be suitable for liquid systems. Body and cover shall be of malleable iron. Float & Valve seat shall be of stainless steel. Valve head shall be of Vitone (Synthetic Rubber). Connections shall be 13mm or 20mm as specified, screwed BSP. Vents shall be suitable for service up to 125 SWP (8.5bars) & 250°F (120°C) service.

Vents shall be similar to model AE 550 manufactured by SPIRAX-SARCO.

Air vents shall be provided at high points, on all water coils, and where shown on the drawings to ensure adequate venting of the piping system. A ball valve shall be provided to isolate the vent. The vent outlet shall be piped to a nearby convenient drain using suitable diameter flexible transparent PVC tubing.

Expansion Joints:

a) Where indicated on the drawings, expansion joints shall be provided. Expansion joints shall also be provided in all lines subject to temperature changes where indicated or required to relieve strain developed in lines due to temperature increase or decrease.

Pipe alignment guides shall be installed as recommended by the joint manufacturer but in any case not more than 1.5m on each side of expansion joint, except in lines 100mm or smaller they may not be over 600mm on each side of joint.

Stamp & Signature

b) Anchors shall be provided wherever necessary or indicated to localise expansion or to prevent undue strain on piping. Anchors shall consist of heavy steel collars with lugs and bolts for clamping and attaching anchor braces, unless otherwise indicated. Anchor braces shall be installed in the most effective manner to secure the desired results, using turnbuckles wherever required. Anchors, supports or stays shall be attached in places where such supports will not injure the construction during installation or damage the structure by the weight or expansion of the pipeline. Detailed drawings of pipe anchors shall be submitted for approval before installation.

Flexible Connectors:

Flexible connectors shall be constructed of rubber, tetrafluoroethylene resin, or corrosion resisting steel, bronze, monel or galvanised steel. The material used and the configuration shall be suitable for pressure, vacuum, temperature and circulation medium. The flexible sections may have threaded, welding, soldering, flanged or socket ends and shall be suitable for service intended. The flexible section may be reinforced with metal retaining rings, with built in reinforcement and restriction bolts or with wire braid cover suitable for the service intended. Flanged assemblies shall be equipped with limit bolts to restrict maximum travel within limits standard with the manufacturer. Unless otherwise shown on the drawings, the length of the flexible connector shall be as recommended by the manufacturer for the service intended. Internal sleeves or liners shall be provided when recommended by the manufacturer suitable for the circulating medium. Covers to protect the bellows will be provided where necessary or directed. Flexible connectors shall be designed for 125Psi (8.5 bars) service, and 250°F (120°C).

Flexible pipe connectors shall be installed on piping connected to equipment where indicated on the drawings. Installation shall be in accordance with manufacturer's recommendations.

Installation:

a) General: All piping shall be installed in accordance with NFPA standards:

- NFPA 13 Standard for the installation of Sprinkler system.
- NFPA 14 Standard for the installation of Standard-pipe and hose systems.
- NFPA 20 Standard for the installation of Centrifugal Fire Pumps.
- NFPA 24 Standard for the installation of Private Fire Service Mains & their appurtenances.

Pipes shall be cut accurately to measurements established at the job site and worked into place without springing or forcing, properly clearing all windows, doors and other openings. Excessive cutting or other weakening of the building structure to facilitate piping installation will not be permitted without written approval. Layout drawings required under the title of "Approval of Material & Equipment" shall show locations of all supports, the load imposed on each fastening or anchor, typical details for special anchorage, for suspended piping, valves, tank, pumps, converters, and other mechanical equipment. Where supports are required between structural framing members, suitable intermediate metal framing shall be provided and detailed. Pipe shall have burrs removed by reaming and shall be installed to permit free expansion and contraction without damage to joints and hangers. Changes in direction shall be made with fittings, except that bending of pipe 100mm and smaller will be permitted provided a pipe bender is used and wide-sweep bends are formed. The centre line radius of bends shall not be less than 6 diameters of the pipe. Bent pipe showing kinks, wrinkles, flattening or other malformations will not be accepted. All piping shall be installed with sufficient pitch to ensure adequate drainage and venting. Piping connections to equipment

Stamp & Signature

shall be provided with unions or flanges. Open ends of pipelines or equipment shall be properly capped or plugged during installation to keep dirt and other foreign matters out of the system.

b) Screwed joints shall be made with tapered threads properly cut. Joints shall be made tight with a stiff mixture of lethargy and glycerine, or polytetrafluoroethylene (PTFE) tape, or approved thread joint compound applied to the male thread only. Not more than three threads shall show after the joint is made up. For steam piping do not use PTFE tape.

c) Welded joints shall be fusion welded by metal arc welding method unless otherwise required. Changes in direction of piping shall be made with welding fittings only. Mitering or notching pipe to form elbows & tees or other similar construction will not be permitted. Branch connections shall be made with welding tees or forged welding tees or forged welding outlets.

Field and shop bevels shall be in accordance with the recognised standards and shall be done mechanically by means of flame cutting. Where bevelling is done by flame cutting, surfaces shall be clean of scale and oxidation prior to welding.

Before welding, the component parts to be welded shall be aligned so that no strain is placed on the weld when finally positioned. Height shall be so aligned that no part of the pipe wall is offset by more than 20% of the wall thickness. Flanges and branches shall be set true. This alignment shall be preserved during the welding operation.

Removing and replacing defective welds shall be at no additional cost to the Owner. Repairing of defective welds by adding new material over the defects or by peeling will not be permitted. Electrodes shall be stored in a dry heated area and shall be kept free of moisture or dampness during fabrication operations. Electrodes that have lost part of their coating shall be discarded.

d) Flanges and Unions shall be faced true. Flanges shall be provided with 1.6mm gasket of material suitable for specified usage, but shall not use asbestos, and made square and tight. Except where copper tubing is used, union or flange joints shall be provided in each line immediately preceding the connection to each piece of equipment such as coils, pumps, control valves & other similar items.

e) **Solvent Welded Joints for uPVC Pipes:** uPVC pipes shall be welded using solvent welding. Solvent used shall be specifically recommended by the pipe manufacturer. No alternative shall be acceptable. Prior to solvent welding the pipe and fitting shall be thoroughly cleaned, and then the solvent shall be applied. The joint shall be kept firm for the specified period as recommended by the manufacturer.

Pipe Supports:

All supports and anchors shall be installed in accordance with NFPA Standard.

Refer Section 21 05 29, SUPPORTS & ANCHORS FOR DETAILED SPECS.

Pressure Testing:

Fire Protection piping shall be hydrostatically tested at a pressure equal to 150% of the maximum operating pressure, but not less than 200psi (13.6 bars), for a period of time sufficient to inspect every joint in the system but in no case less than two hours. No loss of pressure will be allowed. Leaks found during tests shall be repaired by re-welding or replacing pipe or fittings. Caulking of joints will not be permitted. Concealed piping shall be tested in place before concealing. Tests shall be conducted in the presence of the Consultant or the

Stamp & Signature

Consultant's representative who shall be given 10 days notice before any test is to be conducted. All material, equipment or instruments required for tests shall be provided by the Contractor.

END OF SECTION W4

W5-HOSE REEL & HOSE RACK

PART-1: GENERAL

1.1 Section Scope:

A. The contractor shall supply hose reel and racks of the required specs as given in the EQUIPMENT DATA SHEET.

1.2 Submittals:

A. Tendering Stage Submittal

1. The tenderer shall indicate the equipment he intends to use and shall provide their source.

B. Construction Stage Submittal

1. The contractor shall provide complete details of all equipment to be used, and shall obtain Consultants approval.

1.3 Quality Assurance:

A. Factory Test:

1. Each equipment shall undergo a series of standard factory tests to ensure that the unit is leak tight, and that every aspect of unit fabrication meets stringent quality standards in accordance with good practice and the manufacturer's quality assurance requirements.

1.4 Delivery, Storage, and Handling:

A. Hoses and Racks shall be stored and handled in accordance with the manufacturer's recommendations.

B. Equipment shall be shipped with nameplates indicating name of manufacturer, model size, serial number, and all other data.

1.5 Warranty:

A. Manufacturer shall guarantee the equipment and components against defects in materials and/or workmanship for a period of one year from date of initial operation or 18 months from date of shipment, whichever occurs first, unless otherwise stated elsewhere in this document.

PART-2: PRODUCTS

2.1 Fire Hose Reel:

A. The Contractor shall supply and install recessed, swinging arm type, Fire Hose Reels, where indicated on the drawing. The Hose Reels shall conform to BS 5274:1985 and shall consist of:

Stamp & Signature

1. Hose Reel Lock Shield Valve: manufactured from materials resistant to de-zincification, ∅25mm, threaded.
2. Side Disks: 18SWG, galvanised steel sheets, powder coated, post office red color.
3. Hose: Red rubber smooth, covered to BS3169 Type 1, Class B; ∅25mm and 30.5m long.
4. Control Nozzle: Nylon lever operated jet/spray

2.2 Fire Hose Reel Cabinet:

A. Provide and install Fire Hose Reel Cabinet constructed from 16SWG galvanised sheet steel, powder coated to BS18 B25. Cabinet shall be minimum of size 850mm x 850mm and shall be minimum 350mm deep.

1. Water Entry: Top, bottom, back or side, 50 dia knockouts to suit pipework requirements.
2. Architrave: 20SWG stainless steel, brushed satin finish.
3. Door: 15mm MDF finished in pre-catalysed lacquer both sides and edges in BS06 C33.
4. Concealed Hinges: Concealed hinges, left or right as required.
5. Name Panel/Finger Pull: Recessed stainless steel, brushed satin finish. Caption "FIRE HOSE REEL" in red 45mm high. Universal logo showing fire hose reel shall also be provided.
6. Instruction on reverse of panel: "IN CASE OF FIRE PULL HOSE FROM REEL AND WATER WILL TURN ON AUTOMATICALLY".

2.3 Fire Hose Reel Cabinet Door:

A. Where steel cabinet is not felt necessary, only the Door will be installed over a recesses in the masonry construction for the hose reel, and / or extinguishers, as shown in the detail drawings.

B. Separate doors, one on top of another shall be provided & installed. The top door shall be for the hose reel, while the bottom door shall be to house fire extinguishers, as shown in the detail drawings.

C. Doors shall conform to specifications given at Clause 2.2 above for Hose Reel Cabinet.

2.4 Fire Hose Rack:

A. The Contractor shall supply and install fire-hose rack with hose of diameter 40mm with instantaneous coupling terminated with light alloy jet / spray nozzle.

B. Hose shall attaché to Ø 65mm fire hydrant valve (angle valve). Length of hose shall be 30 meter. Hose shall comply with British Standards BS-3169.

C. Fire hose shall be rubber lined with nylon hose.

D. Hose shall be as approved by the Consultant.

2.5 Hose Rack Cabinet:

A. Provide and install fire hose rack cabinet constructed from 16SWG galvanised steel sheet, powder coated to fire red colour according to BS 18 B 25. Cabinet shall have a

Stamp & Signature

minimum size of 600mm wide x 800mm high x 150mm deep, and shall have a full glass door.

2.6 Orifice Plates:

A. Where the dynamic pressure at the inlet to Fire Hose Reel exceeds 2.75 bars (40 psi) an orifice plate shall be installed prior to the inlet of Fire Hose Reel.

B. The orifice plate shall be fabricated of 6mm thick stainless steel (SS 304) and installed between steel flanges. Size of the bore shall be determined by the contractor.

C. Shop drawing shall be submitted to the Consultant for approval prior to the fabrication.

PART-3: EXECUTION

A. The equipment shall be installed where shown on drawings & shall be installed as per the manufacturer recommendations.

END OF SECTION W5

W6-FIRE HYDRANT & STAND PIPES

PART-1: GENERAL

1.1 Scope of Work:

A. The work under this section of the specifications consists of providing all material and labour for proper installation of fire hydrants and stand pipes.

1.2 Submittals:

C. Tendering Stage Submittal

1. The tenderer shall indicate the fire hydrants and stand pipes he intends to use and shall provide their source.

D. Construction Stage Submittal

1. The contractor shall provide complete details of fire hydrants and stand pipes to be used, and shall obtain Consultants approval.

1.3 Warranty:

A. Manufacturer shall guarantee the equipment and components against defects in materials and/or workmanship for a period of one year from date of initial operation or 18 months from date of shipment, whichever occurs first, unless otherwise stated elsewhere in this document.

PART-2: PRODUCTS

2.1 Dry Barrel –Pillar Hydrant – Double Headed:

A. Fire Stand Pipes shall be of Pillar Hydrant type, of size dia 150mm, tested to 250 psi. The pillar Hydrant shall be constructed of steel, and shall consist of four sections, i.e. Dry Port, Upper Barrel, Lower Barrel, and Inlet Connection. The Dry Port shall be O'Ring sealed. The Upper Barrel shall be bolted on top to the Dry Port and at the Bottom to the Lower Barrel. The Upper Barrel shall house the outlet consisting of two nos. Ø 65mm hydrant valves with instantaneous couplings. The Lower Barrel shall carry the main hydrant valve, which shall be

Stamp & Signature

constructed of cast-iron and shall have a conical shaped synthetic rubber moulded disc which shall seat on to a precision machined bronze seat. The main hydrant valve shall be compression type opening against the pressure and closing with it, and shall be actuated by a cast bronze nut which shall rotate the steel hydrant rod.

2.2 Double Delivery Standpipe:

A. Shall be manufactured using Ø 6inch Schedule 40, Black steel pipe, fully welded, conforming to dimensions given in detail drawing, approximately 36 inch high, and with the top end capped. The barrel will be provided at the top with two dia 2½ " hydrant valves, placed 180° apart, and each outlet shall be provided with an instantaneous coupling. The bottom of the standpipe shall be flanged.

PART-3: EXECUTION

3.1 Installation:

A. Dry Barrel –Pillar Hydrant – Double Headed

1. Hydrant valve shall be provided with flanged inlet and tee-base. All nuts and bolts shall be zinc passivated and plated. Hydrant barrel shall be painted inside and out with a primer, and finish painted on sections below ground level with black bituminous paint, while exposed surfaces shall have red high glass enamel.

B. Double Delivery Standpipe

1. When installing the standpipe, the piping leading to the standpipe shall be provided with concrete foundation/thrust block as shown in detail drawing.

END OF SECTION W6

Stamp & Signature

W7-VALVES FOR FIRE SUPRESSION SERVICE

PART-1: GENERAL

1.1 Section Scope:

A. The Contractor shall supply and install all valves used at various locations throughout the fire suppression system piping.

1.2 General Requirements

A. Minimum Pressure Rating for Standard-Pressure Piping: 175 psig.

B. Minimum Pressure Rating for High-Pressure Piping: 300 psig.

1.3 Reference Standards

A. UL 1091-Butterfly Valves for Fire-Protection Service

B. UL 312- Check Valves for Fire Protection Service

C. UL 262- Gate Valves for Fire-Protection Service

D. UL 789- Indicator Post for Fire-Protection Service

1.4 Submittals:

A. Tendering Stage Submittal

1. Indicate the sourcing & manufacturer of the various valves.

B. Construction Stage Submittal

1. Provide schedule of valves
2. Provide complete details of all valves to be used, and obtain Consultants approval.

1.5 Quality Assurance:

A. All fire protection valves & accessories to be supplied preferably by one manufacturer.

B. Manufacturer shall be a company specializing in manufacture of valves with a minimum of five (5) years of experience.

1.6 Delivery, Storage, and Handling:

C. Valves shall be stored and handled in accordance with the manufacturer's recommendations.

D. Protect internals from entry of foreign material by temporary caps on all openings.

E. Equipment shall be shipped with nameplates indicating name of manufacturer, model size, serial number, and all other pertinent machine data.

PART-2: PRODUCTS

2.1 Butterfly Valves:

A. Standard: UL 1091- Butterfly Valves for Fire-Protection Service

B. Butterfly valves shall be used for applications requiring 50mm or larger diameter valves, and shall have a rating suitable for the service intended.

C. Butterfly valves shall be wafer type with modular cast iron body, suitable for mounting between ANSI flanges of the required pressure rating. Two flanges plus required nuts and bolts shall be provided with the valves.

Stamp & Signature

D. The centre disc shall be of stainless steel.

E. The liner shall be replaceable, of Nitrile or EPDM rubber. Each valve shall be provided with one replaceable liner as spare.

F. Actuator shall be worm gear type of aluminium or cast iron, weather proof to IP65, complete with hand wheel, position indicator, and with adjustable stops at both fully open and fully closed positions. The actuator shall be self-locking, lubricated for life and free of maintenance.

G. All valves shall be indicating type.

2.2 Gate Valves:

A. Ø 50mm (2 inch) & Smaller

1. Standard: UL 262- Gate Valves for Fire-Protection Service
2. Bronze body, union bonnet, non-rising stem, wedge disc. Hand wheel nut, packing nut, gland, stuffing box, bonnet, bonnet ring, disc and body shall be of bronze.
3. Hand wheel shall be of malleable iron.
4. Packing shall be suitable for specified usage but shall not use asbestos. Stem shall be manganese bronze.
5. End Connections shall be threaded.

B. Ø 65mm (2 1/2 inch) & Larger

1. Standard: UL 262- Gate Valves for Fire-Protection Service
2. Cast/ ductile iron body bronze mounted with flanged ends. These shall be of solid wedge disc type, with outside screw and yoke (rising stem).
3. Body and bonnet shall be of cast iron. Wedge shall be of cast iron with bronze disc. Seat rings shall be bronze.
4. Packing shall be suitable for specified usage but shall not use asbestos. Packing gland shall be cast iron.
5. Yoke shall be of cast iron and yoke nuts shall be of bronze. Hand wheel shall be of cast iron.
6. End Connections: Flanged or grooved.

2.3 Ball Valves:

A. Ø 50mm (2 inch) & Smaller

1. Standard: UL 1091 except with ball instead of disc.
2. Two-piece cast bronze body, chrome plated brass ball, teflon ball and flange seals, rods silicon brass stem, teflon and Viton “O” ring stem seals, zinc plated carbon steel handle with vinyl grip and brass handle nut.
3. Valves NPS 1-1/2 inch and smaller: Bronze body with threaded ends.
4. Valves NPS 2 inch: Bronze body with threaded ends or ductile-iron body with grooved ends.

Stamp & Signature

2.4 Swing Check Valves:

A. Ø 50mm (2 inch) & Smaller

1. Standard: UL 312- Check Valves for Fire Protection Service
2. Threaded ends.
3. Cap, hinge pin, body, hinge, disc nut and disc shall be of bronze.

B. Ø 65mm (2 1/2 inch) & Larger

1. Standard: UL 312- Check Valves for Fire Protection Service.
2. Cast/ ductile iron body, including valve cap and disc. Hinge pin, seat ring and disc ring shall be of bronze.
3. Ends shall be flanged or grooved as required.

2.5 Guided Check Valves:

A. Ø 80mm (3 inch) & Smaller

1. Standard: UL 312- Check Valves for Fire Protection Service.
2. Bronze or cast steel body, bronze or stainless steel trim, centre guided, silent type.
3. Valves NPS 1-1/2 inch and smaller: bronze body with threaded ends.
4. Valves NPS 2 inch & larger: cast/ ductile iron body with flanged or grooved ends as required.

B. Ø 100mm (4 inch) & Larger

1. Standard: UL 312- Check Valves for Fire Protection Service.
2. Cast/ ductile iron body, bronze or stainless steel trim, centre guided, silent type.
3. Ends shall be flanged or grooved, as required.

2.6 Hydrant Valves

A. Ø 65mm (2.5 inch)

1. Manufacturer: Refer List of Approved Manufacturers.
2. Standard: BS 5041 ; UL 668
3. Body: Copper Alloy to BS 1400
4. Pressure rating: 250 psig
5. Connections: threaded or flanges as required.
6. Configuration: Straight, right angled, oblique or bib nose as required, indicated on drawings or directed by Consultant.

2.7 Hydrant Valves with Pressure Regulating Valve

A. Ø 65mm (2.5 inch)

1. Manufacturer: Refer List of Approved Manufacturers.
2. Standard: BS 5041 ; UL 668

Stamp & Signature

3. Body: Copper Alloy to BS 1400 and provided with a PRV to control outlet static pressure from 5 to 8 bars with inlet pressure up to 300 psig.
4. Pressure rating: 300 psig
5. Connections: threaded or flanges as required.
6. Configuration: Straight, right angled, oblique or bib nose as required, indicated on drawings or directed by Consultant.

2.8 Fire-Department Connections

A. Manufacturer: Refer List of Approved Manufacturers.

B. Standard: UL 405.

C. Design: Exposed Type- projecting for wall mounting; or Flush type for wall mounting, as indicated on drawings or DATA SHEET.

D. Pressure Rating: 175 psig minimum.

E. Body Material: Corrosion-resistant metal.

F. Inlets: Brass with threads according to NFPA 1963 and matching local fire-department sizes and threads. Include extension pipe nipples, brass lugged swivel connections, and check devices or clappers.

G. Number of Inlets: Two X 65mm dia.

H. Caps: Brass, lugged type, with gasket and chain.

I. Escutcheon Plate: Round for projecting type and rectangular for flush mounting type; brass, wall type.

J. Escutcheon Plate: Marking: Similar to "AUTO SPKR & STANDPIPE" . Finish: Polished chrome plated

K. Outlet: Back, with pipe threads; 100mm

2.9 Indicator Posts:

A. Standard: UL 789- Indicator Post for Fire Protection Service.

B. Type: Horizontal for wall mounting.

C. Body Material: Cast iron with extension rod and locking device.

D. Operation: Hand wheel.

2.10 Trim And Drain Valves:

A. Trim and drain valves are typically used as part of specialty control valve trim and drain piping, and are NPS 2 (DN 50) and smaller. Most of these valves are ball type, but there are also a few angle, butterfly, gate, and globe types listed. No UL standard exists for these valves.

B. Standard: "Approval Guide," published by FM Global listing.

C. Pressure Rating: 175 psig minimum.

2.11 Gaskets:

A. Non-asbestos, compressed gasket material with high-strength aramid fibres bonded with high grade nitrite NBR synthetic rubber, suitable for 750°F (400°C) and 1450 psi (10000 kPa).

Stamp & Signature

2.12 Thread Lubricant:

A. **General**: non-hardening, non-poisonous as approved.

PART-3: EXECUTION

3.1 Installation Contractor's Responsibilities:

B. All gate valves, check valves, control valves, butterfly valves, drain cocks, etc. necessary for satisfactory operation of the system shall be provided whether indicated or not.

C. All valves whose stem are installed at a height of over 2m from floor level shall be provided with galvanised chain operators. Valves in horizontal lines shall be installed with stem horizontal or vertical above.

D. Each valve shall be identified with not less than 35mm round or square black over white laminated plastic tags secured to valve with a suitable brass chain.

E. Tags shall be engraved to identify valve by number and valve function.

END OF SECTION W7

W8-ABOVE GROUND FIRE SUPRESSION PIping & specialities

PART-1: GENERAL

1.7 Section Scope:

B. This Section covers the scope of supply and installation of all above ground piping to conduct fire water for fire suppression system.

C. The Contractor shall supply and install all fire water piping as shown on the drawings and in accordance with these specifications.

1.8 General Requirements

C. Minimum Pressure Rating for Standard-Pressure Piping: 175 psig.

D. Minimum Pressure Rating for High-Pressure Piping: 300 psig.

1.9 Reference Standards

A. NFPA 13 Standard for the installation of Sprinkler system.

B. NFPA 14 Standard for the installation of Standard-pipe and hose systems.

C. NFPA 20 Standard for the installation of Centrifugal Fire Pumps.

D. NFPA 24 Standard for the installation of Private Fire Service Mains & their

1.10 Submittals:

C. **Tendering Stage Submittal**

2. Indicate the pipe sourcing and manufacturer.

D. **Construction Stage Submittal**

3. Provide all technical details of piping and fittings

4. Submit samples of pipes and fittings.

Stamp & Signature

1.11 Quality Assurance:

C. All piping and fittings shall be supplied preferably by one manufacturer.

D. Manufacturer shall be a company specializing in manufacture of piping and fittings, with a minimum of five (5) years of experience.

1.12 Delivery, Storage, and Handling:

F. Pipes shall be stored and handled in accordance with the manufacturer's recommendations.

G. Protect internals from entry of foreign material by temporary caps on openings.

PART-2: PRODUCTS

2.1 Piping Material:

e) Seamless Black Steel Piping: Seamless black-steel piping, Schedule 40 conforming to ASTM A53.

f) Black Steel Pipe: Electrode Resistance Welded, conforming to BS 1387 (medium series).

g) Schedule 40, Black-Steel Pipe: ASTM A 53/A 53M. Pipe ends may be factory or field formed to match joining method.

h) Schedule 10, Black-Steel Pipe: ASTM A 135 or ASTM A 795/A 795M, Schedule 10 in NPS 5 inch (125mm) and smaller; and NFPA 13-specified wall thickness in NPS 6 inch (150mm) to NPS 10 inch (250mm), plain end.

i) Steel Pipe Nipples: ASTM A 733 made of ASTM A 53/A 53M, standard-weight, seamless steel pipe with threaded ends.

j) Steel Couplings: ASTM A 865, threaded.

k) Gray-Iron Threaded Fittings: ASME B16.4, Class 125, standard pattern.

l) Malleable- or Ductile-Iron Unions: UL 860.

m) Cast-Iron Flanges: ASME 16.1, Class 125.

n) Steel Flanges and Flanged Fittings: ASME B16.5, Class 150.

o) Grooved-Joint, Steel-Pipe Appurtenances:

1. Manufacturers: Subject to compliance with requirements, available manufacturers offering products that may be incorporated into the Work include the following:
   a. Anvil International, Inc.
   b. Tyco Fire & Building Products LP.
   c. Victaulic Company.
2. Pressure Rating: [**175 psig**] [**250 psig**] [**300 psig**] minimum.
3. Grooved-End Fittings for Steel Piping:

   ASTM A 47/A 47M, malleable-iron casting or ASTM A 536, ductile-iron casting; with dimensions matching steel pipe.
4. Grooved-End-Pipe Couplings for Steel Piping: AWWA C606 and UL 213, rigid pattern, unless otherwise indicated, for steel-pipe dimensions. Include ferrous housing sections, EPDM-rubber gasket, and bolts and nuts.

Stamp & Signature

p) Steel Pressure-Seal Fittings: UL 213, FM-approved, 175-psig pressure rating with steel housing, rubber O-rings, and pipe stop; for use with fitting manufacturers' pressure-seal tools.

2.2 Application:

b) Fire Protection shall be of material as specified under PIPING SCHEDULE in EQUIPMENT DATA SHEETS.

2.3 Fittings & Flanges:

A. Fittings shall be forged, compatible to the pipe. Welded fittings shall be butt-welding type. Galvanised piping shall be provided with galvanised fittings with threads. All fittings shall be rated for minimum 10 bars SWP.

B. Flanges shall be slip-on type & shall conform to ANSI B16.5. Galvanised piping shall be provided with galvanised threaded flanges. All flanges shall be rated for minimum 10 bars SWP.

C. All joints shall be welded, except the sprinkler fitting.

2.4 Valves & Strainers:

Refer Section 21 05 23, VALVES & STRAINERS.

2.5 Automatic Air Vents:

A. Automatic air vents shall be suitable for liquid systems. Body and cover shall be of malleable iron. Float & Valve seat shall be of stainless steel. Valve head shall be of Vitone (Synthetic Rubber). Connections shall be 13mm or 20mm as specified, screwed BSP. Vents shall be suitable for service up to 125 SWP (8.5bars) & 250°F (120°C) service.

B. Vents shall be similar to model AE 550 manufactured by SPIRAX-SARCO.

C. Air vents shall be provided at high points, on all water coils, and where shown on the drawings to ensure adequate venting of the piping system. A ball valve shall be provided to isolate the vent. The vent outlet shall be piped to a nearby convenient drain using suitable diameter flexible transparent PVC tubing.

2.6 Expansion Joints:

A. Where indicated on the drawings, expansion joints shall be provided. Expansion joints shall also be provided in all lines subject to temperature changes where indicated or required to relieve strain developed in lines due to temperature increase or decrease.

B. Pipe alignments guides shall be installed as recommended by the joint manufacturer but in any case not more than 1.5m on each side of expansion joint, except in lines 100mm or smaller they may not be over 600mm on each side of joint.

C. Anchors shall be provided wherever necessary or indicated to localise expansion or to prevent undue strain on piping. Anchors shall consist of heavy steel collars with lugs and bolts for clamping and attaching anchor braces, unless otherwise indicated. Anchor braces shall be installed in the most effective manner to secure the desired results, using turnbuckles wherever required. Anchors, supports or stays shall be attached in places where such supports will not injure the construction during installation or damage the structure by the weight or expansion of the pipeline. Detailed drawings of pipe anchors shall be submitted for approval before installation.

Stamp & Signature

2.7 Flexible Connectors:

A. Flexible connectors shall be constructed of rubber, tetrafluoroethylene resin, or corrosion resisting steel, bronze, monel or galvanised steel. The material used and the configuration shall be suitable for pressure, vacuum, temperature and circulation medium. The flexible sections may have threaded, welding, soldering, flanged or socket ends and shall be suitable for service intended. The flexible section may be reinforced with metal retaining rings, with built in reinforcement and restriction bolts or with wire braid cover suitable for the service intended. Flanged assemblies shall be equipped with limit bolts to restrict maximum travel within limits standard with the manufacturer. Unless otherwise shown on the drawings, the length of the flexible connector shall be as recommended by the manufacturer for the service intended. Internal sleeves or liners shall be provided when recommended by the manufacturer suitable for the circulating medium. Covers to protect the bellows will be provided where necessary or directed. Flexible connectors shall be designed for 125Psi (8.5 bars) service, and 250°F (120°C).

B. Flexible pipe connectors shall be installed on piping connected to equipment where indicated on the drawings. Installation shall be in accordance with manufacturer's recommendations.

PART-3: EXECUTION

3.1 Installation Contractor's Responsibilities:

F. All gate valves, check valves, control valves, butterfly valves, drain cocks, etc. necessary for satisfactory operation of the system shall be provided whether indicated or not.

G. All valves whose stem are installed at a height of over 2m from floor level shall be provided with galvanised chain operators. Valves in horizontal lines shall be installed with stem horizontal or vertical above.

H. Each valve shall be identified with not less than 35mm round or square black over white laminated plastic tags secured to valve with a suitable brass chain.

I. Tags shall be engraved to identify valve by number and valve function.

3.2 Installation:

f) General: All piping shall be installed in accordance with NFPA standards:

- NFPA 13 Standard for the installation of Sprinkler system.
- NFPA 14 Standard for the installation of Standard-pipe and hose systems.
- NFPA 20 Standard for the installation of Centrifugal Fire Pumps.
- NFPA 24 Standard for the installation of Private Fire Service Mains & their appurtenances.

Pipes shall be cut accurately to measurements established at the job site and worked into place without springing or forcing, properly clearing all windows, doors and other openings. Excessive cutting or other weakening of the building structure to facilitate piping installation will not be permitted without written approval. Layout drawings required under the title of "Approval of Material & Equipment" shall show locations of all supports, the load imposed on each fastening or anchor, typical details for special anchorage, for suspended piping, valves, tank, pumps, converters, and other mechanical equipment. Where supports are required

Stamp & Signature

between structural framing members, suitable intermediate metal framing shall be provided and detailed. Pipe shall have burrs removed by reaming and shall be installed to permit free expansion and contraction without damage to joints and hangers. Changes in direction shall be made with fittings, except that bending of pipe 100mm and smaller will be permitted provided a pipe bender is used and wide-sweep bends are formed. The centre line radius of bends shall not be less than 6 diameters of the pipe. Bent pipe showing kinks, wrinkles, flattening or other malformations will not be accepted. All piping shall be installed with sufficient pitch to ensure adequate drainage and venting. Piping connections to equipment shall be provided with unions or flanges. Open ends of pipelines or equipment shall be properly capped or plugged during installation to keep dirt and other foreign matters out of the system.

g) Screwed joints shall be made with tapered threads properly cut. Joints shall be made tight with a stiff mixture of lethargy and glycerine, or polytetrafluoroethylene (PTFE) tape, or approved thread joint compound applied to the male thread only. Not more than three threads shall show after the joint is made up. For steam piping do not use PTFE tape.

h) Welded joints shall be fusion welded by metal arc welding method unless otherwise required. Changes in direction of piping shall be made with welding fittings only. Metering or notching pipe to form elbows & tees or other similar construction will not be permitted. Branch connections shall be made with welding tees or forged welding tees or forged welding outlets.

Field and shop bevels shall be in accordance with the recognised standards and shall be done mechanically by means of flame cutting. Where bevelling is done by flame cutting, surfaces shall be clean of scale and oxidation prior to welding.

Before welding, the component parts to be welded shall be aligned so that no strain is placed on the weld when finally positioned. Height shall be so aligned that no part of the pipe wall is offset by more than 20% of the wall thickness. Flanges and branches shall be set true. This alignment shall be preserved during the welding operation.

Removing and replacing defective welds shall be at no additional cost to the Owner. Repairing of defective welds by adding new material over the defects or by peeling will not be permitted. Electrodes shall be stored in a dry heated area and shall be kept free of moisture or dampness during fabrication operations. Electrodes that have lost part of their coating shall be discarded.

i) Flanges and Unions shall be faced true. Flanges shall be provided with 1.6mm gasket of material suitable for specified usage, but shall not use asbestos, and made square and tight. Except where copper tubing is used, union or flange joints shall be provided in each line immediately preceding the connection to each piece of equipment such as coils, pumps, control valves & other similar items.

j) **Solvent Welded Joints for uPVC Pipes:** uPVC pipes shall be welded using solvent welding. Solvent used shall be specifically recommended by the pipe manufacturer. No alternative shall be acceptable. Prior to solvent welding the pipe and fitting shall be thoroughly cleaned, and then the solvent shall be applied. The joint shall be kept firm for the specified period as recommended by the manufacturer.

3.3 Pipe Supports:

A. All supports and anchors shall be installed in accordance with NFPA Standard.

B. Refer Section 21 05 29, SUPPORTS & ANCHORS FOR DETAILED SPECS.

Stamp & Signature

3.4 Pressure Testing:

A. Fire Protection piping shall be hydrostatically tested at a pressure equal to 150% of the maximum operating pressure, but not less than 200psi (13.6 bars), for a period of time sufficient to inspect every joint in the system but in no case less than two hours. No loss of pressure will be allowed. Leaks found during tests shall be repaired by re-welding or replacing pipe or fittings. Caulking of joints will not be permitted. Concealed piping shall be tested in place before concealing. Tests shall be conducted in the presence of the Consultant or the Consultant's representative who shall be given 10 days notice before any test is to be conducted. All material, equipment or instruments required for tests shall be provided by the Contractor.

END OF SECTION W8

W9-FIRE PUMP SET, ELECTRIC & diesel engine operatED
(HYDRANT/sprinkler APPLICATION)

PART-1: GENERAL

1.13 System Description

The water based Fire Suppression System is served by a Fire Pump sets consisting of a Diesel Engine driven Fire Pump, an Electric Motor operated at Fire Pump and a Jockey Pump with individual Controllers. The Fire Pumps are located in the Central Fire Pump Room at Ground Floor Level, and are provided with flooded suction. The EQUIPMENT DATA SHEET for the Fire Pumps is attached to this document.

1.14 Submittals

A. Tendering Stage Submittals

1. Tenderer shall submit the following documentation:
   a) Equipment catalogue having specifications, selection data; equipment dimensions, etc.
   b) Factory certified selection documentation.
   c) Equipment Quality Assessment Form supplied by the Consultants, dully filled.
   d) Statement of deviation from specifications.

B. Technical Approval Stage Submittals

1. Contractor shall submit the following documentation and obtain Consultants approval prior to ordering the equipment:
   a) equipment catalogue;
   b) Factory certified selection documentation.
   c) Pump curves indicating NFPA 20 requirements.
   d) controller diagram and information
   e) crating information

Stamp & Signature

f) shipment information;

g) Statement of conformance to specifications and deviation from specifications.

C. Construction Stage Submittals

1. Contractor shall submit the following documentation at appropriate times:

a) Certified dimensional drawings of the equipment.

b) Equipment Installation, Operation & Maintenance Manual.

c) Field Wiring Diagram.

d) Factory Performance Test Protocol & Report

e) Certificate of Origin

D. Close-Out Submittals

1. Contractor shall submit the following documentation at the closeout of the project:

a) Commissioning Reports, as per manufacturer's standard, duly signed by the commissioning engineer.

b) Commissioning Reports of the Consultant, duly signed by the commissioning engineer.

c) 5-Sets of operation & maintenance manual.

d) 5 sets of spare parts manual.

1.15 Quality Assurance

A. Standard & Regulatory Requirements.

1. Fire Pump Set shall be designed and constructed to operate satisfactorily in a typical fire protection application. Pump, motor, engine & controller shall be the products of manufacturers regularly engaged in their production and marketing. Fire pump set shall conform to the requirements of the latest edition of NFPA-20 (Standard for the installation of Centrifugal Fire Pumps).

2. Each pump shall be furnished with a certified performance curve indicating pressure, capacity & horsepower requirements.

B. Testing at Manufacturers Works

1. The Fire Pumps & Controllers shall be subjected to testing at the manufacturer's works, to determine conformance to NFPA 20 requirements and FM approval standards. All test reports shall be supplied by the Manufacturer to the Employer.

C. Testing at Site

1. The Supplier shall carry out complete testing of the fire pump sets after the completion of installation and in accordance with manufacturer's recommendations and shall record the commissioning and testing of the fire pumps in the Testing and Commissioning Forms attached as annexure to these specifications.

Stamp & Signature

2. As part of the testing Supplier shall plot the pump performance on the manufactures' certified pump test curves showing head capacity and brake horsepower of the pump, and shall prove conformance of operation to rated data.
3. The testing shall be done by activating the individual fire pumps in the same operating sequence that will be actually implemented.

1.16 Delivery, Storage, and Handling

A. Unit shall be stored and handled in accordance with the manufacturer's recommendations.

1.17 Warranty

A. Manufacturer shall guarantee all components of the fire pumps against defects in materials and/or workmanship for a period of 18 months from date of initial operation or 24 months from data of shipment, whichever occurs first, unless otherwise stated elsewhere in this document.

B. Manufacturer/ Supplier shall conform to the stipulations of Warranty & Guarantee as per relevant clauses given in the Conditions of Contract.

PART-2: PRODUCTS

2.1. Scope:

A. The Contractor shall supply Fire Pump Sets of the capacity indicated in EQUIPMENT DATA SHEETS, and as per these specifications. The fire pump, driver, controller and all accessories shall be furnished by the pump manufacturer.

B. Each of the above pump sets shall be factory installed on a suitable steel skid and tested in accordance with NFPA 20 standards, and an FM approval certificate obtained.

C. All steel surfaces shall be sand blasted and painted with two coats of primer and finish paint of fire red colour to BS 4800/04D45.

D. The fire pump unit, consisting of a pump, driver and controller shall perform in compliance with the NFPA 20 as an entire unit when installed or when components have been replaced.

2.2. Operating Conditions:

A. The pump(s) shall be of the type and size to provide a flow rate and total head as indicated in EQUIPMENT DATA SHEETS.

B. As per NFPA 20 – A.6.2 (2013), the fire pump shall deliver not less than 150% of the rated capacity at a pressure of not less than 65% of the rated head and the shut off head shall not exceed 140% of the rated head.

2.3. Horizontal Split Case Centrifugal Pumps for Fire Service:

A. **Casing:** shall be horizontally split, with centreline discharge, foot-supported and made of cast iron. Casings shall be provided with tapped and plugged holes for priming vent and drain.

B. **Impeller:** shall be the single section enclosed type of bronze. Impeller shall be statically and hydraulically balanced. Drilled holes shall be provided through the impeller hub to balance axial thrust loads and keep positive pressure on the stuffing box. Impeller shall be keyed & locked to the shaft with a hexagonal head impeller nut, and shall be easily removable without the use of special tools.

Stamp & Signature

C. **Shaft:** Pump shaft shall be high strength stainless steel sized to provide a minimum amount of deflection.

D. **Seal:** Pumps shall be provided with pack gland seal.

E. **Bearing Frame:** shall be rigid, one-piece cast iron construction. Frame shall be provided with catch basin reservoir with tapped drain hole to collect and pipe away drip.

F. **Bearings:** shall be ball type on both ends of the frame. Both bearings shall be locked in place and be sized to provide 100,000 hours life under thrust loads encountered. Both the bearings shall be enclosed by replaceable box.

G. **Bearing Lubrication:** Ball bearings shall be grease lubricated with provisions for the addition and relief of grease.

H. **Baseplate:** shall be fabricated steel centre drain or cast iron drip lip sufficiently rigid to support the pump and the driving motor with tap hole to pipe away leakage and condensation.

I. **Coupling:** shall be spacer flexible type.

J. **Coupling-Guard:** shall be all metal and fastened to the base plate.

2.4.Jockey Pump:

A. **Selection Data:** The jockey pump shall be suitable for providing a flow rate and total head as indicated in EQUIPMENT DATA SHEETS.

B. **Type:** Pump shall be vertical multi-stage type with direct mounted motor, similar to Grundfos Model CP or approved equivalent.

C. **Casing:** Suction and delivery chambers shall be of cast iron, with diffusers of stainless steel.

1. Impellers : Stainless steel
2. Shaft : Stainless steel
3. Shaft-seal : Mechanical
4. Bearings : Stainless steel

2.5.Electric Motor-Drive:

A. Motor shall be constant speed, 3 phase, squirrel-cage induction, totally enclosed fan cooled type, IP-55 with class F insulation with a maximum temperature rise of 80°C in an ambient temperature of 40°C and shall be specifically listed for fire pump service.

B. The motors shall operate on 400V, 3-phase, 50 Hertz AC system and shall be suitable for voltage variation of ±10%.

C. Motor shall comply with rules of electrical machines as stated in VDE 0530/59, BS 2613, BS 4999 Part 141, Part 105 and EN 60034 Parts 5, 6 & 7 and NFPA-20.

D. Motor horsepower & locked rotor current shall be as per Table 9.5.1.1 of NFPA 20 (2013).

Stamp & Signature

E. Motor shall be sized to ensure non-overloading operation of the motor at any point of the pump operation curve and be rated at least at 125% of rated shaft power, and be able to provide required output under site conditions, i.e. maximum ambient temperature of 120°F. (50°C) and altitude 1700 feet (518 meters).

2.6. Fire Pump Controllers

A. General for Controllers

1. Approvals

   a) All internal components shall be front mounted and wired for ease of inspection and maintenance. All relays shall be of the plug-in type, complete with visual indication to show that the relays are energized. The Controller shall include an LCD display to indicate voltage and amperes as well as system pressure, in PSI or Bars.

B. Electric Motor Operated Fire Pump Controller:

1. Starting Type

   a) The controller shall be of the combined manual and automatic type designed for star-delta closed transition starting.

2. Ratings

   a) The Controller shall have a withstand rating of 100,000 RMS symmetrical amperes @ (400V).

3. Construction

   a) The controller shall include a motor rated combination isolating switch and circuit breaker, mechanically interlocked and operated with a single externally mounted handle.

   b) The isolating switch shall be rated to disconnect the motor load.

   c) The isolating switch/circuit breaker combination shall be mechanically interlocked such that the enclosure door cannot be opened when the handle is in the ON position except by a tool operated defeater mechanism.

   d) The Controller manufacturer shall manufacture the contactor, isolating switch, circuit breaker, pushbuttons, and enclosures. Brand-labeled components will not be accepted.

4. Enclosure

   a) The controller shall be housed in a NEMA Type 12 (IEC IP52) dust-tight, powder baked finish, freestanding enclosure.

5. Microprocessor Controller

   a) The controller shall come complete with a 4 line by 40 character LCD display mounted on a panel opening in the front door The LCD display shall indicate the following:

      i. Main screen displaying system pressure, three-phase voltage and amperage readings, system frequency date and time.

      ii. Set point review screen displaying the programmed pressure start and stop

Stamp & Signature

points, and Weekly test time.

iii. Controller statistics screen, including

- Powered Time
- Motor Run Time
- Number of Calls to Start
- Number of Starts
- Last Motor Start Time
- Last Motor Run Time
- Last Low Pressure Start
- Minimum System Voltage
- Maximum System Voltage
- Minimum System Frequency
- Maximum System Frequency
- Minimum System Pressure
- Maximum System Pressure
- Last System Startup
- Last Phase Failure
- Last Phase Reversal
- Locked Rotor Trip
- Maximum Run Current
- Last Locked Rotor Current

iv. Controller diagnostics screen, including:

- Date & Time
- Firmware Version
- Shop Order Number
- Customer Order Number
- Transformer Output Voltage
- Current Transformer Outputs
- Pressure Transducer Calibrated Settings
- Input Status
- Output Status

v. Display last messages screen that will display up to 10,000 alarms/messages stored in the controller's memory.

Stamp & Signature

vi. Display up to ten (10) custom messages of up to 100 characters each, which will continually scroll across the fourth line of the display.

vii. Remaining time left on active timers.

b) The controller shall be supplied with green Status LED's for the following:

i. Power On

ii. Pump Running

iii. Local Start

iv. Remote Start

v. Deluge Valve

vi. Emergency Start

vii. Interlock On

viii. Low Pressure

ix. Auto Shutdown Enabled

x. Programmable LED #1

c) The controller shall be supplied with ten (10) red alarm LED's to indicate the following:

i. Phase Reversal

ii. Phase Failure

iii. Fail to Start

iv. Under voltage

v. Overvoltage

vi. Low Room Temperature

vii. Locked Rotor Trip

viii. Low Suction Pressure

ix. Source 2 Disconnected

x. Programmable LED #2

d) The microprocessor logic board shall be provided with:

i. A USB port for transference of message history, controller status, diagnostics, and statistics and the ability to update firmware.

ii. An Ethernet port for direct connection to a computer for data transfer.

iii. A RS485 Serial port for communication to various external software programs.

e) The controller shall be available with an embedded web page to allow viewing of the controllers' current status, data values, programmed set points, and history.

f) A Fail-to-Start alarm shall occur if the motor controller sees less than 20% of the

Stamp & Signature

motor full load amps after an adjustable time delay of 1-90 seconds.

g) Locked rotor protection shall be provided. After a trip condition and restoration of power, the LCD display shall indicate “LOCKED ROTOR TRIP”.

h) A sequential start timer and weekly test timer shall be provided as standard.

i) A restart time delay of two (2) seconds shall be provided to allow the residual voltage of the motor to decay prior to re-starting the motor. In the event that the pump motor continues to run after a request to stop, then the controller must display a fail to stop message to indicate this condition.

j) Overvoltage (5-20%) and under voltage (5-30%) sensing and alarming shall be provided as standard.

k) The controller shall be supplied with interlock and shutdown circuits as standard. A flashing green LED shall indicate an interlock on condition.

l) Where shutdown of the pump(s) due to low suction pressure is required, it shall be accomplished without the addition of a separate panel or enclosure. The LCD display shall indicate low suction shutdown. Resetting of the condition shall be automatic or manual as selected by the user.

m) Means shall be provided to test the operation of all LED’s to ensure their functionality.

6. Programming Menu

a) The programming menu shall have the ability to enable an entry password.

b) The programming menu shall be limited to two (2) levels of password protection.

c) The controller shall have English as a standard language.

d) The programming menu shall be grouped into 6 main menu headings as follows:

i. Regional Settings

ii. Pressure Settings

iii. Timer Values

iv. Alarm Set points

v. Input/output Menu

vi. System Configuration (password protected)

7. Pressure Sensor

a) A solid-state 4-20mA pressure sensor shall be provided. The pressure Start and Stop points shall be adjustable in increments of one (1) PSI. A low pressure pre-alarm, indicated with a flashing green LED, shall denote a potential pump starting condition and will remain lit once the pump has started to indicate the starting cause.

8. Custom Inputs/Outputs

a) The controller shall come standard with nine (9) future inputs, two (2) future LED indicators, and one (1) future output, with the ability to add up to another 8 outputs via optional relay boards.

Stamp & Signature

b) The user shall be able to program the future inputs/outputs through the main programming menu.

c) The inputs shall be selectable based on the following criteria:

i. User selected message or thirteen (13) predetermined messages.

ii. Energize the common alarm relay when the input is received.

iii. Link to a future relay and/or LED indicator.

iv. Alarm latched until reset.

v. Normally open or closed input.

vi. On-delay timer.

d) The LED indicators shall be selectable based on the following criteria:

i. Indication based on a minimum of twelve (12) predetermined alarms or a custom input.

e) The future relays shall be selectable based on the following criteria:

i. Output based on a minimum of twenty-seven (27) predetermined alarms, controller status or a custom input.

ii. Latched until reset.

iii. Energized under normal conditions.

iv. On or off delay timer on the output.

9. Alarm Relays

a) All relays shall be of the plug-in type. An LED on the relay panel shall indicate the energized state of the relay. All relay contacts shall be rated @ 8A, 277VAC/30VDC. Two (2) sets of Form-C contacts shall be provided for each of the following:

i. Phase Reversal

ii. Phase Failure

iii. Common Alarm

iv. Future #1

v. Pump Run.

b) The Common Alarm and Phase Failure relays shall be energized under normal conditions.

10. Audible Alarm Buzzer

a) An audible alarm buzzer, capable of being heard while the motor is operating, shall operate if Fail to Start, Hardware Malfunction or any Common Alarm condition exists.

11. Manufacturer

a) The controller shall be of the LMR Plus type as manufactured by Eaton Corporation or approved equivalent.

Stamp & Signature

C. Jockey Pump Controller:

1. Approvals
   a) The Jockey Pump Controller shall meet the requirements of UL 508 (Underwriters Laboratories UL).
2. Starting Type
   a) The controller shall be across the line or Wye-Delta type designed for full voltage starting.
3. Ratings
   a) The Controller shall have a minimum withstand Rating of 18, 000 symmetrical amperes @ 400V.
   b) The horsepower rating of the controller shall not exceed 50Hp for three (3) phase units or 10Hp on single phase units.
4. Construction
   a) The Controller shall include a combination Cram Breaker/Overload Motor Protector.
   b) The circuit breaker shall be mechanically interlocked such that the enclosure door cannot be opened when the handle is in the ON position except by a tool operated defeater mechanism.
   c) The controller manufacturer shall manufacture the contactor, circuit breaker, pushbuttons, and enclosures. Brand-labeled components will not be accepted.
5. Supply Voltage
   a) The Jockey pump controller shall be suitable for 400V/3/50Hz.
6. Enclosure
   a) The controller shall be housed in a NEMA Type 12 (IEC IP52) dust-tight, powder baked finish, freestanding enclosure.
7. Run Period Timer
   a) An optional Run Period Timer shall be provided.
8. Languages
   a) The controller shall have English language as standard.
9. Digital Indication
   a) The controller shall be supplied with a digital display that shall indicate the following: System Pressure, Start Pressure, Stop Pressure.
   b) The digital display shall be supplied with a solid-stale 4-20mA pressure sensor. The pressure Start and Stop points shall be adjustable in increments of one (1) PSI.
   c) The digital display shall be a door-mount type that permits exterior programming with the controller door secured.
10. Options

Stamp & Signature

a) The Jockey pump controller shall also be provided with the following:

i. Contacts for “Pump Run”

ii. Contacts for “AC Power Failure”

iii. “Power On” Light

iv. “Pump Run” Light

v. Low Suction Pressure Switch and Alarm Pilot Light

vi. Low Suction Shutdown

vii. Elapsed Run Time Meter

11. Manufacturer

a) The controller shall be as manufactured by EATON Corporation or approved equal.

2.7. Spares:

The Contractor shall supply spares for each of the fire pumps and Controllers suitable for 3 years of normal operation in accordance with the manufacturer’s recommendations.

An "Operation and Maintenance" manual shall be supplied with the fire pump set.

EXECUTION

3.1 Foundation:

Foundations shall be constructed by Installation Contractor and are not covered in the scope of work of this Contractor.

3.2 Installation:

Installation of the fire pumps shall be carried out by Installation Contractor and are not covered in the scope of work of this Contractor.

This Contractor shall however provide periodical supervision services and ensure that the installation is being carried out in accordance with manufacturer’s recommendations and requirements.

This Contractor shall also provide all assistance to the Installation Contractor to facilitate the installation of the Fire Pumps and Controllers.

3.3 Commissioning and Testing:

The Fire Pumps shall be commissioned and tested by this Contractor, in accordance with the manufacturer’s recommendations.

The pump operational curve shall be identified by taking no-flow reading and shall be charted on the pump curve. Operational point at full flow shall be identified and submitted to the Consultant.

Tests shall be conducted and test reports submitted to the Consultant and approval obtained.

END OF SECTION W9

Stamp & Signature

W10-BASIC MECHANICAL REQUIREMENTS

PART-1: GENERAL

1. Related Documents:

A. Drawings and general provisions of Contract, including General and Special Conditions apply to this Section.

2. Instructions to Tenderers:

A. The Specifications & Drawings make reference to certain Standard Specifications and also to certain manufacturers and equipment model numbers. The object of these references is to ensure that the equipment and materials offered by the Tenderers and supplied by the Contractor are in accordance with the required standard of quality, workmanship and capacities, etc. The object is not to limit the selection of equipment to a particular manufacturer unless specifically mentioned in the tender documents that a particular equipment and/or material is to be supplied.

B. It is clarified that the equipment and the materials complying with various standards and of manufacturers other than mentioned in the tender documents shall be acceptable provided they meet the required capacities as specified and meet the intent of the specifications regarding quality and workmanship.

C. In case there is any deviation between any item or material offered by the Tenderer from the tender specifications and drawings, the Tenderer shall clearly draw attention to all such deviations and no such item or material shall be supplied by the Contractor without prior written approval of the Engineer/ Consultant.

D. These Specifications and accompanying Drawings are to be considered as supplementing each other and as such are intended to serve jointly as the basis upon which the Contractor shall establish a Contract Price, and upon which he shall base the performance of the required work.

E. It is the intent of these Specifications and Drawings to call for finished work, tested, complete, and ready for operation.

F. These Drawings and Specifications are presented to the Tenderer with the understanding that he is an expert and is competent in the preparation of Contact Bid Prices on the basis of information such as is contained in these documents, which do not include assurance as to their complete accuracy and validity, in all details, and which may depend, for proper execution, upon interpretation by the Engineer/ Consultant and other Authorities, during the course of construction.

G. For the above reasons, the Tenderer shall understand that his submission of an unqualified proposal commits him to perform all work expressed and implied in the Drawings and Specifications without additional compensation. He shall further understand that such submission commits him without extra compensation, and within the scope of the Contract, to the following:

1. To provide, if required by the Engineer/ Consultant, the items or arrangements of greater quantity, better quality, or higher cost in the event that a disagreement with regard to; such items occurs between the drawings and specifications, or within one.
2. To provide any small items of work not specifically called for, but required to complete the intended installations.

Stamp & Signature

3. To co-ordinate his work or adjust the same so that conflicts in space do not occur with other trades involved at the project.
4. To co-ordinate his work or adjust the same to suit site or any other existing conditions.

H. Contractor to ensure a hard copy of all the relevant standards pertaining to the work on site are available on site at all times.

3. Design Life of Equipment:

A. The design life of all equipment and material shall be a minimum of 25 years. Bidder shall identify all equipment and material that has a lower design life and shall indicate the proposed design life in his bid, and this shall be subject to approval by the Consultant.

4. Standards to be kept on Site:

A. The Contractor shall maintain at his site office a hard-copy of all standards that are referenced in these specifications. The Contractor shall submit to the Consultant and obtain approval on a list of all standards that he is required to maintain in his site office. The cost of maintain these standards is assumed to be covered in the overall contract price.

5. Interpretation of the Drawings & Specifications:

A. Except where modified by a specific notation to the contrary, it shall be understood that the indication and/or description of any item, in the drawings or specifications or both, carries with it the instructions to furnish and install the item, regardless of whether or not this instruction is explicitly stated as part of the indication or description.

B. It shall be understood that the specifications and drawings are complimentary and are to be taken together for a complete interpretation of the work. Exceptions are that notes on the drawings, which refer to an individual element of work, take precedence over the specifications where they conflict with the same.

C. No exclusions from, or limitation, in the language used in the Drawings or Specifications shall be interpreted as meaning that the appurtenances or accessories necessary to complete any required system or item of equipment are omitted.

D. The necessary Drawings utilise symbols and schematic diagrams to indicate various items of work. Neither of these have any dimensional significance nor do they delineate every item required for the intended installations. The work shall be installed in accordance with the diagrammatic intent expressed on the mechanical drawings, and in conformity with the dimensions indicated on final Architectural and Structural working Drawings and on equipment shop drawings.

E. No interpretation shall be made from the limitations of symbols and diagrams that any elements necessary for complete work are excluded.

F. Certain details appear on the Drawings which are specific with regard to the dimensions and positioning of the work. These details are intended only for the purpose of establishing general feasibility. They do not obviate field co-ordination for the indicated work.

G. Information as to the general construction not evident in this specifications and drawings shall be derived from structural & architectural drawings and specifications.

Stamp & Signature

6. Codes, Permits & Inspection:

A. All works shall meet or exceed the latest requirements of all authorities having jurisdiction over construction work at the project site.

B. All required permits and inspection certificates shall be obtained, paid for, and made available at the time of completion of the Works.

C. All work shall be carried out in accordance with the following codes:

1. Fire Suppression Works:
   - NFPA
   - FM Global (where applicable)
2. Electrical Works:
   - IEE Wiring Regulation
   - Pakistan Electricity Rules
   - Electric Inspectors Regulation & Requirements
   - NFPA Standards

7. Coordination of Contract Works

A. The Contractor shall coordinate the Works with those works of the Building Contractor and any other contractors and sub-contractors.

B. The Contractor shall note that the drawings supplied to him only indicate the approximate locations of the works. He shall make any modification reasonably required of his Program, work sequence and physical deployment of his works to suit the outcome of work coordination or as necessary and ensure that all cleaning, adjustment, test and control points are readily accessible.

C. The Contractor shall pay particular attention to the building works Program and shall plan, coordinate and Program his works to suit and adhere to the building works in accordance with the building Program.

D. Any significant problems encountered during the coordination work, which are beyond the Contractor's control, shall promptly be reported to the Engineer/ Consultant.

8. Drawings by the Contractor:

A. Shop Drawings

1. The Contract Drawings are schematic and are intended to enable the Contractor to prepare his estimate and submit a tender. The contract drawings are not intended to be used as shop drawings and will not be used for execution. Contractor shall prepare installation (Shop) drawings for execution of his works
2. If the Contractor requires any further instructions, details, contract drawings or information drawings to enable him to prepare his working drawing he will apply in writing to the Engineer/ Consultant /Consultant for such information well in advance of application of such information.

Stamp & Signature

3. All shop drawings shall be prepared on computer using current version of AUTOCAD software.
4. Prior to commencement of works on site and at least 3 weeks in advance of the drawings being required for actual execution, the Contractor shall submit hard-copies of shop drawings in triplicate plus soft-copy on AUTOCAD CD (both PDF & DWG format) for approval of the Consultant/Engineer/ Consultant. The Consultant/Engineer/ Consultant shall review the drawings & (i) approve the drawing or, (ii) disapprove the drawings with comments or, (iii) disapprove the drawings with comments for rectification/revision. In the event of (iii), the Contractor shall correct/revise the drawing & resubmit 3 hard-copies of the drawings plus soft-copy on AUTOCAD CD to the Consultant/Engineer/ Consultant for Approval. On a drawing being approved, the Contractor shall submit 6 hard-copies plus soft-copy on AUTOCAD CD for formal approval and distribution to relevant offices.
5. All drawings shall show plans and sections with sufficient details to clearly reflect the installation of the plant. All material specifications shall be provided on the drawings. All information required for preparing suitable foundation, for providing suitable access to the plant, for making openings in building structure, for co-ordination with electrical, plumbing, air-conditioning and other designs etc., shall be clearly provided.
6. The Contractor shall submit to the Consultant/Engineer/ Consultant 3 sets of hard-copy drawings plus soft-copy on AUTOCAD CD showing all major holes, cavities, embedded frames and other parts of the plant to be embedded in the floor, ceiling and walls, channels in the floors, cable trenches, cement pipes or other major conduits, which are needed for the successful and timely completion of the works. The Consultant/Engineer/ Consultant after ascertaining the accuracy of these drawings, shall return 1 (one) set of the drawings to the Contractor, within 14 days of the receipt of these drawings.
7. All shop drawings shall be fully dimensioned and suitably scaled showing construction, sizes, weights, arrangements, operating clearances and performance characteristics.
8. Shop drawings shall only be of standard sizes of A0, A1 size as per ISO 5457:1999, as approved by the Consultant.
9. Installation shall not be allowed to commence unless approved shop drawings are in possession of the Contractor, for which purpose shop drawings shall be submitted by the Contractor to the Consultant/Engineer/ Consultant sufficiently in advance of actual requirements to allow for ample time to the Consultant in checking and approval and no claim for extension of the Contract time will be considered by reason of the Contractor's failure to submit the drawings on time.
10. Each shop drawing submitted by the Contractor shall include a certificate by the Contractor that all related conditions on site relevant to the particular installation have been checked and that no conflict exists.
11. Any expenses resulting from an error mistake or omission in or delay in delivery of the drawings & information mentioned in sub-clause (b) of this clause shall be borne by the Contractor.
12. Drawings approved shall not be departed from except on the instructions of the Consultant/Engineer/ Consultant.

Stamp & Signature

13. The approval by the Consultant for any submitted data, working drawings, performance curves, test certificates for any items, arrangements and/or layout shall not relieve the Contractor for any responsibility regarding the performance of the Contract. Such approval shall also not relieve the Contractor from responsibility of any error in the submitted data & workings, brought to light at any time subsequent to any approvals.

B. Civil Work Drawings

The Contractor shall submit to the Engineer/ Consultant in accordance with the approved "Submission Schedule", 6 copies of drawings showing details of all civil work to be done by this Contractor or other contractors as noted below:

1. Equipment foundation drawings, duly coordinated with the equipment certified dimensions, and indicating the weight and the load on each support of equipment.
2. Plant room drawings, clearly indicating the details and positions of all openings, trenches, ducts and cutting required and construction details needed to complete the Works.
3. Elevations of all masonry and concrete and other walls, clearly indicting the dimensions and locations of all openings required and the type and design of the sleeves to be installed.

C. Manufacturer's Shop Drawings

1. The drawings shall show detailed construction, principal dimensions, weights and clearances for maintenance, etc. Immediately after placing of any order or at any event within 4 weeks unless otherwise approved in writing by the Engineer/ Consultant, the Contractor shall forward to the Engineer/ Consultant for comment, 4 copies of manufacturer's shop drawings indicating detailed construction, principal dimensions and weights, clearances for withdrawals and/or cleaning, etc. No work shall proceed on or off Site unless drawings requiring approval are so approved in writing by the Engineer/ Consultant.

D. Record Drawings

1. The Contractor shall maintain an accurate record of changes as work progresses on a set of Record Drawings, which shall be maintained at Site, and the following procedure shall be adopted:
    a. Make records in a neat and legibly printed manner with a non-smudging medium.
    b. Identify each Record Drawing as the "Project Record Copy", maintain Drawings in good condition, do not use them for construction purposes, and make them readily available to the Engineer/ Consultant.
    c. Maintain project Record Drawings in a state current to the project. Failure to comply with this requirement may prejudice Progress Payments. The Engineer/ Consultant's visual inspection shall constitute proof that Record Drawings are current.
    d. If the Contractor fails to produce either the marked-up drawings during the execution of the works or the record drawings, etc. for the Engineer/ Consultant/ Consultant approval, within one month after sectional or practical completion, the Engineer/ Consultant/ Consultant will have the right to have these drawings produced by others. The cost of obtaining the necessary information and preparing such drawings etc. will be deducted from the outstanding payments owing to the Contractor.

Stamp & Signature

E. As–Built Drawings

1. The Contractor shall submit 3 sets of the first draft prints of As-Built drawings within 28 days of the issuance of the Certification of Completion to the Engineer/ Consultant/ Consultant for checking. The Engineer/ Consultant/ Consultant after checking the above draft prints shall return one set of the marked up copies of these As-Built drawings to the Contractor within 42 days from the date of submission of the Contractor's draft prints with comments. The Contractor shall within a further 28 days from the date of receiving the Engineer/ Consultant/ Consultant's comments on the draft As-Built drawings re-submit to the Engineer/ Consultant/ Consultant for his approval another 3 sets of the second draft prints of As-Built drawings with the Engineer/ Consultant/ Consultant's comments incorporated. This process of submission and approval shall continue until the final approval of the Engineer/ Consultant/ Consultant on these As-Built drawing is obtained.
2. The Contractor shall ensure all As-Built drawings are accurate representation of the complete Works, before submitting them to the Engineer/ Consultant/ Consultant.
3. As-built drawings shall only be of standard sizes of A0, A1 size as stipulated in ISO 5457:1999, as approved by the Consultant.
4. The final approved As-Built drawings shall be in 6 sets of hard copy and 3 sets of electronic copies. These shall be submitted within 21 days from the date of final approval. Each electronic copy shall be in the form of CD-ROM (both in PDF & DWG formats), labeled, with cross reference to a printed list of files explaining the contents and purpose of each file and supplied in sturdy plastic containers.

9. Responsibility for Accuracy of Information:

A. The Contractor shall be fully responsible for accuracy of all information necessary for successful and timely completion of the works.

B. The Contractor shall be responsible to make all measurements and set out all the necessary dimensions for their correctness.

C. The Contractor shall be fully responsible for ascertaining the accuracy of the dimensions and other information given in the tender documents before carrying out the work. The Contractor shall provide the complementary dimensions and communicate the same to the Engineer/ Consultant/Consultant.

D. The Contractor shall consult the drawings and documents which have been prepared for the Civil and other contracts by other Engineer/ Consultants, which can effect his work and which are either kept on site or are available with the other Engineer/ Consultants.

E. It shall be the responsibility of the Contractor to acquire all necessary information and ascertain its accuracy for co-ordination of the works with the works of other Contractors.

10. Storage Arrangements:

A. The Contractor shall make adequate arrangements for the storage of the materials arranged by him or supplied by the Employer. No payment shall be made to the Contractor for storage arrangements whatsoever. However adequate space for stores shall be provided on site to the Contractor.

Stamp & Signature

B. The location of the store area shall be within the Site premises and/or selected with the consultation and approval of the Engineer/ Consultant.

11. Standards & Typical Design:

A. The specification either cites or implies M Global, IEEE, IEC, ASME, ASHRAE, or BS Standards where the context so refers. Other comparable United States, or European standards and typical designs are equally acceptable providing that they in no way detract from the quality, safety, operability or durability of the equipment and material furnished. However, when other standards or typical designs than those cited or implied are offered by a tenderer, he shall set forth in his proposal the alternate standards and/or designs he proposes so that a direct comparison can be made by the Engineer/ Consultant before the issue of a Letter of Award. Each specific difference from the specifications shall be clearly spelled out by the tenderer. If no alternates are set forth by the Tenderer in his proposal, it will be assumed that the equipment and material will be in accordance with the standards and typical designs as cited or implied in the Specifications.

12. Abbreviations for Standards:

A. The standards, codes of practice and recommendations of the following societies or institutions have either been used in the specifications and are cited here as a general level of quality for the equipment, materials and workmanship.

1. Abbreviations for International institutions are given below:
   - International Electro technical Commission ... IEC

2. Abbreviations for some European societies and standards institutions are as follows:
   - Association Francaise de Normalisation ... AFN
   - American Society of Heating Refrigerating and Air-conditioning Engineers ... ASHRAE
   - British Standard Institution ... BSI
   - Chartered Institution of Building Services ... CIBS
   - Dentsches Institute fur Normung ... DIN
   - Institution of Electrical Engineer/ Consultants, London ... IEE

3. Abbreviations for Pakistani Societies and Standard Institutions:
   - Pakistan Standards Institution ... PSI

4. Abbreviations for various United States Societies and Standard Institutions:
   - American Standards Association ... ASA
   - American Society of Heating, Refrigerating and Air-conditioning Engineers ... ASHRAE
   - American Society of Mechanical Engineer ... ASME

Stamp & Signature

- National Electrical Manufacturers Association ... NEMA
- American Society for Testing and Material ... ASTM
- Instrument Society of America ... ISA
- National Bureau of Standards ... NBS
- National Fire Protection Association ... NFPA

B. Where differences or contradictions appear between any of the laws, standards, codes, specified herein, the decision of the Consultant shall be final and binding on the Contractor and the Contractor shall not claim any additional charges for carrying out the same.

13. Delivery of Equipment / Material on Site:

A. No plant or Contractor's Equipment shall be shipped or delivered to the Site until intimation in writing has been applied for and obtained by the Contractor from the Engineer/ Consultant that the plant may be delivered. The Contractor shall be responsible for the reception on Site of all plant and Contractor's Equipment delivered for the purpose of the Contract.

B. All materials delivered to Site shall be accurately listed and recorded in the site record books maintained on site by the Contractor and shared with Employer's Project Manager.

C. Materials and equipment delivered to Site and paid for in interim payment shall be the Employer's property. Such materials and equipment shall not be removed from Site without the approval of the Engineer/ Consultant in writing and appropriate deduction shall be made in the next interim payment in accordance with the Contract.

14. Unloading & Storage at Site:

A. The Contractor shall unload all owner supplied or otherwise equipment & material at the site from delivery vehicles as the case may be. Items for permanent installation shall be properly stored in areas designated by the Engineer/ Consultant and shall be protected as required to prevent damage or deterioration of any type. Storage methods shall be such as to cause minimum inconvenience to others and shall be arranged to facilitate inspection.

B. All equipment and material storage shall be subject to the approval of the Engineer/ Consultant.

1. Items stored shall be blocked up at least six (6) inches off the ground.
2. The ends of all nozzles, pipes, tubes and conduits while in storage at the site shall be covered with a tube cap to save against entrance of rain water, blowing dirt, and other foreign matter. Tubing shall be shipped and stored in neat bundles.
3. Miscellaneous steel, plate work, pipes, etc. shall be protected by a prime coat of paint and kept painted throughout the storage and erection period to inhibit rusting unless such items are galvanised or have other corrosion proof finish.

C. All packing boxes, shipping containers, planking, covering, etc., shall become the property of the Employer as soon as the equipment and material which is contained therein arrives at the site. The Employer, on application from the Contractor, may permit the Contractor to use some of the boxes, containers, etc., without charge for equipment and material storage purposes.

Stamp & Signature

15. Equipment Lifting:

A. The contractor shall be solely responsible for safe lifting of the equipments from place of storage to location of final installation and finally on the foundations.

B. Prior to lifting the equipments the following procedure shall be adopted:

1. Submit comprehensive insurance policy for the full value of the equipment to the Engineer/ Consultant/Employer from approved insurance company.
2. Submit complete information of specialist firm of lifters/riggers to the Engineer/ Consultant & obtain approval.
3. Submit complete procedure & equipment to be used for lifting the equipment in place. Identify on plans location of tripods, hoist, etc. that will transfer weight to the equipment, to the structure & obtain approval.
4. All the above to be completed with one month before the date of lifting of equipment.

16. Qualification of Equipment & Material Manufacturer:

A. All minor equipment and all materials shall be manufactured by companies which have had at least five years previous experience in the design and manufacture of equipment and or material of comparable type, capacity and operating conditions.

B. Where the requirements of this clause make any material non-obtainable the Employer and/or Engineer/ Consultant reserves the right to waive any portion or portions of it as required to obtain the intent of the Specifications.

C. When manufacturer's product is specified by name or equivalent, it shall be the sole judgement of the Engineer/ Consultant/Consultant to determine the acceptability of any product which is offered as an equal to that specified.

D. Proposals shall be based on the equipment and materials specified, and any request to substitute any time shall be so mentioned in the proposal and the amount to be added or deducted shall be given. Any request for substitution after the date of Letter of award shall likewise be accompanied with the difference in price.

E. If the Contractor in his tender proposal has offered more than one source of equipment or material the selection of the source shall be at the judgement of the Consultant/Engineer/Consultant.

17. Guarantees/Warrantees for Equipment/Plant:

A. The period of guarantee/warrantee on the equipment/plant shall be the period stated in Conditions of Contract.

B. The Contractor's guarantee does not cover the normal wear & tear.

C. Manufacturer's equipment warranties if they exceed the Maintenance Period as defined in these Documents shall be transferred to the Employer at the end of the Maintenance Period.

D. The Contractor shall guarantee that the material & workmanship incorporated into the plant/equipment are new and the best of their respective kinds for the service intended and that all items will be free from inherent defect in design, workmanship & materials, and that all

Stamp & Signature

equipment in its several parts will operate successfully at all capacities up to and including the maximum specified load without undue noise, heating, straining of parts, wear and vibration and that an ample factor of safety is included in every design.

E. Guarantee/Warrantee, shall be furnished by the Contractor upon forms approved by the Consultant/Engineer/Consultant and shall be signed by both the Contractor and the Sub-Contractors whose work is involved.

F. If the equipment/plant manufacturer's standard guarantee/warrantee is applicable, the guarantee/warrantee form and conditions must be submitted along with the equipment/plant 'technical submittals'.

G. The Contractor's liability shall be limited to the replacement of defective parts that may develop in the equipment or material of his own work or manufacture or his Sub-Contractors under proper use and arising solely from faulty design, material, or workmanship provided always that such defective parts are not repairable at the Site, and are not essential in the meantime for commercial use of the equipment, are promptly returned to the Contractor's or Sub-Contractor's factory unless otherwise arranged. The equipment so replaced or repaired shall be in conformity with the specifications.

H. For indigenous equipment, all replacements shall be made free of cost at the Site by the Contractor.

I. For imported equipment, all replacement shall be made free of cost ex-Karachi port, and the Employer shall arrange to have then cleared, pay all duties and hand-over the replaced parts to the Contractor.

J. The return of defective parts to the Contractor's or Sub-Contractor's factory shall be the Contractor's responsibility and shall be made at his expense. The Employer will, however, render such assistance as necessary to expedite the same. In the case of defective parts not repairable at the site but essential in the meantime for the commercial use of the equipment, the Contractor shall, whenever possible, replace free of cost at the site the said defective parts before the defective parts are removed from the site.

K. If it becomes necessary for the Contractor to replace or renew any defective portions of the Plant under this clause, the provisions of this clause will apply to the portions of the plant so replaced or renewed until the expiration of six months from the date of such replacement or until the end of the guarantee period, whichever shall be later. If any defects are not remedied within a reasonable time, the Employer, after due notice to the Contractor, may proceed with the work at the Contractor's risk and expense without prejudice to any other rights which the Employer may have against the Contractor in respect to such defects.

L. If the replacements or renewals are of such a character as may effect the efficiency of the plant, the Engineer/ Consultant/Consultant shall have the right to give to the Contractor within one month of such replacement or renewal, notice in writing that performance tests be made, in which case tests shall be carried out as provided in these Documents. Should such tests show that the guarantees of the Contract are sustained; the cost of the tests shall be borne by the Employer. Should the guarantees not be sustained, the cost of the test shall be borne by the Contractor.

Stamp & Signature

M. If during the guarantee period the services of the Contractor's personnel are required for the rectification or replacement of any defective part or work due to defective material, design or workmanship, such services shall be made by the Contractor without charge to the Employer.

PART-2: EXECUTION

2.1 Execution of Works:

A. Program of Works

1. The Contractor shall submit to the Engineer/ Consultant a detailed Program of Works within 2 weeks from the acceptance of his tender showing the intended method, stages and order of work execution in coordination with the building construction Program, together with the duration he estimated for each and every stage of the Works. The Program shall include at least the following:
   a. Dates for submission of shop drawings and technical submittals;
   b. Dates for the placement of orders for equipment and materials;
   c. Expected completion dates for builder's works, i.e. when work site needs to be ready;
   d. Delivery dates of equipment and materials to Site;
   e. Dates of commencement and completion of every stage of the Works in line with the building construction Program, i.e. each floor level and/or zone area;
   f. Dates of documents/drawings submissions to relevant Government departments to obtain the necessary approvals;
   g. Dates of requirement of temporary facilities necessary for testing & commissioning, e.g. electricity supply, water and town gas;
   h. Dates of completion, testing and commissioning; and
   i. Short term Programs showing the detailed work schedules of coming weeks and months shall also be provided to the Engineer/ Consultant. Programs shall be regularly updated to reflect the actual progress and to meet the Contractor's obligations under the Contract.
2. In addition, detailed submission schedules for installation drawings, equipment and testing and commissioning shall be submitted to the Engineer/ Consultant for approval. The formats and information to be included in the schedules shall be as required by the Engineer/ Consultant.

B. Builder's Work

1. The builder's work in connection with mechanical equipment rooms construction will be carried out as part of the building works by the Building Contractor at the expense of the Employer. The Contractor shall submit full details of such requirements with all details for openings required to be kept for movement of equipment, and for electrical and mechanical services, within a reasonable time to the Engineer/ Consultant/ Consultant for approval, so that due consideration may be given before the Building Contractor commences the building works in accordance with the building Program in the areas concerned. The Contractor is required to mark out at the relevant locations of the Site

Stamp & Signature

the exact positions and sizes of all such works and to provide detailed information of such works to the Building Contractor to facilitate him to carry out the builder's work as the works proceed.

2. The Contractor is also required to set all sleeves in masonry and concrete works, of the correct size and at the correct location, before the works are carried.
3. All 'cutting-away' and 'making-good' shall be carried out by the Contractor or charged to the Contractor.
4. All expenses properly incurred and losses suffered by the Employer as a result of the Contractor's failure to comply with the above requirements are recoverable by the Employer from the Contractor's bills.

C. Cooperation with other Contractors

1. The Contractor shall cooperate at all times with the Building Contractor and all other contractors and sub-contractors in order to achieve efficient workflow on Site.
2. Any significant problems beyond the Contractor's control shall promptly be reported to the Engineer/ Consultant.

D. Site Supervision

A. The Contractor shall keep on the Site a Site Engineer/ Consultant along with a team of competent and technically qualified site supervisors to control, supervise and manage all the Works on Site. The Site Engineer/ Consultant shall be vested with suitable powers to receive instructions from the Engineer/ Consultant/ Consultant.

B. The team shall be of adequate strength and all personnel deployed on site by the Contractor shall be technically competent and have adequate site experience for the Works. The Contractor shall submit the CV of all such personnel and obtain approval from the Engineer/ Consultant/ Consultant prior to their deployment on site. The Contractor shall immediately replace any site supervisor whose experience, skill or competency is, in the opinion of the Engineer/ Consultant/ Consultant, found to be inadequate for the particular work.

C. All such approvals provided by the Engineer/ Consultant/ Consultant shall not relieve the Contractor from any and all obligations of the Contract. The Contractor shall also refer to the Conditions of Contract for other specific requirements, if any, on site supervision.

2.2 Verification of Actual Dimensions on Site:

A. The Contractor shall be solely responsible for verification of actual site dimensions and building layout. Building layouts shown on Consultant's drawings shall not be considered to be final with regard to dimensions and layout but shall be subject to actual verification by the Contractor. All working drawings prepared by the Contractor shall incorporate actual measurements taken on site. The Contractor shall ensure that all equipment can be conveniently fitted into the space allocated for this purpose.

B. If any space allocated for certain equipment or combination of equipments is insufficient or deficient in terms of clearances required for maintenance etc., the Contractor shall forthwith inform the Consultant/Engineer/ Consultant of the discrepancy. He shall provide all reasonable assistance to the Consultant/Engineer/ Consultant for verification of the same

Stamp & Signature

and for taking remedial measures. It is understood that all tenderers during tendering shall have checked that the equipment proposed to be supplied by them fits conveniently into the space allocated for this purpose. In case any such space is insufficient, the tenderer shall so indicate the deficiency in his tender documents and specify the space requirements. Failure on the part of the tenderer to point out any discrepancies existing in this regard shall make him liable, if his tender has been accepted, to bear the full consequences developing out of any equipment not fitting into the space allocated for the purpose.

C. If any time during the progress of the Works any error shall appear or arise in the position, levels, dimensions or alignment of any part of the works, the Contractor on being required to do so by the Consultant/Engineer/ Consultant shall at his own expense rectify such error to the satisfaction of the Consultant/Engineer/ Consultant unless such error is based on incorrect data supplied in writing by the Consultant/Engineer/ Consultant, in which case the expense of rectifying the same shall be borne by the Employer. The checking of any setting out or of any line or level by the Consultant/Engineer/ Consultant shall not in any way relieve the Contractor of his responsibility for correctness thereof and the Contractor shall carefully protect and preserve all bench marks, site rails, pegs and other things used in setting out the Works.

2.3 Approval for Material & Equipment:

A. General: All equipment and material to be used in the Works shall be subject to approval obtained prior to delivery of the same on site. It is to be specifically noted that any approval given by the Engineer/ Consultant/Consultant/ Engineer/ Consultant shall not relieve this Contractor of his obligations under this Contract.

B. Approval of Imported Equipment: For approval of all equipment, the Contractor shall be required to submit, within two weeks of the signing of the Contract, detailed submittals stating the equipment proposed to be supplied and providing supporting literature/brochures etc., to enable the "CONSULTANT" to check conformance to the specifications. Performance curves and charts shall be submitted with the operating points clearly marked. The selection procedure for Chillers, AHU's FCU's, etc., shall be submitted in detail on type-written sheets. All equipment submittals shall be accompanied with a certificate stating that the equipment proposed to be supplied fits into the space allocated for it with sufficient clearance around it to allow for installation of related ducting, piping, etc., and provides for maintenance clearances as required by the manufacturer of the equipment, and that all special requirements of the equipment have been accounted for. Any additional information, test reports etc., required by the "Consultant" shall be furnished by the Contractor. All work related to the equipment shall only be commenced after receipt of written approval from the "Consultant".

C. Approval of Locally Manufactured Equipment: The procedure of approval of locally manufactured equipment shall be the same as stipulated above for imported equipment. Additionally all locally manufactured equipment shall be inspected at the manufacturer's premises by the Consultant/Engineer/ Consultant, and approval given prior to delivery on site.

D. Approval of Imported Material: All imported material to be used in the works shall be submitted to the Consultant/Engineer/ Consultant and approval obtained. Manufacturer's literature/brochure etc. that provide complete information on the material specifications, to enable the Consultant/ Engineer/ Consultant to check conformance to specification, shall be

Stamp & Signature

submitted. Any additional information, test reports etc., required by the Consultant/ Engineer/ Consultant shall be supplied by the Contractor.

E. Approval of Locally Procured Material: All locally procured material shall be submitted to the Consultant/Engineer/ Consultant for approval, and approval obtained prior to delivery of the same on site. The procedure for obtaining approval shall generally be the same as given above for imported material, except that where manufacturer's literature is not available, a sample of the material shall be submitted along with type written notes indicating relevant source data and specs on the material. Any other samples, information, test reports etc., required by the Consultant/Engineer/ Consultant's shall be submitted.

2.4 Cutting & Patching:

A. Cutting will be done under Specifications of other trades. Perform cutting, fitting and patching of mechanical equipment and materials required to:

1. Set openings and sleeves for ducts & pipes accurately before the structural concrete are poured or set boxes on the forms so as to leave openings in the structure in which the required sleeves can be subsequently located in which case Contractor shall fill in the concrete voids around the sleeves.
2. Uncover work to provide for installation of ill-timed work.
3. Remove and replace defective work.
4. Remove and replace work not conforming to requirements of the Contract Documents.
5. Remove samples of installed work as specified for testing.
6. Install equipment and materials in existing structures.
7. Upon written instructions from the Consultant uncover and restore work to provide for observation of concealed work.

B. All patching will be done under Specifications of other trades. Should the Contractor neglect to perform his preliminary work and should cuttings be required in order to install the piping or equipment, then the expense of the cutting and restoring of surface to their original condition shall be borne by the Contractor.

C. Cut, remove and legally dispose of selected mechanical equipment, components and materials as directed by the Consultant, including but not limited to removal of mechanical piping, heating units and trim and other mechanical items made obsolete by new work.

D. Protect structure, furnishings, finishes and adjacent materials not indicated or scheduled to be removed.

E. Provide and maintain temporary partitions or dust barriers adequate to prevent the spread of dust and dirt to adjacent areas.

F. Patch and refinished existing finished surfaces and building components using new materials matching existing materials and experienced installers.

2.5 Measuring Instruments:

A. The Contractor shall acquire and maintain on site various required measuring instruments in perfect working condition to enable the representative of the Employer

Stamp & Signature

Consultant/Engineer/ Consultant to check the quality and standard of all material and performance of equipments.

2.6 Operating & Maintenance Instructions:

A. Framed Instructions: Approved piping, wiring and control diagrams showing the complete layout of the entire system, including equipment, piping, valves and control sequence, framed under glass or in approved laminated plastic, shall be posted; where directed. In addition, condensed operating instructions, explaining preventive maintenance procedures, methods of checking the system for normal safe operation, and procedures of safely starting and stopping the system shall be prepared in typed form, framed as specified above and posted beside the diagrams. Proposed diagrams, instructions and other sheets shall be submitted for approval prior to the posting. The framed instructions shall be posted before acceptance testing of the system.

B. Field Instructions: During the two months of the operation and maintenance period upon completion of the work the services of one or more project engineers shall be provided by the Contractor to instruct the representative of the Employer in the operation and maintenance of the Works. The field instructions shall cover all the items contained in the bound instructions.

2.7 Operation & Maintenance (O&M) Manual & User Manual:

A. General

A. The Contractor shall provide two types of manuals to the Engineer/ Consultant with all changes made to the installation during the course of the Contract suitably incorporated.

B. The "O&M Manual" is for use by the maintenance contractor of the completed installation. It shall contain detailed technical information covering both operation and maintenance aspects of the installation.

C. The "User Manual" seeks to give users of the completed installation an overview of the essential information of the installation. The contents of the manual should be concise and succinct for ease of comprehension by people with a non-technical background.

2.8 Presentation:

A. All manuals shall be written in English, unless otherwise specified. The text of descriptive parts shall be kept concise while at the same time ensure completeness. Diagrammatic materials shall also be supported by comprehensive descriptions.

B. The manuals shall comprise A4 size loose-leaf, where necessary, A3 size folded loose-leaf. The loose-leaves shall be of good quality paper that is sufficiently opaque to avoid "show-through". Unless otherwise specified in the Contract, the manuals shall be bound in durable loose-leaf four ring binders with hard covers.

C. The manuals shall have labels or lettering on the front cover and spine. The Engineer/ Consultant's approval shall be obtained on this at the draft manual stage. The electronic copy of manuals including the technical literatures shall be in PDF format.

2.9 Checking and Approval:

A. The Contractor shall submit 3 sets of the first draft of O&M Manuals together with a list of recommended spare parts for one year's operation and a list of special tools both complete with prices to the Engineer/ Consultant for comment within 28 days of the issuance of the Completion Certificate.

Stamp & Signature

B. The Contractor shall submit 2 sets of the first draft of the User Manual to the Engineer/ Consultant for comment at least 56 calendar days before the date of completion. The Engineer/ Consultant will check the drafts and return them to the Contractor within 42 days from the date of submission with comments necessary for a final and approved set of document. The Contractor shall then make all necessary amendments to the documents and resubmit them to the Engineer/ Consultant within 21 days from the date of receipt of comments.

C. The Contractor shall submit 3 sets of hard copies (one of which shall be the original) and one set of electronic copy of the final approved O&M Manuals in CD-ROM within 21 days from the date of approval by the Engineer/ Consultant. The Contractor shall submit 6 sets of hard copies and 3 electronic copy of the final approved User Manuals in CD-ROM within 21 days from the date of approval by the Engineer/ Consultant.

2.10 Structure and Content of O&M Manual:

A. The detailed requirements, structure and contents of the O&M Manual shall include the following information under separate sections where appropriate:

1. Project Information
    a. This shall include: Project title, site address, contract no., contract title, contractor/sub-contractor name, address, contact persons and their telephone/fax nos., contract commencement date, substantial completion date and end date of operation & maintenance period.
2. System Description
    a. Type(s) of system(s) and equipment installed;
    b. Design criteria, design data and parameters;
    c. Locations of the system and major equipment, and what they serve;
    d. Description of operation and functions of the system and equipment;
    e. General operating conditions, expected performance and energy and resources consumption where applicable.
3. List of Installed Equipment
    a. Schedule of all items of equipment and plant stating the location, name, model no., manufacturer's serial or reference no., manufacturer’s design duties and data.
4. Spare Parts and Special Tools Lists
    a. List of Spare Parts supplied by the Contractors: Item descriptions, supplied quantities, model nos. manufacturer’s serial or reference nos. and storage locations.
    b. Recommended Spare Parts List and Special Tools List: Manufacturers’/suppliers’ recommendations for spare parts and special tools with item description, unit rate, recommended stock quantities as well as the agents for the spare parts and special tools.
5. Manufacturers’ Certificates/Guarantees
    a. Manufacturers’ certificates such as factory test certificates, laboratory test reports

Stamp & Signature

and guarantees and any others where required for the equipment and plants, etc.

b. Originals of Statutory Inspection Certificate for various installations, including:

[Note: Testing records & commissioning data (other than the types prescribed above), which are required under the Contract are checked and endorsed separately by the Engineer/ Consultant and do not form part of the O&M manuals.

6. Safety Precautions for Operation and Maintenance

State, where applicable, hazard warnings and safety precautions of which the operation and maintenance staff need to be aware:

a. mandatory requirements relating to safety;

b. known hazards against which protection measures shall be taken; and

c. known features or operational characteristics of the installed equipment or systems which may cause hazard and the related safety precautions.

7. Operation Instructions

Instructions for the safe and efficient operation, under both normal and emergency conditions, of the installed system which shall comprise:

a. an outline of the operating mode;

b. control logic and data (sequence, effect, limits of capability, modes and set points);

c. procedures and sequences for start-up and shut-down;

d. interlocks between equipment/system;

e. calling on of stand-by equipment;

f. precautions necessary to overcome known hazards;

g. means by which any potentially hazardous equipment can be made safe;

h. estimation of energy consumption and energy costs;

i. forms for recording plant running hours, energy consumption and energy costs; and

j. operating data such as running current, operating pressure, operating flow rates, etc.

8. Maintenance

(i) Maintenance instructions

Manufacturers' and the Contractor's recommendations and instructions for the maintenance of the installed equipment. Clear distinction should be made between planned tasks (preventive maintenance) and fault-repair tasks (corrective maintenance). Instructions shall be given on each of the following, as appropriate:

(a) nature of deterioration, and the defects to be looked for;

(b) isolation and return to service of plant and equipment;

(c) dismantling and reassembly;

(d) replacement of components and assemblies;

Stamp & Signature

(e) dealing with hazards which may arise during maintenance;

(f) adjustments, calibration and testing; and

(g) special tools, test equipment and ancillary services.

(ii) Maintenance schedules

Proposed maintenance schedules for all the preventive maintenance tasks identified above. The schedules shall be based on both manufacturers' recommendations and other authoritative sources (e.g. statutory or mandatory requirements) and should include:

(a) routine servicing;

(b) inspections;

(c) tests and examinations;

(d) adjustments;

(e) calibration; and

(f) overhaul.

The frequency of each task may be expressed as specific time intervals, running hours or number of completed operations as appropriate. Collectively, the schedules will form a complete maintenance cycle, repeated throughout the whole working life of the installation.

(a) Drawing Lists

(b) A complete list of as-built drawings identified with drawing number/reference;

(c) A complete list of manufacturers' shop drawings with drawing number/reference, where applicable; and

(d) A brief description of CD-ROM for these drawings.

(e) Technical Literatures

A complete set of manufacturers' literatures for all the plant and equipment installed in the system. The contents of these literatures shall cover the following areas where applicable:

(a) description of equipment with model numbers highlighted;

(b) performance -behavioral characteristics of the equipment;

(c) applications -suitability for use;

(d) factory/laboratory test reports, detailed drawings, circuit diagrams;

(e) methods of operation and control;

(f) operation instructions;

(g) cleaning and maintenance requirements;

(h) plants, materials and space required for maintenance;

(i) protective measures and safety precautions for operation and maintenance;

Stamp & Signature

and part lists.

(j) Contact addresses and telephone numbers of suppliers of major equipment

2.11 Structure and Content of User Manual:

A. The detailed requirements, structure and contents of the User Manual shall include, where applicable, the following information:

1. Project Information

This shall include: Project title, site address, contract no., contract title, contract commencement date, substantial completion date and end date of Maintenance Period.

2. System Description

(i) Type(s) of system(s) and equipment installed, and their purposes;

(ii) Locations of major plant spaces and riser ducts;

(iii)Brief description of the operation and functions of the systems and equipment; and

(iv)Listing of set points which can be adjusted by the user to suit their operation needs.

3. Schedule of Major Plant Spaces and Installed Equipment

(i) Schedule of major plant spaces and riser ducts including their locations; and

(ii) Schedule of major equipment and plants including their locations and serving areas.

4. Safety Precautions for Operation

Any safety precautions and warnings signals that the users shall be aware of in the daily operation of the various systems and equipment in the installation including:

(i) mandatory requirements relating to safety;

(ii) features or operational characteristics of the installed systems or equipment which may cause hazard and the related safety precautions;

(iii) protective measures and safety precautions for operation; and

(iv) list of warning signals and the related meanings that the user shall be aware of and the actions to be taken.

5. Operation Instructions

Instructions for the safe and efficient operation, under both normal and emergency conditions, of the installed system which shall comprise:

(i) an outline of the operating mode;

(ii) step by step operation instructions for systems and equipment that are to be operated by the user, including at least procedures for start-up and shut-down;

(iii) means by which any potentially hazardous situation can be made safe;

Stamp & Signature

(iv) cleaning and basic maintenance procedures.

6. List of Statutory Periodic Inspections and Tests

   A schedule of periodic inspections and tests that Employer and/or user of the installation have to arrange to achieve compliance with the requirements stipulated in the relevant Laws (if any). The frequency of such inspections and tests shall be expressed in specific time intervals.

7. Drawings

   A set of selected as-built drawings which shall be able to illustrate to the user the general layout of the completed installation.

8. Photographs

   A set of photographs with suitable captions to illustrate to the user the appearance and locations of devices which require their setting and operation.

2.12 Mechanical Installations:

A. Sequence, coordinate, and integrate the various elements of mechanical systems, materials and equipment. Comply with the following requirements:

1. Coordinate mechanical systems, equipment and materials installation with other building components
2. Verify all dimensions by field measurements.
3. Arrange for chases, slots and openings in other building components during progress of construction, to allow for mechanical installations.
4. Coordinate the installation of required supporting devices and sleeves to be set in poured-in-place concrete and other structural components, as they are constructed.
5. Sequence, coordinate and integrate installations of mechanical, materials and equipment for efficient flow of the Work. Give particular attention to large equipment requiring positioning prior to closing the building.
6. Where mounting heights are not detailed or dimensioned, install systems, materials and equipment to provide the maximum headroom possible.
7. Coordinate connection of mechanical systems with exterior underground and overhead utilities and services. Provide required connection for each service.
8. Install systems, materials and equipment to conform with approved submittal data, including coordination drawings, to greatest extent possible. Conform to arrangements indicated by the Contract Documents, recognizing that portions of the work are shown only in

Stamp & Signature

diagrammatic form. Where coordination requirements conflict with individual system requirements, refer conflict to the Consultant/Engineer/Consultant.

9. Install systems, materials and equipment level and plumb, parallel and perpendicular to other building systems and components, where installed exposed in finished spaces.

10. Install mechanical equipment to facilitate servicing, maintenance, and repair or replacement of equipment components. As much as practical, connect equipment for ease of disconnecting, with minimum of interference with other installations. Extend grease fittings to an accessible location.

11. Install access panel or doors where units are concealed behind finished surfaces.

12. Install systems, materials and equipment giving right of-way priority to systems required to be installed at a specified slope.

13. Provide fire stopping materials in all annular spaces surrounding piping, conduits, ducts, etc. that penetrate fire-resistive construction.

2.13 Safety Program

A. The Contractor shall strictly follow at his own cost the Safety Program outlined below and such additional measures as the Engineer/ Consultant or Engineer/ Consultant's Representative may determine to be reasonably necessary.

1. Prior to commencement of work the successful Contractor shall submit safety Program for discussion with the Employer and the Engineer/ Consultant.
2. The Contractor shall prepare a plan of the Works' Site to assure that storage areas for materials and equipment are located on the project/work site for maximum efficiency. This plan will be subject to the approval of the Engineer/ Consultant.
3. Activities between different operations and different crafts will be co-ordinated.
4. The Contractor shall layout and provide an efficient access system with information and directional signs posted as necessary.
5. All employees will be instructed on safe work method.
6. The Contractor shall advise all his supervisory staff of their responsibility for the prevention of injury to persons or damage to property or equipment in their respective areas of supervision.
7. Safety will be included in all job planning. This will include providing safe construction equipment and vehicles, protective equipment necessary for protection of workmen, and establishing methods for safe operation.
8. Good housekeeping will be maintained at all times.
9. Scaffolds, ladders, ramp", runways etc. will be constructed properly and maintained in safe conditions.
10. Ample fire protection will be provided and fire hazards guarded, by the Contractor.
11. Adequate lighting, ventilation etc. will be provided as necessary, by the Contractor.

Stamp & Signature

12. Equipment will be properly and regularly inspected and maintained by the Contractor to the satisfaction of the Engineer/ Consultant.

13. The Contractor will assign to his employees only such duties as are within their physical and mental capabilities.

14. The Contractor will hold monthly meetings with his supervisory staff and the man incharge at the lower level will hold safety meetings of 10 to 15 minutes with his crew each week.

15. First Aid facilities will be provided at job sites, the services of doctors and hospitals made available, and all supervisors instructed in handling of injured employees.

16. Adequate toilet facilities will be provided, maintained in a hygienic condition and their use enforced by the Contractor.

B. Accident reports will be furnished to the Engineer/ Consultant for onward transmission to the Employer within 2 days of the reported accident.

C. Copies of the safety Program will be supplied by the Contractor to the Engineer/ Consultant and will be promptly posted in all offices in use of projects/works under this Contract.

D. At all construction sites the following instructions shall be followed:

1. availability of safety (hard) hats, which should be worn by anyone visiting or working within the designated work area

2. controlled entry to the designated work area

3. proper distribution of temporary electric power (use of RCDs/ELCBs, switch gear, cabling, socket outlets)

4. proper guarding of shafts, stairs and floor edges up, to a height of 42".

5. proper access stairs and ladders with handrails

6. properly demarcated passageways, which are kept clear of materials, equipment, and rubbish

7. daily cleaning of debris and rubbish from the site

8. adequate temporary lighting

9. proper housekeeping to reduce slipping and tripping hazards.

10. proper protection to pedestrians and adjoining buildings

11. contractor's all-risk Insurance policy to be inplace.

E. To ensure safety of all people on the Site during the construction process, including Contractors' personnel and Employer's representatives, the following procedures shall be adopted by all Contractors for the use of temporary electricity supply.

1. Work shall generally be carried out in accordance with 16th Edition of UK IEE Wiring Regulations, BS CP 1017 "Distribution of Electricity on Building Sites", and the Pakistan

Stamp & Signature

"Electricity Rules, 1937" all legal formalities of the Electric Inspector's office shall be complied with.

2. Construction of cables used shall be as follows:
   a) to fixed distribution boards and fixed equipment, PVC/PVC/SWA/PVC, to BS 6346.
   b) to moveable plant, flexible armoured cables, to BS 6116.
   c) to welding electrode-holders, flexible cables to BS 638.
   d) to portable tools and hand-lamps, flexible cords to BS 6500
3. Installation of cables shall be as follows:
   a) outdoors, directly buried at least 500mm below grade, with tile covers and cable markers (at minimum 10 meter intervals and at bends), and in RCC pipe at road/traffic crossings.
   b) indoors, clipped to the surface at least 3000mm above floor/ground level.
   c) strain relief shall be provided at termination of all cables at equipment, plugs, etc.
4. Double earthing, with stranded copper conductors, shall be used to establish a TNS system. No separate earthing electrodes are required at each location.
5. A main distribution board, to BS 4363, of totally enclosed sheet-steel construction (IP 54) shall be provided, with 30mA trip residual current device(s) for the earth-leakage protection of circuits. Short-circuit and overload protection shall be provided by circuit-breakers of the appropriate rupturing capacity.
6. Plugs, sockets, and accessories of a robust, unbreakable construction, to BS 4343, shall be used for all equipment. Portable tools, to BS 2769, shall preferably be of double-insulated construction and be operated at 110V.
7. A layout drawing of the proposed temporary installation with schematics, cable sizes and routes, earth conductors, and protection details shall be had approved from the Employer. After installation, test results (insulation resistance, earth-loop impedance, etc.) shall be submitted; re-testing shall be done every three months.

2.14 Tests on Completion:

A. The Contractor shall give to the Engineer/ Consultant/Consultant/Engineer/ Consultant in writing 15 days notice of the date after which he will be ready to make the "Tests on Completion". Unless otherwise agreed the tests shall take place within 10 days after the said date on such day or days as the Consultant/Engineer/ Consultant shall in writing notify the Contractor.

B. If the Consultant/Engineer/ Consultant fails to appoint a time after having been asked to do or to attend at any time or place duly appointed for making the said tests, the Contractor shall be entitled to proceed in his absence and the said tests shall be deemed to have been made in the presence of the Consultant/Engineer/ Consultant.

C. If in the opinion of the Consultant/Engineer/ Consultant the tests are being unduly delayed he may, by notice in writing, call upon the Contractor to make such tests within 10 days from the receipt of the said notice, and the Contractor shall make the said tests on such day within the said 10 days as the Contractor may fix and of which he shall give notice to the Consultant/Engineer/

Stamp & Signature

Consultant. If the Contractor fails to make such tests within the time aforesaid, the Consultant/Engineer/ Consultant may himself proceed to make the tests. All tests so made by the Consultant/Engineer/ Consultant shall be at the risk and expense of the Contractor.

D. The Employer, except where otherwise specified, shall provide free of charge subject to the provisions of Sub-clause (e) of this clause; electricity, fuel and water, as may be reasonably demanded to carry out such tests efficiently.

E. If any portion of the works fail to pass the tests, tests of the said portion shall, if required by the Consultant/Engineer/ Consultant or by the Contractor, be repeated within a reasonable time upon the same terms and conditions, as aforesaid, save that all expenses to which the Employer may be put by the repetition of the tests shall be deducted from the Contract Price.

2.15 Inspection of Completed Works:

A. The Contractor is required to give the Employer/Engineer/ Consultant/Consultant due notification when he expects the work to be completed, a report in triplicate of the measurements carried out with regard to pressure testing of pipes and leak testing of duct work and other specified tests shall be attached to this application. The final inspection should then be carried out, without unnecessary delay, and if possible within four weeks.

B. At the request of either party, inspection of such Sections of the work as will not be accessible after completion, or will be difficult to alter, which are to be taken into use by the Employer before the time of the final inspection, may be carried out in advance. (Advance Inspection).

C. An inspection is to be carried out immediately before the expiry of the guarantee period. (Guarantee Inspection).

D. Inspection of corrected faults or omissions noted in connection with advance, final, or guarantee inspection is also to be done (Supplementary Inspection).

E. Inspections are to be carried out by the Consultant/Engineer/ Consultant or any other suitable and competent person appointed by the Employer.

F. The costs of Advance Inspection, Final Inspection & Guarantee Inspection are to be met by the Employer, where the inspection has been carried out by a person appointed by him.

G. The costs of supplementary inspections and re-inspections are to be borne by the Contractor.

H. It is the responsibility of the Contractor to provide & pay for, any help or assistance necessary in connection with the inspection work.

I. The inspector's decision as to what faults or omissions may have occurred is binding on both sides.

J. The Contractor is required to carry out, without delay, any improvements, alterations or additions which may be considered necessary as the result of an inspection report.

K. When the final inspection has taken place, the work is to be handed over to the Employer in so far has been found to be in the state required by the Contract, and can suitably be put into use for this purpose for which it was intended.

L. The Employer has the right to put into use any Section of the work contracted for and not approved at the time of inspection, provided this can be done without jeopardising the progress

Stamp & Signature

of the work, and he may use it without special compensation even before the faults or omissions have been made good.

M. Where special dates are specified under the Contract for the completion of different Sections of the work, the provisions of this Clause are to apply to each part separately.

N. The inspection report required under this Clause is to be delivered in writing, and signed by the inspector, giving the date on which it is to be made available for the parties' inspection. The report should cover the following points:

1. State whether the work has been approved or not.
2. State the reasons for failing to approve it, if it has not been approved.
3. State faults or omissions for which the Contractor is to be held responsible, together with the time within which they are to be made good.
4. Include notes on matters which do-not require immediate action, but ought to be finally settled in connection with the guarantee inspection.
5. The sum to which the Employer is entitled.
6. Date on which the insurance taken out by the Contractor lapses.
7. If the work has been approved at the final inspection, the date from which the guarantee/maintenance period is to run and the day after which it expires.
8. Distribution of costs connected with the inspection.

2.16 Acceptance & Interim Operation

A. After the performance tests, if the equipment supplied by the Contractor is found to meet the guarantee and any other specified requirement, and if all other work called for hereunder has been completed, the Employer's acceptance will be forth-coming and final payment will become due as provided for under the terms of payment. This acceptance shall, however, not relieve the Contractor of his responsibility for the first inspection.

B. Should the equipment furnished by the Contractor fail to operate as required, or in case of failure to meet any of its guarantees, the Employer shall have the right to operate the equipment, using the Contractor's supervisory operating personnel, until such defects have been remedied and guarantees met with. In the event that defects necessitate the rejection of the equipment or any part thereof, the Employer shall have the right to operate the equipment until such time as new equipment is provided to replace the rejected equipment. Such operation shall not be deemed as an acceptance of any equipment.

2.17 Inspection & Testing During Manufacture

A. The Consultant/Engineer/ Consultant shall be entitled at all responsible times during manufacture to inspect, examine and test on the Contractor's premises the materials and workmanship of all plant to be supplied under the Contract, and if part of the said plant is being manufactured on another premises the Contractor shall obtain the Consultant/Engineer/ Consultant's permission to inspect, examine & test as if the said plant were being manufactured on the Contractor's premises. Such inspections, examination or testing if made shall not release the Contractor from any obligation under the Contract.

Stamp & Signature

B. The Contractor shall give to the Consultant/Engineer/ Consultant reasonable notice in writing of the date and place at which the plant will be ready for testing as provided in the Contract, and unless the Engineer/ Consultant shall attend at the place so named within ten days of the date which the Contractor has stated in his notice, the Contractor may proceed with the test and also get the inspection and test carried out by an international testing agency of repute in the country of manufacture of the plant and thereafter forward to the Engineer/ Consultant duly certified copies of the test report carried out by him and the international inspecting agency, who on basis thereof give his opinion/decision. Provided that the Engineer/ Consultant shall give the Contractor twenty four hours notice in writing of his intention to attend the test.

C. Where the Contract provides for tests on the premises of any Sub-Contractor, the Contractor shall provide such assistance, labour, materials, electricity, fuel, stores, apparatus and instruments as may be requisite and as may be reasonably demanded to carry out such tests efficiently.

D. As and when any Plant shall have passed the tests referred to in this Clause the Consultant/Engineer/ Consultant shall furnish to the Contractor a certificate in writing to that effect.

END OF SECTION W10

W11-EQUIPMENT INSTALLATION

PART-1: GENERAL

1.6 Section Scope:

A. The Contractor shall install equipment as & where shown on the drawings and guidelines defined in this section.

1.7 Reference Specifications:

A. The following specifications shall be construed to be part of this Section.

1. 21 05 23-Valves for Fire Protection Service
2. 21 12 16-Hose Reel and Hose racks
3. 22 12 20-Fire Hydrants and Stand Pipes
4. 21 12 24-Fire Brigade Connections
5. 21 13 13-Wet Pipe Fire Sprinkler System
6. 21 31 16-Electric & Diesel Engine Drive- Centrifugal Fire Pump

PART-2: EXECUTION

2.1 Equipment Foundation Bases:

A. Unless otherwise indicated on drawings, equipment shall generally be installed on a 100mm to 150mm high concrete base.

B. Base shall be constructed of 1:2:4 (210 kg/cm^2, 28 day compressive strength) approved concrete with nominal reinforcement.

C. Base shall be finished with 5mm cement plaster, or approved tiles as shown on drawings. Edges shall be provided with 25 x 25 x 3mm galvanized angle iron frame work. Base dimension shall not be less than 100mm larger in both directions than supported equipment.

Stamp & Signature

D. Manufacturer's supported recommendation shall be followed, using anchor bolts at tie-in locations. Drawings shall be submitted to the Consultant for approval.

2.2 Installation Contractor's Responsibilities (Foundation):

A. The contractor shall be solely responsible for safe lifting of the equipments from place of storage on site to location of final installation and finally on the foundations.

B. Prior to lifting the equipments the following procedure shall be adopted:

1. Submit comprehensive insurance policy for the full value of the equipment to the Engineer/Employer from approved insurance company.
2. Submit complete information of specialist firm of lifters/riggers to the Engineer & obtain approval.
3. Submit complete procedure & equipment to be used for lifting the equipment in place. Identify on plans location of tripods, hoist, etc. that will transfer weight to the equipment, to the structure & obtain approval.
4. All the above to be completed with one month before the date of lifting of equipment.

2.3 Installation Contractor's Responsibilities (Equipment):

A. The Contractor shall ensure that the equipment is installed totally in accordance with the manufacturer's instructions (equipment installation manual must be obtained & read), and as directed by the Consultant. Correct allignment & levelling must be ensured.

B. Field assemble equipment (if required) in accordance with instructions in the manufacturer's installation bulletin.

C. Install the equipment on the foundation. Neoprene isolation pads or spring vibration isolators as specified for the equipment shall be placed under the equipment.

D. Insure that structure, piping or other equipment adjacent to this equipment do not restrict operation & maintenance requirements of the equipment.

E. Install all piping, cable, and other connections with all fittings, to the equipment. All material and labor required for a complete installation shall be supplied by the Contractor.

F. Connect equipment control panel to all operating external safety and auxiliary control devices.

G. Provide and install gauge cocks for pressure readings at the inlet and outlet of all fluid flows.

H. Install any control components provided by the manufacturer for installation external to the machine.

END OF SECTION W11

W12-PIPE WELDING

Stamp & Signature

PART-1: GENERAL

1.18 Section Scope:

A. This section describes the overall welding and related procedure that's needs to be adopted for joining/cutting of various pipe joints.

1.19 Reference Standards:

A. ASME Section IX

1.20 Reference Specifications:

A. The following specifications shall be construed to be part of this Section.

1. 21 20 10-Buried Fire Protection Piping
2. 21 20 20-Above Ground Fire Suppression Piping & Specialities

1.21 Quality Assurance:

A. Standard & Regulatory Requirements

1. Welder Qualification

a. Welding shall be carried out by qualified welders. Welder qualification shall be carried out in accordance with ASME Section IX Welding & Brazing Qualifications.

b. The Contractor shall provide all material, consumables and labour needed for welder qualification tests. The Contractor shall also arrange and pay for all the test required at a testing facility acceptable to the Owner.

PART-2: EXECUTION

2.1 Fabrication Requirements:

A. End Preparation

1. Butt welding ends shall be bevelled. Bevelling shall be done by grinding or machining and the finished bevel shall be free of nicks or grooves. Prior to welding, the bevelled surface and the adjacent surface within 6mm of the weld joint shall be cleaned of all foreign material, rust loose mill scale etc., before being placed in alignment for welding.

B. Weld Joint Alignment

1. The parts to be welded shall be aligned by suitable means such as external clamps, yokes etc. Yokes, if used, shall be tack welded using electrodes compatible with the parent metal. After joint fit-up yokes shall be ground flush.
2. Tack welding shall be done by qualified welders only and shall conform to the quality of root weld.

C. Nozzles and Piping

1. Pipes below Ø 25mm shall be cut by pipe cutter only: flame cutting is not allowed. Larger sizes may be flame cut provided edges are prepared by grinding or machining, after cutting.
2. Bolt holes shall straddle the axis of pipe for all flanged connections.
3. The center line of branch connections shall intersect the centre line of the header.

Stamp & Signature

2.2 Welding:

A. Production Welding Requirements

1. All production welding including repair welding shall be carried out according to qualified welding procedures and by qualified welders only. The Owner reserves the right, at any time, to make changes in the welding procedure to ensure production of acceptable welds.
2. Scale and slag shall be removed from each weld bead and groove before depositing the next weld bead. Cleaning shall be done by power grinders and wire brushes.
3. Fillet welding shall be done for reinforcing pads, sockets welding fittings and slip-on flanges. Fillet welds shall be continuous, unless otherwise specified in the drawings. Size of fillet welds shall be as indicated on the drawings. Where no size is given, it shall be equal to the thickness of the thinner of the two parts being welded.
4. Arc burns shall be removed by grinding. Grinding shall have a smooth contour. After grinding, the remaining wall thickness in the area shall not be less than 90% of the nominal wall thickness.

2.3 Inspection and Testing:

A. Hydrostatic Testing: The piping shall be tested with water and all welds carefully inspected for leaks. The pressure shall be raised slowly and steadily until test pressure is reached. The pressure shall be maintained while a thorough examination is made to ensure that all welding are sound and show no leaks or undue distortion.

B. Repairs & Welds: Defective welds found during pressure test shall be cut out for a distance of not less than 25mm on either side of the defect and shall be rewelded.

C. Repeat Pressure Test: Following the execution of any repairs found to be necessary, the piping shall again be tested in accordance with the above specs.

D. Record: Contractor shall keep a record of all tests performed and shall record the date of test, test conditions and results. These reports shall be signed by the Owner's representative and Contractor's representatives.

1. Contractor shall provide all material and labour required for testing.

END OF SECTION W12

W13-VALVES & STRAINERS

Butterfly Valves:

Butterfly valves shall be used applications requiring 50mm or larger diameter valves, and shall have a rating suitable for the service intended, but a minimum of 10 bars.

Butterfly valves shall be wafer type with modular cast iron body, suitable for mounting between ANSI 150 lb flanges. Two flanges plus required nuts and bolts shall be provided with the valves.

The centre disc shall be of stainless steel, with extended shaft for accommodating insulation depth.

Stamp & Signature

The liner shall be replaceable, of Nitrile or EPDM rubber. Each valve shall be provided with one replaceable liner as spare.

Actuator shall be worm gear type of aluminium or cast iron, weather proof to IP65, complete with hand wheel, position indicator, and with adjustable stops at both fully open and fully closed positions. The actuator shall be self-locking, lubricated for life and free of maintenance.

Gate Valves:

a) Ø 50mm (2 inch) & Smaller

125 psi (860 kPa) SWP, 250°F (120°C), threaded ends, bronze body, union bonnet, non-rising stem, wedge disc. Hand wheel nut, packing nut, gland, stuffing box, bonnet, bonnet ring, disc and body shall be of bronze. Hand wheel shall be of malleable iron. Packing shall be suitable for specified usage but shall not use asbestos. Stem shall be manganese bronze.

b) Ø 65mm (2 1/2 inch) & Larger

125 psi (860 kPa) SWP, 250°F (120°C), cast iron body bronze mounted with flanged ends. These shall be of solid wedge disc type, with outside screw and yoke (rising stem). Body and bonnet shall be of cast iron. Wedge shall be of cast iron with bronze disc. Seat rings shall be bronze. Packing shall be suitable for specified usage but shall not use asbestos. Packing gland shall be cast iron. Yoke shall be of cast iron and yoke nuts shall be of bronze. Hand wheel shall be of cast iron.

Globe Valves:

a) Ø 50mm (2 inch) & Smaller

125 psi (860 kPa) SWP, 250°F (120°C), bronze, threaded ends. Body, bonnet, disc holder, stem lock nut, packing nut and disc lock nut shall be of bronze. Hand wheel shall be of malleable iron with stem of manganese bronze. Renewable composition disc shall be provided suitable for water & steam. Packing shall be suitable for specified usage, but shall not use asbestos.

b) Ø 65mm (2 1/2 inch) & Larger

125 psi (860 kPa) SWP, 250°F (120°C), cast iron body, bronze mounted with bronze faced disc and yoke bonnet, and shall be flanged. Hand wheel, gland, bonnet and body shall be of cast iron. Stem shall be of manganese bronze. Packing shall be suitable for specified usage but shall not use asbestos. Stem lock nut, disc and seat ring shall be of bronze. Disc shall be renewable composition type.

Ball Valves:

a) Ø 50mm (2 inch) & Smaller

125 (860 kPa) SWP, Screwed; two-piece cast bronze body, chrome plated brass ball, teflon ball and flange seals, rods silicon brass stem, teflon and Viton “O” ring stem seals, zinc plated carbon steel handle with vinyl grip and brass handle nut.

Swing Check Valves:

a) Ø 50mm (2 inch) & Smaller

125 psi (860 kPa) SWP; 250°F (120°C), threaded ends. Cap, hinge pin, body, hinge, disc nut and disc shall be of bronze.

Stamp & Signature

b) Ø 65mm (2 1/2 inch) & Larger

125 psi (860 kPa) SWP; 250°F (120°C), cast iron body, including valve cap and disc. Hinge pin, seat ring and disc ring shall be of bronze. Ends shall be flanged.

Guided Check Valves:

a) Ø 80mm (3 inch) & Smaller

125 (860 kPa) SWP, Screwed, (pump discharge): bronze or cast steel wafer body, bronze or stainless steel trim, centre guided, silent type.

b) Ø 100mm (4 inch) & Larger

125 (860 kPa) SWP, Flanged, (pump discharge): bronze or cast steel globe body, bronze or stainless steel trim, centre guided, silent type, flanged.

Y-Strainers:

a) Ø 50mm (2 inch) & Smaller

125 psi (860 kPa) SWP; 250°F (120°C), "Y" type, with bronze body and threaded ends. Screen shall be of 20 mesh monel.

b) Ø 65mm (2 1/2 inch) & Larger

125 psi (860 kPa) SWP; 250°F (120°C), cast iron body with flanged ends. Screen cover shall be provided with blow off taping. Screen shall be of perforated stainless steel, (33 holes per sq.cm.), with 1.1mm diameter and 0.41mm thickness.

Bucket Strainers:

Shall be fabricated from Ø 300mm, Black Steel, Schedule 40 pipe. Flanges shall conform to ANSI B16.5. After fabrication the entire assembly shall be hot dipped galvanised. Bolts shall be galvanised. The strainer shall consist of a brass perforated screen bucket. Perforation shall be as approved.

Pressure Reducing Valves (PRV):

Pressure Reducing Valves (PRV's) shall be pilot operated.

PRV's shall be suitable for the service specified & shall be able to maintain downstream pressure at all flow rates & shall be sized for the maximum flow & pressure specified or required on the basis of manufacturers published data.

PRV's upto Ø 40mm shall be of bronze with screwed ends, while higher size PRV's shall be of cast-iron body with flanged ends. Nominal working pressure shall be 16 barg. PRV shall be able to sustain working temperature upto 70°C (158°F). Pilot shall be adjustable for 1.4 barg to 12 barg.

Float Valve:

Shall be best quality heavy duty type provided with Ø 150mm copper ball and heavy duty bronze float arm. Valve shall provide tight shut off at full closed position.

Foot Valve for Pump Suction Line:

Shall be installed where required or indicated on the drawing. Foot valve shall be of brass, and shall be provided with integral strainer. Foot valve shall be provided with a spring loaded vertical check disc with gasket for tight shut-off.

Stamp & Signature

Gaskets:

General: non-asbestos, compressed gasket material with high-strength aramid fibres bonded with high grade nitrite NBR synthetic rubber, suitable for 750°F (400°C) and 1450 psi (10000 kPa).

Thread Lubricant:

General: non-hardening, non-poisonous as approved.

Dielectric Couplings:

General: provide sweat-to-screw dielectric couplings at junction of copper pipe to steel pipe and insulation bushings for flanged connections to steel or cast iron valves and fittings.

Installation of Valves and Strainers:

All gate valves, globe valves, check valves, control valves, butterfly valves, drain cocks, etc. necessary for satisfactory operation of the system shall be provided whether indicated or not. All valves having steam over 2m height shall be provided with galvanised chain operators. Valves in horizontal lines shall be installed with stem horizontal or above. Isolation gate valves shall be installed on each side of each piece of equipment as pumps, coils and other similar items; at the midpoint of all looped mains; and at any other points indicated or as required for draining, isolation or sectionalising purposes. Each valve shall be identified with not less than 35mm round or square black over white laminated plastic tags secured to valve with a suitable brass chain. Tags shall be engraved to identify valve by number and valve function. Strainers shall be installed wherever necessary to protect equipment and control valve, where proper functioning would be affected by dirt on the seat or scoring of the seat. Strainers shall be arranged not to clog piping and allow easy disconnection for change. All strainers 50mm and above shall be provided with Ø 20mm ball valves for blow-off. Strainers shall allow removal of accumulated dirt and screen replacement without disconnecting main piping.

END OF SECTION W13

Stamp & Signature

Technical Parameters for Fire Pump for IBA Main Campus, Karachi							
		UNIT		UNIT		UNIT	
		(IPS)	(SI)	(IPS)	(SI)	(IPS)	(SI)
1	IDENTIICATION SYMBOL	-	-	FP - 01		FP - 02	
2	FLOW RATE	Gpm	l/min	500	1893	20	76
3	RATED DIFFERENTIAL HEAD (PRESSURE AT DISCHARGE FLANGE)	Psi	Bars	140	9.5	150	10.2
4	SHUT OFF HEAD	Psi	Bars	150	10.2	-	-
5	PUMP SPEED	Rpm	RPM	-	-	-	-
6	NPSH AVAILABLE	Psi	Bars	POSITIVE SUCTION		POSITIVE SUCTION	
7	BRAKE HORSEPOWER	Bhp	kW	74	55	3	2
8	MOTOR HORSEPOWER	Hp	kW	89	66	4	3
9	DRIVER	V/Ph/Hz	V/Ph/Hz	ELECTRIC MOTOR		ELECTRIC MOTOR	
10	POWER SUPPLY	-	-	400/3/50		400/3/50	
11	MOTOR STARTER	-	-	STAR DELTA CLOSED TRANSITION		DOL	
12	CONSTRUCTION						
13	PUMP TYPE	-	-	CENTRIFUGAL HORIZONTAL END SUCTION		VERTICAL INLINE	
14	AVAILABLE TANK DEPTH	-	-				
15	TANK DEPTH FOR FIRE WATER RESERVE (FROM BOTTOM)	-	-				
16	DESIGN PRESSURE	Psi	Bars	300	21	300	21
17	DESIGN TEMPERATURE	°F	°C	200	93.3	200	93.3
18	CASING MATERIAL	-	-	CAST IRON		CAST IRON	
19	IMPELLER MATERIAL	-	-	BRONZE		BRONZE	
20	SHAFT MATERIAL	-	-	SS		SS	
21	SEAL TYPE	-	-	PACKING GLAND		PACKING GLAND	
22	BASE PLATE MATERIAL	-	-	CAST IRON		CAST IRON	
23	COUPLING TYPE	-	-	FLEXIBLE COUPLING		FLEXIBLE COUPLING	
24	MOTOR TYPE/INSULATION CLASS VDE 0530	-	-	TEFC / Class F		TEFC / Class F	
25	VOLTAGE VARIATION	%	%	±10%		±10%	
26	APPLICABLE STANDARDS	-	-	NFPA-20		NFPA-20	
27	CERTIFICATION/LISTING	-	-	-		-	
	NOTES:						
1	1) Ø6 INCH VENTURI FLOW METER SHALL BE PROVIDED WITH THE FIRE PUMP						

Stamp & Signature

2	2) (-VE) 15 TO 100 PSI SUCTION & 0 TO 300 PSI DISCHARGE GAUGES.
3	3) CONTROLLERS SHALL BE SUPPLIED LOOSE FOR MOUNTING ON SITE.
4	4) ELECTRIC PUMP MOTOR SHALL BE TEFC TYPE AND JOCKEY PUMP MOTOR SHALL BE TEFC AND INSULATION SHALL BE CLASS F
5	5) FIRE PUMP CONTROLLERS ENCLOSURE SHALL HAVE MINIMUM NEMA 4 RATING
6	6) PUMP SHALL BE SELECTED ON MAXIMUM AMBIENT TEMPERATURE OF 50 °C
7	7) GAUGE SHALL BE COMPOUND & VACCUM GAUGE. (-VE 15 TO 100 PSI)
8	8) UL, FM, AUTOMATIC AIR RELEASE VALVE SHALL ALSO BE PROVIDED WITH FIRE PUMP
9	9) UL/FM, PILOT OPERATED RELIEF VALVE WITH WASTE CONE SHALL ALSO BE PROVIDED WITH FIRE PUMP

LIST OF APPROVED MANUFACTURERS (FIRE SUPPRESSION SYSTEM WORKS)

Equipment & Material shall be supplied only from the approved sources noted below. However in all cases the Contractor shall submit complete technical details of the equipment, material and obtain Consultants approval prior to delivery on site. Where option of "Approved Equivalent" is indicated, it shall be at the discretion of the Consultant to accept the alternate proposal submitted by the Contractor.

Equipment / Material	Approved Manufacturers	Country of Origin
Pressure Gauges	Viking	USA
	Tyco	USA
Gate Valves, Globe Valves, Strainers, Check Valves, Ball Valves, Butterfly Valves, OS & Y Valve, Shut Off Valve	Naffco	UAE
	Sffeco	UAE/Saudia Arabia
	Approved Equivalent	-
Supports & Anchors	Hilti	Germany/China
	Sikla	Germany
	Fischer	Germany
	Walraven	Germany
	Inka	Turkey
	Approved Equivalent	-
Concrete Fasteners	Rawl Plug Co.	UK
	Hilti	UK/Germany
	Fischer	Germany
	Sikla	Germany
	Walraven	Germany
	Inka	Turkey
Paint	Berger	Pakistan
	ICI	Pakistan
Fire Protection Piping and Fittings Black Steel, Schedule 40 Pipe	IIL	Pakistan
	Huffaz	Pakistan
	Protek	China

Stamp & Signature

Hydrant Valve	Naffco	UAE
	Sffeco	UAE/Saudia Arabia
	Bristol	UAE
	SRI	Malaysia
Fire Hose Reels	Naffco	UAE
	Sffeco	UAE/Saudia Arabia
	Bristol	UAE
	Rapid Drop	UK
Fire Hose Reels Cabinet & Door	Naffco	UAE
	Sffeco	UAE/Saudia Arabia
	Bristol	UAE
	Fighter	Pakistan
Fire Brigade Connection	Sffeco	UAE/Saudia Arabia
	Naffco	UAE
	SRI	Malaysia
Portable Fire Extinguisher	Naffco	UAE
	Sffeco	UAE/Saudia Arabia
	SRI	Malaysia
Fire Stopping	Hilti	Germany/China
	STI	Europe
	Approved Equivalent	-
Fire Pumps	NM Fire pump	China
	Sffeco	UAE
	Nafco	UAE
Fire Sprinklers	Viking	USA
	Tyco	USA
	Reliable	USA

PIPE SCHEDULE

DATA						
ID NO.:	APPLICATION	SECTION NO.	PIPING MATERIAL	STANDARD	REMARKS	APPROVED MANUFACTURER
P/1	BUILDING FIRE PROTECTION	21 10 10	MILD STEEL	ASTM A53	SCHEDULE 40 SEAMLESS	HUFFAZ, PAKISTAN OR PROTEK, CHINA OR IIL, PAKISTAN
P/2	BUILDING FIRE PROTECTION (BURIED PIPE)	21 20 10	HIGH DENSITY POLYETHYLENE (HDPE)	AWWA C960 DIN 8074/75 & ISO 4427	GRADE PE-100 PN-16, SDR-11	IIL, PAKISTAN DADEX, PAKISTAN

NOTE:

Stamp & Signature

1) ALL MS PIPING OF DIAMETER LESS THAN AND EQUAL TO 50mm SHALL BE THREADED.

Landing Value

IDENTIFICATION NO.	LV
QUANTITY	Refer Drawing
LOCATION	Refer Drawing
BODY	Copper Alloy to BS 1400
HAND WHEEL	Gray Cast Iron to BS 1452
TYPE	BIB Nose Valve
INLET CONNECTION	Ø 65 mm Flanged
OUTLET CONNECTION	Female Instantaneous Coupling with Cap and Chrome Chain (Note-1)
TEST PRESSURE	300 PSI

NOTE:

1) INSTANTANEOUS COUPLING SHALL BE COMPATIBLE TO THAT USED BY PAKISTAN FIRE BRIGADE STANDARDS.

Stamp & Signature

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 IBA, Karachi 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 IBA, Karachi.

2. The truthfulness and accuracy of the statement as to the experience of Sub-Contractors is guaranteed by the bidder. The IBA, Karachi'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.

Stamp & Signature

SCHEDULE – D TO BID

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.

SCHEDULE – E TO BID

METHOD OF PERFORMING WORKS

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

- The sequence and methods in which he proposes to carry out the Works, including the number of shifts per day and hours per shift, he expects to work.
- A list of all major items of 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.

Stamp & Signature

BIDDER QUALIFICATION CRITERIA

S. No	Mandatory Eligibility Criteria (Attach Supporting Document)	Remarks Yes / No
1	Last 3 years' experience of related satisfactory firefighting works.	
2	Last 3 years' average annual turnover with minimum 20 million (per year) as bank statement or financial statement.	
3	"Sales tax registration certificate both FBR and / or SRB" and NTN.	
4	PEC Category C-6 or above with specialization code ME-02	
5	Undertaking no dissatisfactory performance by any institution / organization during last three years.	

Stamp & Signature

(INTEGRITY PACT)

SCHEDULE – F TO BID

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC PAYABLE BY CONTRACTORS

(FOR CONTRACTS WORTH RS. 10.00 MILLION OR MORE)

Contract No. _____

Contract Value: _____

Contract Title: _____

Date …… [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 IBA, Karachi (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.

……

[IBA, Karachi] [Contractor]

Stamp & Signature

CONDITIONS OF CONTRACT
CONTRACT DATA

(Note: Except where otherwise indicated, all Contract Data should be filled in by the IBA, Karachi prior to issuance of the Bidding Documents.)

Sub-Clauses of
Conditions of Contract

1.1.3 IBA, Karachi's Drawings, if any
(To be listed by the IBA, Karachi)

1.1.4 **The IBA, Karachi** means

_____
_____

1.1.5 **The Contractor** means

_____
_____

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

1.1.9 **Time for Completion** _____days

(The time for completion of the whole of the Works should be assessed by the IBA, Karachi)

1.1.20 **Engineer (mention the name along with the designation including whether he belongs to department or consultant) and other details**

_____
_____

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

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

Stamp & Signature

(*The IBA, Karachi may add, in order of priority, such other documents as form part of the Contract. Delete the document, if not applicable)*

2.1 **Provision of Site:** On the Commencement Date

3.1 **Authorized person:**_____

3.2 **Name and address of Engineer's/IBA, Karachi's representative**

_____

4.4 **Performance Security:** Amount

_____

Validity_____

(Form: As provided under Standard Forms of these Documents)

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

Specification Clause No's_____

7.2 **Programme:**

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

Form of programme: _____ *(Bar Chart/CPM/PERT or other*)

7.4 Amount payable due to failure to complete shall be __% per day up to a maximum of

(10%) of sum stated in the Letter of Acceptance

(Usually the liquidated damages are set between 0.05 percent and 0.10 percent per day.)

7.5 **Early Completion**

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**

_____

_____

10.2 **Variation procedures:**

Day work rates …… (detail) ……

Stamp & Signature

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 IBA, Karachi to the Contractor on the works costing Rs.2.5 million or above on following conditions:

(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 IBA, Karachi;

(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 $1/5^{th}$ 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.

OR

2) **Secured Advance on Materials**

(a) The Contractor shall be entitled to receive from the IBA, Karachi 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;

(ii) 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;

(iii) 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;

(iv) 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;

Stamp & Signature

(iii) Ownership of such materials shall be deemed to vest in the IBA, Karachi and these materials shall not be removed from the Site or otherwise disposed of without written permission of the IBA, Karachi;

(iv) The sum payable for such materials on Site shall not exceed 75 % of the (i) landed cost of imported materials, or (ii) ex-factory / ex-warehouse price of locally manufactured or produced materials, or (iii) market price of stands other materials;

(v) 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 2 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 b making deduction entries in the column; ‑deduct quantity utilized in work measured since previous bill,‖ equivalent to the quantities of materials used by the contractor on items of work shown as executed in part I of the bill.

(d) 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.

b

(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.

Stamp & Signature

i) Lump sum price_____(details), or

ii) Lump sum price with schedules of rates _____(details), or

iii) Lump sum price with bill of quantities_____(details), or

iv) Re-measurement with estimated/bid quantities in the Schedule of Prices or on premium above or below quoted on the rates mentioned in CSR _____(details), or/and

v) Cost reimbursable_____(details)

11.3 **Percentage of retention*:** *five (5%)*

11.6 **Currency of payment:** Pak. Rupees

14.1 **Insurances:** *(IBA, Karachi may decide, keeping in view the nature and the scope of the work)*

Type of cover The Works Amount of cover

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

Type of cover Contractor 's Equipment: Amount of cover
Full replacement cost

Type of cover

Third Party-injury to persons and damage to property

_____

(The minimum amount of third party insurance should be assessed by the IBA, Karachi and entered).

Workers:

_____

_____

Other cover*:

_____

(In each case name of insured is Contractor and IBA, Karachi)

14.2 **Amount to be recovered**

Premium plus _____percent (____%).

15.3 **Arbitration****

Stamp & Signature

Place of Arbitration:_____

_____

** (IBA, Karachi to specify as appropriate)*

*** (It has to be in the Province of Sindh)*

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).

Stamp & Signature

FORM OF BID SECURITY
(Bank Guarantee)

(Letter by the Guarantor to the IBA, Karachi)

Guarantee No. Executed on
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

, (hereinafter 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
Agency; and

WHEREAS, the IBA, Karachi has required as a condition for considering the said Bid that the

Stamp & Signature

Principal furnishes a Bid Security in the above said sum to the IBA, Karachi, 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 IBA, Karachi 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 IBA, Karachi 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 IBA, Karachi the said sum stated above upon first written demand of the IBA, Karachi without cavil or argument and without requiring the IBA, Karachi to prove or to show grounds or reasons for such demand, notice of which shall be sent by the IBA, Karachi 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 IBA, Karachi 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

Stamp & Signature

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) 1. ----------

Witness:

1. ---

Corporate Secretary (Seal)

2. ---

---

3. Title

_____

(Name, Title & Address) Corporate Guarantor (Seal)

Stamp & Signature

FORM OF PERFORMANCE SECURITY (Bank Guarantee)

Guarantee No._____
Executed on_____
Expiry Date

(Letter by the Guarantor to the IBA, Karachi) 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

Stamp & Signature

NOW 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 IBA, Karachi)

in the penal sum of the amount stated above, for the payment of which sum well and truly to be made to the said IBA, Karachi, 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 IBA, Karachi, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of the said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force and virtue till all requirements of Clause 9, Remedying Defects, of Conditions of Contract are fulfilled.

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

We, (the Guarantor), waiving all objections and defenses under the Contract, do hereby irrevocably and independently guarantee to pay to the IBA, Karachi without delay upon the IBA, Karachi's first written demand without cavil or arguments and without requiring the IBA, Karachi to prove or to show grounds or reasons for such demand any sum or sums up to the amount stated above, against the IBA, Karachi'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 IBA, Karachi's designated Bank & Account Number.

Stamp & Signature

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 IBA, Karachi 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.

Witness:

1. _____

_____

Guarantor (Bank)

2. _____

_____

Corporate Secretary (Seal)

3. **Title** _____

_____ _____

(Name, Title & Address) Corporate Guarantor (Seal)

_____

Stamp & Signature

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

‑Contractor‖) of the other part.

(hereinafter called the

WHEREAS the IBA, Karachi 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 IBA, Karachi to execute and complete the Works and remedy defects therein in conformity and in all respects within the provisions of the Contract.

4. The IBA, Karachi hereby covenants to pay the Contractor, in consideration of the execution

Stamp & Signature

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 IBA, Karachi

_____

(Seal)

Signed, Sealed and Delivered in the presence of:

Witness:

_____

(Name, Title and Address)

Witness:

_____

(Name, Title and Address)

Stamp & Signature

MOBILIZATION ADVANCE GUARANTEE

(Letter by the Guarantor to the IBA, Karachi)

Guarantee No._____ Executed on

WHEREAS the _____

(hereinafter called the Procuring Agency) has entered into a Contract for _____ _____ _____(Particulars of Contract), with _____ _____(hereinafter called the Contractor).

AND WHEREAS the IBA, Karachi 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 IBA, Karachi 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 IBA, Karachi agreeing to make the above advance to the Contractor, has agreed to furnish the said Guarantee.

Stamp & Signature

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

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

This Guarantee shall expire not later than _____

by which date we must have received any claims by registered letter, telegram, telex or telefax.

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

_____
Guarantor (Scheduled Bank)

Witness:

1. _____

1. Signature _____

_____
Corporate Secretary (Seal)

2. Name _____

3. Title _____

2. _____

_____ _____
(Name, Title & Address) Corporate Guarantor (Seal)

_____
Stamp & Signature

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.l7.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

follow :-

And doth hereby covenant and agree with the Government and declare ay

Stamp & Signature

(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

Stamp & Signature

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

Stamp & Signature

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.

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

Stamp & Signature

SPECIFICATIONS

[Note for Preparing the Specifications]

A set of precise and clear specifications is a prerequisite for bidders to respond realistically and competitively to the requirements of the user without qualifying their Bids. The specifications must be drafted to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship, materials, performance of the works. Only if this is done objectives of economy, efficiency, and fairness in procurement will be realized and responsiveness of Bids can be ensured, and the subsequent task of bid evaluation can be facilitated. The specifications should require that materials to be incorporated in the works be new, unused, and of the most recent or current models, and incorporated all recent improvements in design and materials unless provided for otherwise in the contract.

Samples of specifications from similar to previous procurements are useful in this respect. The use of metric units is encouraged. Depending on the complexity of the works and the repetitiveness of the type of procurement, it may be advantageous to standardize the Technical Specifications that should cover all classes of workmanship, materials and equipment although not necessarily to be used in a particular procurement.

Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for equipment, materials, and workmanship, recognized international standards should be used as much as possible. The specifications shall consider all conditions but not limited to seismic conditions, weather conditions and environmental impact. The specifications should state that equipment, materials, and workmanship that meet other authoritative standards, and which ensure at least a substantially equal quality than the standards mentioned, will also be acceptable. The following clause may be inserted in the Specifications.

Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Specifications to specific standards and codes to be met by Works to be furnished and tested, the provisions of the latest current edition or revision of the relevant shall apply, unless otherwise expressly stated in the Contract. Other authoritative standards that ensure equivalence to the standards and codes specified will be acceptable.

Stamp & Signature

It is hereby certified that the terms and conditions have been read, agreed upon and signed.

M/s _____

Contact Person:_____

Address_____

Tel # _____Fax # _____

Mobile # _____e-mail:_____

NTN # _____SRB Registration # _____

Stamp & Signature