

Reference No: ED/SIE/2016-17/O&M/W-03
_____ March 2017



Board of Management Sundar Industrial Estate

BIDDING DOCUMENTS

Rehabilitation and Improvement of
Existing Water Supply System Phase I

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SECTION 1
INVITATION TO BID

INVITATION TO BID

Bid Ref No: ED/ SIE/ 2016-17/ O&M/W-03

Date: ___ March 2017

Sundar Industrial Estate (SIE) is a flagship project of Punjab Industrial Estate Development and Management Company (PIEDMC); a public sector company of Government of the Punjab (GOP). It is the first project developed on the concept of Public Private Partnership (PPP). SIE is run under the patronage of the Board of Management (BOM- SIE).

BOM-SIE invites sealed bids for “*Rehabilitation and Improvement of existing water supply, system Phase I at SIE*” from eligible bidders, registered with income tax, sales tax departments & who are on active taxpayers list of the federal board of revenue (FBR) and registered with PEC (In relevant category). Bidding shall be conducted through open competitive bidding (*single stage one envelope*) procedure specified in the public procurement rules 2014 with subsequent amendments.

A complete set of Bidding Documents, containing detailed specifications and terms and conditions etc. are available for purchase from the office of the Employer during 9 AM to 4PM 7/24) at the address given below. Contact person for purchase of documents, clarifications and conducting site visit is Mr. Kashif Tanveer, Assistant Manager Technical. The interested eligible bidders on submission of a written application to BOM-SIE and upon payment of a non-refundable fee of Rupees 1500/- (One thousand and five hundred only) in the form of bank draft or pay order from any schedule bank of Pakistan in favour of BOM-SIE can purchase the set of Bid Documents. These documents can also be downloaded from the websites of BOM-SIE and PPRA respectively <http://sie.com.pk/>, “<http://www.ppra.org.pk/>”.

The bids prepared (a) in accordance with the instructions in the bidding documents (b) complying Punjab Procurement Rules 2014 (c) supported with Bid Security mentioned in the bidding data will be received by the contact person of BOM-SIE till 1100 hours, March 31, 2017. Bids will be opened at 1230 hours on the same day in the presence of bidders or their authorised representatives. This advertisement is also available on PPRA and BOMSIE websites.

Chief Engineer



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INSTRUCTIONS TO
BIDDERS**

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INSTRUCTIONS TO BIDDERS

A. GENERAL

IB.1 SCOPE OF BID

The BOMSIE “**The Employer**” as defined in the **Bid Data** invites the Bids for the Works summarized in the **Bid Data** hereinafter referred to as “**the Works**”.

Bidders must quote for the complete scope of the works detailed in schedule of prices, drawings and specifications. Any Bid covering partial scope of work will be rejected as non-responsive.

Successful bidders will be expected to complete the works by the required completion date specified in the **Bid Data**.

IB.2 SOURCE OF FUNDS

The Employer has arranged adequate funds from the PIEDMC / its own source for the fiscal year 2016 / 2017 and intends to apply part of these proceeds to cover payments under the resulting contract for the works mentioned in the **Bid Data**.

Payments will be made directly by the Employer subject to the terms and conditions of the resulting contract.

IB.3 ELIGIBLE BIDDERS

3.1 Bidding is open to all natural persons, companies, firms, and organizations or any combination of them with a formal intent to enter into an agreement or under an existing agreement in the form of a joint venture, consortium, or association. In the case of a joint venture, consortium, or association, all members shall be jointly and severally liable for the execution of the Contract in accordance with its terms and conditions. The joint venture, consortium, or association shall nominate a Lead Member who shall have the authority to conduct all business for and on behalf of joint venture, consortium, or association during the bidding process and performance of the contract.

3.2 The Lead Member shall at the time of contract award confirm the appointment by submission of a Power of Attorney to the Employer.

3.3 Any Bid from a joint venture, consortium or association shall indicate the part of proposed contract to be performed by each party and each party shall be evaluated or qualified according to its contribution only.

3.4 National bidders shall satisfy all relevant licensing and/or registration with the appropriate statutory bodies in Pakistan as under:

3.4.1 Duly licensed by the Pakistan Engineering Council (PEC) in the relevant category for value of the Works. The PEC renewed registration certificate must accompany the bid

3.4.2 Registered with income tax and sales tax departments and be on the active tax payer list of the Federal Board of Revenue (FBR). Copy of registration with FBR must form part the bid

3.4.3 Registered with Securities & Exchange Commission (S&EC) or Registrar of Firms. Copy of Registration with S&EC or Registrar of Firms must form part the bid.

3.5 The bidder shall give an affidavit to the effect that he or his firm or company or organization is not declared ineligible in accordance with Punjab procurement rules 2014 by any government or autonomous body on the grounds:

3.5.1 The Bidder is declared bankrupt or, in case of company or firm, insolvent.

3.5.2 Payments in favour of the bidder are suspended in accordance with the judgment of any court of law.

3.5.3 Bidder is found to have conflict of interest as prescribed by Law of Pakistan.

3.5.4 Legal proceedings are instituted against bidder or he is convicted by a final judgment on any offence involving professional conduct.

3.5.5 The Bidder is debarred or blacklisted for participating in public procurement for corrupt, coercive, collusive, fraudulent or obstructive practices.

IB.4 ONE BID PER BIDDER

4.1 A Bidder shall submit only one Bid, in the same bidding process, either individually or as a partner in a joint venture.

4.2 No Bidder can be a subcontractor while bidding individually or as a partner of a joint venture in the same bidding process.

4.3 A Bidder, if acting in the capacity of subcontractor in any Bid, may participate in more than one Bid but only in the capacity of subcontractor.

4.4 The Employer at his own discretion may reject any or all bids or annul the entire bidding process if a bidder participates in more than one bid except as subcontractor.

IB.5 COST OF BIDDING

The bidders shall bear all costs associated with preparation and submission of their bids including attendance of pre bid meeting and site visits and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

IB.6 SITE VISIT

- 6.1 The bidders, at their own risk and cost, are encouraged to visit and examine the Site of Works and its surroundings and obtain all information that may be necessary for preparing the bid and entering into contract for performance of the Works.
- 6.2 The Employer may conduct for the bidders a site visit. The purpose of the site visit is to clarify issues and answer questions on any matter that may be raised by the prospective bidders at that stage.

B. BIDDING DOCUMENTS

IB.7 CONTENTS OF BIDDING DOCUMENTS

- 7.1 The works required, bidding process and contract terms are prescribed in the bidding documents. In addition to Invitation for Bids, the Bidding Documents are those stated below, and should be read in conjunction with any Addendum issued.
- 7.1.1 Instructions to Bidders
 - 7.1.2 Bidding Data
 - 7.1.3 Form of Bid
 - 7.1.4 Schedules to Bid comprising:
 - ✚ Schedule A: Schedule of Prices / Bills of Quantities
 - ✚ Schedule B: Specific Works Data
 - ✚ Schedule C: Works to be performed by the Subcontractors
 - ✚ Schedule D: Proposed Program of Works
 - ✚ Schedule E: Method of Performing Works
 - ✚ Schedule F: Integrity Pact
 - 7.1.5 General and Special Conditions of Contract
 - 7.1.6 Standard Forms of:
 - ✚ Bid Security
 - ✚ Performance Security
 - ✚ Bank Guarantee for Advance Payment
 - ✚ Contract Agreement
 - 7.1.7 Specifications
 - 7.1.8 Drawings, if any
- 7.2 The number of copies to be completed and returned with the bid is specified in the **Bid Data**.
- 7.3 The Invitation for bid issued by the Employer is not part of the bidding documents. In case of discrepancies between the Invitation for bid and the bidding documents listed above bidding documents will take precedence.
- 7.4 The Employer is not responsible for the completeness of the bidding documents and addenda where issued, if they were not obtained directly from the Employer.
- 7.5 The Bidder is expected to carefully examine all instructions, forms, terms and specifications in the bidding documents. Failure to furnish all information required by the bidding documents will be at the Bidder's risk and may result in the rejection of its bid.

IB.8 CLARIFICATION OF BIDDING DOCUMENTS

- 8.1 A prospective bidder requiring any **clarification(s)** in respect of the Bidding Documents may notify the Employer in writing at the address indicated in the **Bidding Data**.
- 8.2 The Employer will within three (3) working days after receiving the request for clarification **respond** in writing provided (a) such request is received not

later than ten (10) days prior to the deadline for submission of bid in case of competitive Bidding and Five (5) days prior to the deadline in case of non-competitive methods.

- 8.3 Copies of the Engineer/Employer's **response** will be forwarded to all purchasers of the bid documents including a brief description of the enquiry but without identifying its source.
- 8.4 Should the Employer deem it necessary to **amend the bidding** documents as a result of such clarifications he shall do so following the procedure under given below.

IB.9 AMENDMENT OF BIDDING DOCUMENTS

9.1 Issue of addendum

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

9.2 Acknowledgement

Any addendum thus issued shall be part of the Bidding Documents and shall be communicated in writing to all purchasers of the Bid Documents. Prospective bidders shall acknowledge receipt of each addendum in writing to the Employer.

9.3 Extension of Deadline

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

C. PREPARATION OF BIDS

IB.10 LANGUAGE OF BID

- 10.1 The bid prepared by the bidder and all correspondence and documents relating to the Bid, exchanged by the bidder and the Employer shall be written in the English language.
- 10.2 Supporting documents and printed literature furnished by the bidder may be written in any other language so long as it is accompanied by an accurate translation of the relevant passages in English language, in which case, for the purposes of interpretation of the Bid, the English translation shall prevail.

IB.11 DOCUMENTS COMPRISING THE BID

- 11.1 The bid submitted by the bidder shall comprise the following:
 - ✚ Covering Letter
 - ✚ Form of Bid duly filled in, signed and sealed.
 - ✚ Schedules (A to F) to Bid duly filled and initialled, in accordance with the instructions contained therein.
 - ✚ Bid Security.
 - ✚ Power of Attorney.
 - ✚ Qualification information and documentary evidence.
 - ✚ Priced Bills of Quantities / schedule of prices

IB.12 DOCUMENTS ESTABLISHING BIDDER'S ELIGIBILITY AND QUALIFICATIONS

- 12.1 The bidder shall furnish, as part of his bid; certificates, and documents establishing the bidder's eligibility to bid and his qualification to perform the Contract if his bid is accepted.
- 12.2 Bidder/ Manufacturer must meet **Qualification Criteria** given hereinafter and possess and provide evidence of its capability, experience and performance as stipulated in the Bidding Documents.

IB.13 DOCUMENTS ESTABLISHING WORKS' CONFORMITY TO BID

- 13.1 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 all such documentation as set out herein and in the **Bidding Data**.
- 13.2 The bidder shall note that standards for workmanship, material and equipment, and references to brand names or catalogue numbers, if any, designated by the Employer in the Technical Provisions are intended to be descriptive only and not restrictive.

IB.14 SUFFICIENCY OF BID

- 14.1 Each bidder shall satisfy himself before Bidding as to the correctness and sufficiency of his Bid and of the rates and prices entered in the Bills of Quantities. These 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 and remedying defects therein.

- 14.2 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 Contract for performance of the Works.

IB.15 BID PRICES

- 15.1 The Contract shall be for the whole Work based on the priced Bills of Quantities submitted by the Bidder.
- 15.2 The bidder shall fill in all rates and prices for all items of Work prescribed in the Bills of Quantities (Schedule A to Bid). Items for which no rate or price is entered will not be paid and shall be deemed to have been covered by other rates and prices as contained in the Preamble to Schedule of Prices.
- 15.3 Unless otherwise stipulated in the Conditions of Contract, prices quoted by the bidder shall remain fixed during performance of the Contract without variation on any account.

IB.16 CURRENCY OF BID AND PAYMENT

- 16.1 The unit rates and prices in the Schedule of Prices shall be quoted by the bidder in Pakistan Rupees as stipulated in Bidding Data.
- 16.2 In all cases, payments shall be computed using the rates quoted in the Bid.

IB.17 VALIDITY OF BIDS

- 17.1 Bids shall remain valid for the period of ninety (90) days after the date of bid opening as stipulated in the **Bidding Data**. A Bid valid for a shorter period than prescribed shall be rejected by the Employer as non responsive.
- 17.2 No alteration is to be made in the Form of Bid except filling in the blanks as directed. If any alteration is made or if these instructions are not fully complied with, the bid may be rejected.

IB.18 BID SECURITY

- 18.1 Each bidder shall furnish, as part of his bid, a **Bid Security** in the amount stipulated in **Bidding Data**. **The estimated value of Work for the purpose of this clause is Rs. 24.72 Million approximately.** The Bidder may opt to submit his Bid Security in the form of Deposit at Call or a Bank Guarantee issued by any Scheduled Bank of Pakistan or an insurance company having at least AA rating from Pakistan Credit Rating Agency (PACRA) /JCR - VIS. The Deposit at Call or Bank Guarantee shall be in favour of the Employer and remain valid for twenty eight (28) days beyond the bid validity period.
- 18.2 Any bid not accompanied by an acceptable Bid Security shall be rejected by the Employer as non-responsive.
- 18.3 The bid securities of unsuccessful bidders will be returned upon award of contract to the successful bidder or twenty eight (28) days after the expiry of

Bid validity period whichever is earlier.

- 18.4 The Bid Security of the successful bidder will be returned when the bidder has furnished the required **Performance Security**, and signed the Contract Agreement.
- 18.5 The Bid Security may be forfeited if:
 - (a) The bidder withdraws his bid during the period of bid validity; or
 - (b) The bidder does not accept the correction of his Bid Price, or
 - (c) The successful bidder:
 - (i) Fails to Furnish Performance Security, or
 - (ii) Fails to Signs the Contract Agreement.

IB.19 PRE BID MEETING

- 19.1 The bidder's nominated representatives are invited to attend pre-bid meeting which, if convened, will take place at the venue date and time fixed in **the Bidding Data**.
- 19.2 The bidder is requested to submit his questions and seek clarifications in writing so that record of the communication reaches the Employer before the pre-bid meeting. It may not be practicable at the meeting to answer all questions, but questions and responses will be transmitted as described herein.
- 19.3 Minutes of the pre-bid meeting, including the text of the questions raised and the responses given together with any responses prepared after the pre-bid meeting will be transmitted **within five (5) days** to all purchasers of the Bid Documents. Any modification of the Bid Documents that may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum and not through the minutes of the pre-bid meeting.

D. SUBMISSION OF BID

IB.20 SEALING AND MARKING OF BIDS

- 20.1 The Bidder shall seal the original and each copy of the Bid in separate envelopes, duly marked as "ORIGINAL" and "COPY." The envelopes shall then be put in an outer envelope securely sealed in such a manner that tempering cannot go unnoticed.
- 20.2 The inner and outer envelopes shall be addressed to the Employer, bear project name, bid reference number and a statement "DO NOT OPEN BEFORE DEADLINE" as specified in the **bidding data**.
- 20.3 In addition to the identification required, the inner envelopes shall also indicate the name and address of the Bidder to enable the Bid to be returned unopened in case it is declared late.
- 20.4 If the outer envelope is not sealed and marked as required the Employer shall assume no responsibility for misplacement or premature opening of the Bid.

IB.21 FORMAT, SIGNING AND SUBMISSION OF BID

- 21.1 All **Schedules to Bid** must be properly filled in and signed.
- 21.2 Each bidder shall prepare **Original and three copies** of the documents comprising the bid as specified in the **Bidding Data**. The documents so prepared shall be clearly marked as "ORIGINAL" and "COPY" as appropriate. In the event of discrepancy between the original and copies, the original shall prevail.
- 21.3 The original and all copies of the bid shall be typed or written in legible hand writing and indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the bidder (in the case of copies, Photostats are acceptable). This authorization shall consist of written confirmation and shall be attached to the bid. The name and position held by each person signing the authorization must be typed or printed below the signature. All pages of the bid shall be initialled and official seal affixed by the person or persons signing the bid.
- 21.4 Any interlineations, erasures, or overwriting shall be valid only if initialled by the person or persons signing the Bid.
- 21.5 The Bid shall be delivered in person or sent by registered mail at the Employer's address given in Bidding Data.

IB.22 DEADLINE FOR SUBMISSION AND LATE BIDS

- 22.1 Bids shall be received by the Employer at the address provided in **Bidding Data** not later than the **time and date** stipulated therein.
- 22.2 Bids submitted through telegraph, telex, fax or e-mail shall not be considered for evaluation and rejected.
- 22.3 Any bid received by the Employer **after the deadline** for submission shall not be considered for evaluation, rejected and returned unopened to the bidder.

IB.23 MODIFICATIONS, SUBSTITUTION & WITHDRAWAL OF BIDS

- 23.1 Any bidder may modify or substitute or withdraw his bid after submission provided that **written notice** of modification, substitution or withdrawal of the Bid is received by the Employer prior to the deadline for submission of bids.
- 23.2 **Withdrawal** of a bid during the interval between the deadline for submission of bids and the expiration of the period of bid validity period specified may result in forfeiture of the Bid Security.
- 23.3 The Bidder may offer **discounts** or otherwise modify the prices of its Bid by submitting Bid modifications in accordance with this Clause, or include in the original Bid submission.

E. BID OPENING AND EVALUATION

IB.24 BID OPENING

- 24.1 The Employer will **open all bids** including modification, substitution or withdrawal notices, in public, in the presence of bidders' representatives who choose to attend, at the time, date and venue stipulated in the Bidding Data.
- 24.2 Representatives of the bidders who choose to attend shall sign the attendance sheet as proof of their attendance.
- 24.3 Envelopes marked "WITHDRAWAL", "MODIFICATION" and "SUBSTITUTION" shall be opened first in that **order** and read out in appropriate details.
- 24.4 All other "ENVELOPES" shall be opened thereafter one at a time. The bidder's name, Bid Prices, total amount of Bid, any discount, the presence or absence of Bid Security, and such other details as the Employer at its discretion may consider appropriate, will be **announced** by the Employer at the bid opening.
- 24.5 Bids or modifications that are not opened and read out at Bid opening **shall not be considered** further for evaluation, irrespective of the circumstances. In particular, any Bid Price or discount which is not read out and recorded at bid opening will not be considered further for evaluation.
- 24.6 Bidders are advised to send a **representative who has knowledge** of the content of the Bid and verify the information read out from the submitted documents. Failure of the representative to point out any un-read information shall indemnify the Employer against any claim or failure to read out the correct information contained in the Bid.
- 24.7 No Bid will be **rejected** at bid opening except for late bids which will be returned unopened to the Bidder.
- 24.8 The Employer will record the **minutes** of the bid opening. Copy of the minutes shall be furnished to individual Bidders upon request.

IB.25 PROCESS TO BE CONFIDENTIAL

- 25.1 Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of a contract shall **not be disclosed** to Bidders until the award to the successful Bidders has been announced.
- 25.2 No bidder shall contact the Employer on any matter relating to its Bid from the time of Bid opening to the time of bid evaluation and announcement of result. The evaluation result shall be announced at least **ten (10) days** prior to the award of Contract. The announcement to all bidders will include schedule of prices, discounted prices, price adjustments made, final evaluated prices and recommendations against all the bids evaluated.
- 25.3 Any effort by a bidder to influence the Employer in the Bid evaluation, Bid comparison or Contract Award decisions may result in the rejection of his Bid. The bidder feeling aggrieved may lodge a written complaint not later than fifteen (15) days after announcement of the bid evaluation result, however,

mere fact of lodging a complaint shall not warrant suspension of procurement process.

IB.26 CLARIFICATION OF BID

- 26.1 To assist in the examination, evaluation and comparison of Bids and **qualification of Bidders** the Employer may, at its discretion, ask the bidder for clarification of his Bid including breakdown of prices and his antecedents. 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 except confirmation of the correction of arithmetic errors.
- 26.2 From the time of bid opening to the time of Contract award if any Bidder wishes to contact the Employer on any matter related to the bid he should do so in writing so as to provide record of the content of communication.

IB.27 CORRECTION OF ERRORS

- 27.1 Bids determined to be substantially responsive will be checked for any Arithmetic errors which shall be rectified on the following basis:
- If there is a discrepancy between the unit price and total price obtained by multiplying the unit price with quantity, the unit price shall prevail and the total price shall be corrected.
 - If in the opinion of the Employer there is an obvious misplacement of the decimal point in the unit price, in that case total price as quoted shall govern and the unit price shall be corrected.
 - If there is a discrepancy between the Total Bid price entered in Form of Bid and the Sub-total shown in the Summary of Schedule of Prices, then the amount stated in the Form of Bid will be corrected in accordance with the Corrected Schedule of Prices
 - If there is a discrepancy between the words and figures, the amount in words shall prevail.
 - If the bidder does not accept the corrected amount of Bid, his Bid will be rejected and Bid Security forfeited.

IB.28 EVALUATION METHODS

Following evaluation methods for price adjustments will be followed:

28.1 *Price Adjustment for Technical Compliance*

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

28.2 *Price Adjustment for Commercial Compliance*

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

28.3 *Price Adjustment for Deviation in Terms of Payments*

“Refer to Bidding Data”.

IB.29 BID EVALUATION AND COMPARISON

29.1 Prior to the detailed evaluation, the Employer will determine the substantial responsiveness of each bid to the Bidding Documents. For the purpose of these Clauses, a substantially responsive bid is one which conforms to all the terms and conditions of the Bidding Documents without material deviations. It will include all requirements listed in Bidding Data.

29.2 A Bid determined as substantially non-responsive will be rejected and will not subsequently be made responsive by the bidder by correcting the inconformity.

29.3 Any minor informality or inconformity or irregularity in a Bid which does not constitute a material deviation may be waived off by the Employer, provided such waiver does not prejudice or affect the relative ranking of any other bidder.

29.4 The Employer will evaluate and compare only the bids previously determined to be substantially responsive and 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 described herein.

29.4.1 Technical Evaluation

It will be examined in detail whether the Works offered by the bidder comply with the Technical Provisions of the Bidding Documents. For this purpose, the bidder’s data submitted with the bid in Schedule B will be compared with technical features or 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.

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

29.5 *Evaluated Bid Price*

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

- 29.5.1. Making any correction for arithmetic errors.
- 29.5.2. Making an appropriate price adjustment for acceptable variation or deviation.
- 29.5.3. Making an appropriate price adjustment for Deviations in terms of Payments (if any and acceptable to the Employer).
- 29.5.4 Discount, if any, offered by the bidders as also read out and recorded at the time of bid opening.

F. AWARD OF CONTRACT

IB.30 QUALIFICATION

- 30.1 The Employer, at any stage of the bid evaluation, having credible reasons or *prima facie* evidence of any flaw in supplier's or contractor's capacities, may require the suppliers or contractors to provide information concerning their professional, technical, financial, legal or managerial competence regardless of their pre-qualification; provided such qualification are objected after recording reasons in writing. The reasons so recorded shall form part of the records of **bid evaluation report**.
- 30.2 The determination will take into account the bidder's financial and technical capabilities. It will be based upon examination of the documentary evidence of the bidders' qualifications as well as such other information required in the Bidding Documents.

IB.31 AWARD CRITERIA & EMPLOYER'S RIGHT

- 31.1 The Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the Bidding Documents and who has offered the lowest evaluated Bid Price, provided such bidder has been determined to be (a) eligible in accordance with the provisions of IBs (b) qualified to perform the Contract satisfactorily in accordance with the provisions of the **contract**.
- 31.2 Notwithstanding **instructions contained in the Bidding Documents**, the Employer reserves the right to accept or reject any or all bids, or annul the entire bidding process at any time prior to the award of Contract without incurring any liability or obligations to the Bidder.
- 31.3 **Notice of the rejection** of all the bids shall be given promptly to all the bidders who have submitted bids.
- 31.4 The Employer shall upon written request communicate to any Bidder grounds for rejection of his bid, but is not required to justify those grounds.

IB.32 NOTIFICATION OF AWARD & SIGNING OF CONTRACT AGREEMENT

- 32.1 Prior to expiration of the period of bid validity prescribed in the bid data, the Employer will notify the successful bidder in writing ("Letter of Acceptance") that his bid has been accepted.
- 32.2 Within **seven (7) days** from the date of submission of Performance Security by the successful bidder, the Employer will send the Form of Contract Agreement incorporating all Covenants between the parties as provided in the Bidding Documents.

IB.33 PERFORMANCE SECURITY

- 33.1 The successful bidder shall furnish to the Employer 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.
- 33.2 Failure of the successful bidder to comply with the requirements of IBs shall

constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security.

IB.34 INSTRUCTIONS NOT PART OF THE CONTRACT

These Instructions to Bidders (IB) along with Bid Data Sheet will not be part of Contract and will cease to have effect once the Contract is signed.

IB.35 INTEGRITY PACT

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

SECTION 3
BIDDING DATA

BIDDING DATA

NOTE:

The following specific data for the works to be procured shall complement, supplement, or amend the provisions in the Instructions to Bidders (IBs). Whenever there is a conflict, the provisions herein shall prevail over those in Instructions to Bidders.

BD REF	IB REF	AMENDMENTS OF AND SUPPLEMENTS TO CLAUSES IN THE IBs
--------	--------	---

A. GENERAL

1.	1	The Employer: The PIEDMC and Board of Management Sundar Industrial Estate along with its relevant Committees [Procurement & Contract Committee, Infrastructure Repair and Maintenance Committee] shall be the Employer for the purpose of this Contract. Address of the Employer is as given in the Bidding Documents.
2.	8	Employer’s Address Board of Management Sundar Industrial Estate Gate # 2, Sundar Road, Lahore. Phone: +92 42 35297291-3, Fax: +92 42 35297080, Email: info@sie.com.pk
2.	1	The Works: “Rehabilitation and Improvement of existing water supply, system Phase I at SIE” includes: (a) Rehabilitation of fire hydrants and control valves including chambers (b) Construction of water bowzer filling points (c) Provision of metered service connection to industrial units (d) Repair and maintenance of pump houses (e) Cleaning and repair of overhead water reservoirs (f) Construction of new reverse osmosis plants and other related works as specified in bid documents and drawings.
4.	1	Completion Time: The expected completion time of the works is one hundred and eighty [180] calendar days from the date of first written order to commence the work.
5.	2	Source of Funds: The funds for the works have been approved by The Board of Directors PIEDMC in the budget for the fiscal year 2016/2017 and allocated to BOM SIE to meet the cost of works.
6.	3	Eligible Bidders: The bidders shall satisfy all relevant licensing and/or registration with the appropriate statutory bodies in Pakistan as prescribed in Bid Documents and listed below. The Bidder must be financially and technically sound - capable to perform the contract: (a) Licensed by PEC in the appropriate category for value of the Works. (b) Registered and be on active tax payer list of the (FBR). (c) Qualified and be on approved list of GOP and others for the said works. (d) Registered with (S&EC) or Registrar of Firms. (e) List of similar works completed by the Bidder during last five (5) years including similar works in hand with cost of each work.

		(f) Statement of account for the last three (3) years. (g) Annual construction turnover for the last three (3) years (h) An affidavit to the effect that the Bidder is not blacklisted or debarred.
7.	3	Joint Venture: Maximum number of members in the joint venture, consortium or association shall be Three (3). The lead member shall be named and authorized through Power of Attorney to conduct business on their behalf.
8.	6	Site Visit: Site visit if requested by the Bidders will be conducted once by Assistant Manager Technical AM (Tech) at 1200 hours on 20th of March 2017.

B. BID DOCUMENTS

9	7.2	No of Copies: The number of copies to be completed and returned with the bid is: One (1) original and three (3) copies marked as such.
10	8.1	Contact Person: For purchase of Bid Documents, seeking clarification in the documents or visiting the work site, the Bidder may contact Mr. Kashif Tanveer AM Tech BOM SIE on Cell No. (0320) 540 0515 or on the address given below.

C. PREPARATION OF BID

11	10.1	Language of Bid: The Bid itself, all documents prepared and submitted by the Bidder with the bid including correspondence shall be in English Language.
12	11.1 12 13.1	Documents Accompanying the Bid: Apart from documents comprising the Bid, other information or materials required to be completed and submitted by Bidders are: a) Covering Letter b) Form of Bid duly filled in, signed and sealed c) Schedules (A to F) to the Bid d) Bid Security e) Power of Attorney f) Documents establishing bidder's Eligibility and Qualification information. g) Documents establishing conformity of work to the bidding documents.
13	15.3	Fixed Cost: The prices quoted by the bidder shall remain fixed during performance of the Contract
14	16.1	Currency of Bid: The currency for quoting unit rates and prices shall be Pakistan Rupees. Similarly currency for payments that becomes due under the Contract shall also be Pakistan Rupees.
15	17.1	Bid validity: The Bid validity period shall be Ninety (90) days after the date of bid opening.
16	18.1	Bid Security: The amount of Bid Security shall be 4% of the bid price. The estimated value of Work is. Rs. 24.72 Million approximately in the form of Pay order of CDR from any schedule bank of Pakistan. The currency of the Bid Security shall be Pakistan Rupees. Bid Security shall remain valid for Twenty eight (28) days after the Bid Validity Period.
17	19.1	Pre Bid Meeting: Pre-bid meeting if convened will take place in the conference room of BOM SIE at 1100 hours on 20th of Mar 2017.

D. SUBMISSION OF BIDS

18.	21.2 a)	Bid Submission : Bids shall be submitted to the Employer's contact person: Mr. Kashif Tanveer A.M. Tech. BOM SIE Department of Engineering Gate No. 2, Sunder Industrial Estate Sundar-Raiwind Road, Lahore. Cell No. (0320) 540 0515, mailto: akashtanveer@yahoo.com
19.	21.2 b)	Marking of Envelope: The envelopes of the bid shall bear: Project name: Bid Number: ED/ SIE/ 2016-17/ O&M/W-03 Statement "DO NOT OPEN BEFORE DEADLINE" Other details reflected in the bidding documents.
20		Deadline for Submission: The last date and time for submission of Bids is 1100 hours, on 31st of Mar 2017 . Venue for Bid submission is Engineering Department Sundar Industrial Estate.

E. OPENING AND EVALUATION OF TENDERS

21.	22.1	Venue, time and Date of Bid Opening: a) Conference Room BOM SIE. b) 1230 Hours on 31st of Mar 2017 c) The bid shall be opened by Procurement and Contracting Committee.
22	30.2	Evaluation: The currency that shall be used for bid evaluation and comparison purposes is Pakistan Rupees.
23.	38.1	Variations in Quantities: Percentage for quantities increase or decrease is 15%
24		Price Adjustment: If a bid deviates from the terms and conditions of payment as specified in Conditions of Contract and if such deviation is acceptable to the Employer, mark-up earned for any earlier payments as compared to those stipulated in the Conditions of Contract shall be calculated at the mark-up rate of 10% per annum and shall be added to the corrected total bid Price for comparison purposes only.
25		Responsiveness of the Bid: The bid shall be taken as responsive if: a) The bid is valid till prescribed validity period. b) The bid prices are firm during the performance of resultant contract. c) Completion period offered is within specified limits d) The bidder is eligible to bid and possesses the requisite experience, capacity and qualification. e) The bid does not deviate from the basic technical requirements. f) The bids are generally in order.

F. AWARD OF CONTRACT

26.	41.1	Performance Security: The amount of Performance Security shall be 10% of the Contract price .
27.	41.2	The Performance Security shall be in the form of bank guarantee from any schedule bank of Pakistan in favour of the Employer.
28.	42.1	Advance Payment: The admissible advances against mobilization and stores brought at site shall be maximum fifteen percent (15%) of the Contract Price and 70% of the value of store respectively. The advance shall be paid against

	bank guarantee from any schedule bank of Pakistan in favour of the Employer.
--	--

QUALIFICATION CRITERIA

An Individual Bidder or Individual Member of Joint Ventures must score an aggregate of 60 out of 100 weighted marks in order to qualify and perform the contract. The weighted score assigned to each criterion and information requested for each is given here under:

Weightage

Ser	Criterion	Weightage
1.	Eligibility and Qualification	15
2.	Work Experience and past performance[5 years]	30
3.	Major Equipment and Plants	15
4.	Technical Personnel and support staff	15
5.	Subcontracting	5
6.	Financial Soundness	10
7.	Litigation History	2
8.	Occupational Health and Safety Policy	3
9.	Joint Venture, Association Consortium	2
10.	Proposed Work Program	3
	Total Marks	100

1. Eligibility and Qualification

- a. Constitution or legal status of Bidder: [attach copy]
- b. Place of registration: [insert]
- c. Principal place of business: [insert]
- d. Registration/ Certificate of Incorporation [attach]
- e. Current Business License [attach]
- f. No conflict of interest [attach declaration]
- g. Public entity – meet conditions [Attach legal status]

2. Work Experience and past performance [5 years]

- h. Works of similar nature performed as prime Contractor and value of work over the last 5 years.
- i. To comply with this requirement, works cited should at least be 70 per cent complete.
- j. Experience as prime contractor, sub-contractor in at least 5 contracts for the past 3 years, each with a minimum value of Rs. 10 Million that have been successfully and substantially completed and that are similar to the proposed works.
- k. Also list details of work under way or committed, including expected completion.

Ser.	Project Name	Name / address of Employer	Value of Work	Type of Work Executed	Year	Value of Contract
1.						
2.						
3.						
n-1						
N						

3. Major Equipment and Plants

Major items of Contractor's Equipment proposed for carrying out the works. List all information requested below

Ser	Description of equipment	Make, and age (years)	Condition and number available	Owned, Hired
1.				
2.				
3.				
n-1				
N				

4. Technical Personnel and Support Staff

Qualifications and experience of key personnel proposed for administration and execution of the Contract. (CVs of all key proposed shall be attached)

Ser.	Position	Name	Experience (Years)	Qualifications	CV of Key Personnel
1.					
2.					
3.					
n-1					
N					

5. Subcontracting proposed sub-contractor and firms involved

Ser	Sections of Works	Value of subcontract	Subcontractor Name and address)	Experience
1.				
2.				
3.				
n-1				
N				

6. Financial Soundness

- a. Financial reports for the last three [3] years
 - I. Balance sheets
 - II. profit and loss statements
 - III. auditors' reports
- b. The submitted financial reports must demonstrate the current soundness of the Bidder's financial position and indicate his prospective long-term profitability

7. Litigation History

Information on current litigation in which the Bidder is involved

Ser	Other party(s)	Causes of dispute	Amount involved
1.			
2.			
3.			

8. Occupational Health and Safety Policy

Give in sufficient details Information regarding Occupation Health and Safety Policy and Safety Record of the Bidder.

9. Joint Venture, Association Consortium

- a. The information listed above shall be provided for each partner of the joint venture.
- b. The information listed above shall be provided for the joint venture.

10. Proposed Work Program

The Bidder should present Proposed Program to include "work method and schedule" descriptions, drawings, and charts necessarily required to comply with the requirements of the bidding documents.

SECTION 4
FORM OF BID

FORM OF BID

(LETTER OF OFFER)

Bid Reference No. _____

(Name of Works)

To:

Gentlemen,

1. Having examined the Bidding Documents including Instructions to Bidders, Bidding Data, Conditions of Contract, Contract Data, Specifications, Drawings, if any, Schedule of Prices and Addenda Nos. _____ for the execution of the above-named Works, we, the undersigned, being a company doing business under the _____ name _____ of _____ and address _____ and being duly incorporated under the laws of Pakistan hereby offer to execute and complete such Works and remedy any defects therein in conformity with the said Documents including Addenda thereto for the Total Bid Price of Rs _____ (Rupees _____) or such other sum as may be ascertained in accordance with the said Documents.
2. We understand that all the Schedules attached hereto form part of this Bid.
3. As security for due performance of the undertakings and obligations of this Bid, we submit herewith a Bid Security in the amount of _____ drawn in your favour or made payable to you and valid for a period of twenty eight (28) days beyond the period of validity of Bid.
4. We undertake, if our Bid is accepted, to commence the Works and to deliver and complete the Works comprised in the Contract within the time(s) stated in Contract Data.
5. We agree to abide by this Bid for the period of _____ days from the date fixed for receiving the same and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

6. Unless and until a formal Agreement is prepared and executed, this Bid, together with your written acceptance thereof, shall constitute a binding contract between us.
7. We undertake, if our Bid is accepted, to execute the Performance Security referred to in Conditions of Contract for the due performance of the Contract.
8. We understand that you are not bound to accept the lowest or any bid you may receive.
9. We do hereby declare that the Bid is made without any collusion, comparison of figures or arrangement with any other person or persons making a bid for the Works.

Dated this _____ day of _____, 2017

Signature _____ in the capacity of _____ duly authorized

to sign the bid for and on behalf of _____

(Name of Bidder in Block Capitals)

(Seal)

Address _____

Witness:

(Signature): _____

Name: _____

Address: _____

SECTION 5
SCHEDULES TO BID

SCHEDULE A

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).

4. Rates and Prices

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

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

4.5.1 The bidder shall be deemed to have obtained all information as to and all requirements related thereto which may affect the bid price.

4.5.2 The Contractor shall be responsible to make complete arrangements for the transportation of the Plant and Materials to the Site.

4.6 The Contractor shall provide for all parts of the Works to be completed in every respect. Notwithstanding that any details, accessories, etc. required for the complete installation and satisfactory operation of the Works, are not specifically mentioned in the Specifications, such details shall be considered as included in the Contract Price.

5. Bid Prices

5.1 Break-up of Bid Prices

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

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

5.2 Total Bid Price

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

6. Provisional Sums

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

SCHEDULE A**SUMMARY OF BID PRICES****NOTE:**

Bill of Quantities is attached

Bill No.	Description of Work	Amount (Rs)
1	Rehabilitation of fire hydrants and control valves including chambers	
2	Construction of water bowzer filling points	
3	Provision of metered service connection to industrial units	
4	Repair and maintenance of pump houses	
5	Cleaning and repair of overhead water reservoirs	
6	Construction of new reverse osmosis plants	
	Total Amount	
The total amount of Bid Price here is to be entered in Paragraph 1 of the Form of Bid both in figures as well as In words.		

Signature of Bidder

SCHEDULE OF PRICES

BILL NO. 1: REHABILITATION OF FIRE HYDRANTS AND CONTROL VALVES INCLUDING CHAMBERS

Item. No.	Description of Items	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
1					
2					
3					
n-1					
n					
TOTAL BILL NO. 1 TO SUMMARY SHEET					

SCHEDULE OF PRICES

BILL NO. 2: CONSTRUCTION OF WATER BOWZER FILLING POINTS

Item. No.	Description of Items	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
1					
2					
3					
n-1					
n					
TOTAL BILL NO. 2 TO SUMMARY SHEET					

SCHEDULE OF PRICES

BILL NO. 3: PROVISION OF METERED SERVICE CONNECTION TO INDUSTRIAL UNITS

Item. No.	Description of Items	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
1					
2					
3					
n-1					
n					
	TOTAL BILL NO. 3 TO SUMMARY SHEET				

SCHEDULE OF PRICES

BILL NO. 4: REPAIR AND MAINTENANCE OF PUMP HOUSES

Item. No.	Description of Items	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
1		No's			
2		Sft			
3					
n-1					
n					
3	TOTAL BILL NO. 4 TO SUMMARY SHEET				

SCHEDULE OF PRICES

BILL NO. 5: CLEANING AND REPAIR OF OVERHEAD WATER RESERVOIRS

Item. No.	Description of Items	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
1					
2					
3					
n-1					
n					
TOTAL BILL NO. 5 TO SUMMARY SHEET					

SCHEDULE OF PRICES

BILL NO. 6: CONSTRUCTION OF NEW REVERSE OSMOSIS PLANTS

Item. No.	Description of Items	Unit	Quantity	Rate (Rs.)	Amount (Rs.)
1					
2					
3					
n-1					
n					
TOTAL BILL NO. 6 TO SUMMARY SHEET					

SCHEDULE B

SCHEDULE OF PRICES

SPECIFIC WORKS DATA

BLANK

SCHEDULE C

WORKS TO BE PERFORMED BY SUBCONTRACTORS

The bidder will do the works with his own workforce except the item of works listed below which he intends to sub-contract.

Items of Work To be Sub-Contracted	Name and Address of Sub-Contractor(s)	Statement of Similar Works Previously Executed by the Sub-Contractor *
Items of Work 1		
Items of Work 2		
Items of Work 3		
Items of Work 4		
Items of Work 5		
Items of Work 6		
And so on ...		
Total Number of Items of work		

Note:

1. No change of Sub-Contractors shall be made by the bidder without prior approval of the Employer.
2. The truthfulness and accuracy of the statement as to the experience of Sub-Contractors is to be guaranteed by the bidder.
3. The Employer’s judgment shall be final as to the evaluation of the experience of Sub-Contractors submitted by the bidder.
4. Statement of similar works completed by the Sub-Contractor shall include
 - a. Description, location and value of works
 - b. Year of completion of work
 - c. Name and address of the clients. *(attach evidence)

SCHEDULE D

PROPOSED PROGRAM OF WORKS

The Bidder shall provide a work program in the form of a Bar chart, Gantt chart Critical path method etc. using software like Primavera or Microsoft Project. The works must be split into Work Breakdown Structure (WBS) prioritized ordered into sequence by which Constructor proposes to complete the Works of the entire Contract. Achievable milestone with timeline must be fixed to monitor and measure progress of work. Each work activity must be loaded with resource in terms of workforce, cash flow required, material flow etc. The program should indicate all the activities to be completed under the Contract like:

- a. Designing of the work where required
- b. Schedule of submittal of drawings
- c. Ordering and procurement of materials
- d. Manufacturing of parts where required
- e. Delivering at site of work Tools, Plants, and Materials etc.
- f. Construction of civil works
- g. Erection of works
- h. Testing and commissioning of Works

SCHEDULE E

METHOD OF PERFORMING WORKS

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

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

SCHEDULE F

INTEGRITY PACT

*DECLARATION OF FEE AND COMMISSION ETC. PAYABLE BY THE SUPPLIERS OF
WORKS, SERVICES & GOODS IN CONTRACTS WORTH
R S. 10.00 MILLION OR MORE*

Contract No. _____ Dated _____

Contract Value: _____

Contract Title: _____

..... [Name of Supplier] 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 Punjab (GOP) or any administrative subdivision or agency thereof or any other entity owned or controlled by GOP through any corrupt business practice.

Without limiting the generality of the foregoing, [name of Supplier] 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 GOP, except that which has been expressly declared pursuant hereto.

[Name of Supplier] certifies 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 GOP and has not taken any action or will not take any action to circumvent the above declaration, representation or warranty.

[Name of Supplier] 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 GOP under any law, contract or other instrument, be voidable at the option of GOP.

Notwithstanding any rights and remedies exercised by GOP in this regard, [name of Supplier] agrees to indemnify GOP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GOP in an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of Supplier] 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 GOP.

Name of Buyer: Name of Seller/Supplier:
.....

Signature: Signature:
.....

[Seal]

[Seal]

**SECTION 6
CONDITIONS OF
CONTRACT**

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CONDITIONS OF CONTRACT

1. GENERAL PROVISIONS

1.1 Definitions

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

The Contract

1.1.1 “**Contract**” means the Contract Agreement and the other documents listed in the Contract Data.

1.1.2 “**Specifications**” means the document as listed in the Contract Data, including Employer’s requirements in respect of design to be carried out by the Contractor (if any), and any Variation to such document.

1.1.3 “**Drawings**” means the Employer’s drawings of the Works as listed in the Contract Data, and any Variation to such drawings.

The Persons

1.1.4 “**Employer**” means the person named in the Agreement and the legal successor in title to this person but not (except with the consent of the Employer) any assignee.

1.1.5 “**Contractor**” means the person named in the Agreement and the legal successor in title to this person but not (except with the consent of the Employer) any assignee.

1.1.6 “**Party**” means either the Employer or the Contractor.

Dates, Time and Period

1.1.7 “**Commencement Date**” means the date 14 days after the date the Agreement comes into effect or any other date agreed between the Parties.

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 Appendix (or as extended under Sub-Clause 7.3) calculated from the commencement date.

Money and Payments

1.1.10 “**Cost**” means all expenditures properly incurred (or to be incurred) by the Contractor whether on or off the Site including overheads and similar charges but does not include profits.

Other Definitions

1.1.11 “**Contractor’s Equipment**” means all machinery, apparatus and other things required for the execution of the Works but does not include Materials or Plant intended to form part of the Works.

1.1.12 “Country” means the Islamic Republic of Pakistan.

1.1.13 “Employer’s Liabilities” means those matters listed in Sub-Clause 6.1.

1.1.14 “Force Majeure” means an event or circumstance which makes performance of a Party’s obligations illegal or impracticable and which is beyond that Party’s reasonable control.

1.1.15 “Materials” means things of all kinds (other than Plant) to be supplied and incorporated in the Works by the Contractor.

1.1.16 “Plant” means the machinery and apparatus intended to form or forming part of the Works.

1.1.17 “Site” means the places provided by the Employer where the Works are to be executed, and any other places specified in the Contract as forming part of the site.

1.1.18 “Variation” means a change which is instructed by the Engineer/Employer under Sub-Clause 10.1.

1.1.19 “Works” means all the Works and design (if any) to be performed by the Contractor including temporary works and any Variation.

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

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

1.4 Law

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

1.5 Communications

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

1.6 Statutory Obligations

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

2. THE EMPLOYER

2.1 Provision of Site

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

Contract Data.

2.2 Permits etc.

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

2.3 Engineer's/Employer's Instructions

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

2.4 Approvals

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

3. ENGINEER'S/EMPLOYER'S REPRESENTATIVES

3.1 Authorized Person

One of the Engineer's personnel shall have authority to Act for him. This authorised person shall be as stated in the Appendix, or as otherwise notified by the Employer to the Contractor.

3.2 Engineer's/Employer's Representative

The Employer may also appoint a firm and individual to carry out certain duties. The appointee may be named in the Appendix, or notified by the Employer to the Contractor from time to time. The Employer shall notify to the Contractor of the delegated duties and authority of this Employer's representative.

4. THE CONTRACTOR

4.1 General Obligations

The contractor is obliged to submit his work schedule on a bar chart for approval of the Engineer before commencement the work.

4.2 Contractor's Representative

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

4.3 Subcontracting

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

4.4 Duties of the Contractor

The contractor shall liable to prepare site area for construction, providing of all tools & machinery, labour, carriage, construction materials supply etc within due time. The contractor shall also liable to complete the whole works, complete in all respects.

4.5 Performance Security

If stated in the Appendix, the Contractor shall deliver to the Employer within 14 days of the Commencement Date a performance security in a form and from third party approved by the Employer.

5. DESIGN BY CONTRACTOR

5.1 Contractor's Design

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

5.2 Responsibility for Design

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

6. EMPLOYER'S LIABILITIES

6.1 Employer's Liabilities:

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

7. TIME FOR COMPLETION

7.1 Execution of the Works

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

7.2 Program

Within fourteen days of the of the written order to commence the work the Contractor shall submit to the Employer a program for the Works in the form of a PERT chart and submit review of milestone established in the work program.

7.3 Extension of Time

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

The Employer shall extend the Time for Completion as determined.

7.4 Late Completion

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

8. TAKING-OVER

8.1 Completion including Sectional Completion.

The Contractor may notify the Engineer/Employer when he considers that the Works are complete. Partial or sectional completion shall also be acceptable and must be notified accordingly.

8.2 Taking-Over Notice

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

9. REMEDYING DEFECTS

9.1 Remediating Defects

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

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

9.2 Uncovering and Testing

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

10. VARIATIONS AND CLAIMS

10.1 Right to Vary

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

10.2 Valuation of Variations:

Variations shall be valued as follows:

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

10.3 Early Warning

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

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

10.4. Valuation of Claims

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

10.5 Variation and Claim Procedure

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

11. CONTRACT PRICE AND PAYMENT

11.1 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 be paid by the Employer to the Contractor within 30 days after such Interim Payment Certificate has been jointly verified by Employer and Contractor, or, in the case of the Final Certificate within 60 days after such Final Payment Certificate has been jointly verified by Employer and Contractor; Provided that the Interim Payment shall be caused in 42 days and Final Payment in 60 days in case of foreign funded project. The contractor shall

submit schedule of payment for supply and installation of the work.

Valuation of the Works

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

11.2 Monthly Statements

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

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

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

11.3 Interim Payments

Payment will be carried out as per payment schedule signed by the Employer & Contractor.

11.4 Retention

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

11.5 Final Payment

Within twenty one (21) days from the date of issuance of the Maintenance Certificate the Contractor shall submit a final account to the Engineer to verify and the Engineer shall verify the same within fourteen (28) days from the date of submission and forward the same to the Employer together with any documentation reasonably required to enable the Employer to ascertain the final contract value.

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

11.6 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/Employer or fails to proceed expeditiously and without delay, or is, despite a written complaint, in breach of the Contract, the Employer may give notice

referring to this Sub-Clause and stating the default.

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

12.2 Defaults by Employer

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

If the default is not remedied within twenty eight (28) days after the Employer's receipt of the Contractor's notice, the Contractor may by a second notice given within a further twenty one (21) days, terminate the Contract. The Contractor shall then 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 Employer instructs in the notice is to be used for the completion of the Works.

12.4 Payment upon Termination

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

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

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

13. RISKS AND RESPONSIBILITIES

13.1 Contractor's Care of the Works

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

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

13.2 Force Majeure

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

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

14. INSURANCE

14.1 Arrangements

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

14.2 Default

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

15. RESOLUTION OF DISPUTES

15.1 Engineer's Decision

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

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

15.2 Notice of Dissatisfaction

If a Party is dissatisfied with the decision of the Engineer or if no decision is given within the time set out in Sub-Clause 15.1 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.

15.3 Arbitration

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

16 INTEGRITY PACT

16.1 Violation of Integrity Pact

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

- a. recover from the Contractor an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by the Contractor or any of his Sub-Contractors, agents or servants;
- b. Terminate the Contract; and
- c. Recover from the Contractor any loss or damage to the Employer as a result of such termination or of any other corrupt business practices of the Contractor or any of his Sub-Contractors, agents or servants.

On termination of the Contract under Sub-Para (b) of this Sub-Clause, the Contractor

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

SECTION 7
CONTRACT DATA

CONTRACT DATA

NOTE:

The following Contract Data or Special Conditions of Contract (SCC) for the Works to be procured shall complement, supplement or amend the provisions the General Conditions of Contract (GCC). Whenever there is a conflict, the provisions herein shall prevail over those in the General Conditions of Contract.

SCC REF	GCC REF	DESCRIPTION
		A. GENERAL PROVISIONS
1	1.1.4	<p>The Employer: Infrastructure Repair and Maintenance Committee [IR&MC] shall act for and on behalf of Board of Management [MOB] Sundar Industrial Estate [SIE] as The Employer for the purpose of this Contract.</p> <p>Employer’s Address: Board of Management SIE Gate No. 2, SIE, Sundar Raiwind Road Lahore. Phone: (042) 3529 7291~3 Fax: (042) 3529 7080 E-mail: info@sie.com.pk</p>
2	1.1.10	<p>The Cost: It is the total contract price including all taxes, levies and other lawful expenses incurred by the Contractor in performance of his Contract.</p>
3	3.1	<p>Employer’s Representative: BOM SIE has appointed Chief Engineer SIE as the Authorised Person / Representative of the Employer and the Engineer for the Contract who shall direct and operate the Contract.</p>
4	3.2	<p>Engineer’s Representatives: Mr. Kashif Tanveer [Assistant Manage Technical] and Mr. Zohaib Nawaz shall be the Representatives of the Engineer who will apart from their usual duties manage, control and supervise all works under the Contract.</p>
5	1.1.19	<p>The Work: The Scope of work named “Rehabilitation of existing water supply system at SIE” detailed at schedule of prices, comprises:</p> <ul style="list-style-type: none"> (a) Rehabilitation of fire hydrants and control valves including chambers (b) Construction of water bowzer filling points (c) Provision of metered service connection to industrial units (d) Repair and maintenance of pump houses (e) Cleaning and repair of overhead water reservoirs (f) Construction of new reverse osmosis plants (g) Other related works as specified in bid documents or ordered by the Engineer
6	1.1.1	<p>The Contract: The Contract Agreement and documents forming integral part of the Contract as listed herein in the order of priority shall form part of the Contract.</p> <ul style="list-style-type: none"> (a) The Contract Agreement (b) Letter of Acceptance (c) The completed Form of Bid (d) Contract Data (e) Conditions of Contract

SCC REF	GCC REF	DESCRIPTION
		(f) The completed Schedules to Bid including Schedule of Prices (g) The Drawings, if any (h) The Specifications (i) Any other document
7	1.1.5	The Contractor: Mean a person of a firm or an organization named in the Agreement.
8	1.1.2	Specifications: For the purposes of this Contract, Following specification shall be followed by the contractor: a. Specifications of the Communication & Works Department of Government of the Punjab. b. Specifications of the National Highway Authority for Rigid Pavements. c. Technical Specifications included herein.
9	1.1.3	Drawings: Means the drawings included herein or the shop drawings provided by the Contractor from time to time and approved by the Engineer.
10	2.1, 1.1.17	Work Site: The site for all works is Sundar Industrial Estate. The Contractor is deemed to have taken over and possessed the site of Works on the seventh (7 th) day of the receipt of first written order to commence the Work.
11	1.1.6	Party: Means either the Employer or the Contractor; collectively called the Parties
12	2.2	Permits: The Employer shall assist if request by the Contractor under Sub-clause 2.2 of COC.
13	8.1	Partial Completion: Sectional or partial completion by the Contractor shall be acceptable to the Employer / Engineer for the purposes of this Contract.
14	1.1.1	Contract No: Contract Agreement (CA) No. “ED/SIE/2016-17/O&M/W/WS/03” has been allotted to the Work “Repair and Maintenance of Rigid Pavement Roads and Allied Works at SIE”.
15	15.3	The Arbitrator: The Issue Resolving Committee of BOM SIE or any other Committee appointed by the BOM shall act as an arbitrator for the Contract. Arbitration if required will take place in the conference room of BOM SIE. Decision of the Convener of the appointed Committee shall be final, conclusive and binding on both the parties in the Contract.
16	1.1.12	The Country: Means the Islamic Republic of Pakistan
17	1.4	The Law: The law that applies to the Contract is the Law of Islamic Republic of Pakistan.
18	1.5	Contract Language: The language of the Contract including all documents and correspondence shall be English Language.
19	-	Other Contractors: The Contractor is expected to cooperate and coordinate with all other Contractors working at Site. The Engineer’s Representatives shall give list of other contractors and share their Schedule, if any.
20	-	Site Investigation: The Employer shall provide to the Contractor the site investigation report for all new works to be designed by the Contractor. Where the design is provided by the Employer, site investigation report reports may not be necessary.

B. TIME CONTROL		
21	7.2	Program of Work: The Contractor shall Submit a Program for the Works within fourteen [14] days of delivery of the Letter of Acceptance.
22		Program Review: The program of Work shall be reviewed and periodically updated after a after every thirty [30] days starting from commencement date.
23	4.5	Validity of Performance Security: The Performance Security must remain valid 28 days after completion of the project.
24	1.1.7	Commencement Date: The Work shall commence on the seventh (7 th) day of the Engineer's first written order to commence the work is issued to the Contractor.
25	1.1.9	Completion Date: The date of completion for the work shall be one hundred and eighty [180] calendar days after the commencement date or such other extended date approved by the Employer /Engineer.
26		Liquidated Damages: In case of delay in completion the Contractor shall pay Liquidated Damages within fifteen [15] days after the date of completion.
C. QUALITY CONTROL		
27	9.1	Defect Liability: The defect liability period shall commence on the date of first taking over of the completed part of work or the entire work as the case may be and shall continue for one hundred and eighty [180] calendar days thereafter.
D. COST CONTROL		
28	11.2 11.3	Interim Payment Certificate (IPC): Minimum Amount of Interim Payment Certificate will be twenty percent [20%] of contract price.
29	10.2	Price Adjustment: The contract " <i>is not</i> " subject to price adjustment except in accordance with Clause 10.1 of the General Conditions of Contract.
30	11.4	Retention Money: The amount of retention is five percent [5%] of value of approved works of Interim Payment Certificate'.
31	11.4	Limit of Retention: Limit of retention will not be more than ten percent [10%] of contract price.
32		Liquidated Damages: The amount of liquidated damages is point one two percent [0.12%] of the contract price per day subject to a maximum of ten [10%] of the contract price
33	4.5	Performance Security: The amount of the performance security is ten percent [10%] of the contract price as provided in Sub-Clause 4.5 of the GCC, and the Contractor shall submit to the Employer within fourteen [14] days of Commencement Date in the form of Pay Order in favour of the Employer. Note: a minimum amount should be equivalent to 10% ~ 15% of the contract price.
34		Bonus: Should the Contractor complete the entire work before the stipulated completion herein he will be entitle to the bonus for early completion equal to an amount of five percent [5%] of the total value of work done.
35	-	Advances: The amount of advance payment on account of mobilization and stores brought at site shall respectively be fifteen percent [15%] of the contract sum and seventy percent [70%] of the value of stores payable against bank guarantee. The advance can be drawn within thirty [30] days of commencement.
36	-	Recovery of Advance: Monthly Recovery of Advance Payment shall be twenty five percent [25%] of the amount of Interim Payment Certificate.
E. FINISHING THE CONTRACT		
37	5.1	As built Drawings: As built drawings shall be supplied by the contractor within fifteen [15]

		days of handing over of the completed works.
38	-	<p>Amount to be withheld: Project Manager may withhold an amount equal to:</p> <ul style="list-style-type: none"> a. Five percent [5%] of the contract in the case the contractor does not submit as built drawings. b. Another five percent [5%] of the Interim Payment should the contractor not submit an updated program.
39	7.4	<p>Late Completion: Number of days for which the maximum amount of liquidated damages can be paid is seventy five [75] days.</p>
40	-	<p>Additional Cost: The percentage to apply to the value of the work not completed, by the Contractor representing the Employer's additional cost for completing the Works, is 7.5%</p>

SECTION 8
STANDARD FORMS

FORM OF BID SECURITY

(Bank Guarantee)

Guarantee No. _____

Executed on _____

(Letter by the Guarantor to the Employer)

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

—

Name of Principal (Bidder) with address:

—

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

—

Bid Reference No. _____ Date of Bid

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

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has submitted the accompanying Bid numbered and dated as above for

_____ (Particulars of Bid) to the said Employer;
and

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

- (1) That the Bid Security shall remain valid for a period of twenty eight (28) days beyond the period of validity of the bid;
- (2) That in the event of;

- (a) The Principal withdraws his Bid during the period of validity of Bid, or
- (b) The Principal does not accept the correction of his Bid Price, pursuant to Sub-Clause 16.4 (b) of Instructions to Bidders, or
- (c) Failure of the successful bidder to
 - (i) Furnish the required Performance Security, in accordance with Sub-Clause IB-21.1 of Instructions to Bidders, or
 - (ii) Sign the proposed Contract Agreement, in accordance with Sub-Clauses IB-20.2 & 20.3 of Instructions to Bidders,
- (d) The entire sum shall be paid immediately to the said Employer for delayed completion and not as penalty for the successful bidder's failure to perform.

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

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

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

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

Guarantor (Bank of Punjab)

Witness: 1. Signature _____

1. _____ 2. Name _____

- _____ 3. Title _____
Corporate Secretary (Seal)
2. _____
- _____
(Name, Title & Address) Corporate Guarantor (Seal)

FORM OF PERFORMANCE SECURITY
(Bank Guarantee)

Guarantee No. _____

Executed on _____

(Letter by the Guarantor to the Employer)

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

Name of Principal (Contractor) with address:

Penal Sum of Security (express in words and figures)

Letter of Acceptance No. _____ Dated _____

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

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

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfil all the undertakings, covenants, terms and conditions of the said Documents during the original terms of the said Documents and any extensions thereof that may be granted by the Employer, with or without notice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfil all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of the said Documents that may hereafter be made, notice of which modifications to the Guarantor being hereby waived, then, this

obligation to be void; otherwise to remain in full force and virtue till all requirements of Clause 9, Remedying Defects, of Conditions of Contract are fulfilled.

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

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

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

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

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

FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (hereinafter called the "Agreement") made on the ____ day of _____ 2010 ____ between _____(hereinafter called the "Employer") of the one part and _____ (hereinafter called the "Contractor") of the other part.

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

NOW this Agreement witnesseth as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.
2. The following documents after incorporating addenda, if any except those parts relating to Instructions to Bidders, shall be deemed to form and be read and construed as part of this Agreement, viz:
 - (a) The Letter of Acceptance;
 - (b) The completed Form of Bid along with Schedules to Bid;
 - (c) Conditions of Contract & Contract Data;
 - (d) The priced Schedule of Prices;
 - (e) The Specifications; and
 - (f) The Drawings
3. In consideration of the payments to be made by the Employer to the Contractor as hereinafter mentioned, the Contractor hereby covenants with the Employer to execute and complete the Works and remedy defects therein in conformity and in all respects within the provisions of the Contract.
4. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works as per provisions of the Contract, the Contract Price or such other sum as may become payable under the provisions of the Contract at the times and in the manner prescribed by the Contract.

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

Signature of the Contactor

(Seal)

Signature of the Employer

(Seal)

Signed, Sealed and Delivered in the presence of:

Witness:

(Name, Title and Address)

Witness:

(Name, Title and Address)

FORM OF BANK GUARANTEE FOR ADVANCE PAYMENT

Guarantee No. _____

Executed on _____

(Letter by the Guarantor to the Employer)

WHEREAS the (Board of Management Sundar Industrial Estate hereinafter called the Employer has entered into a Contract for "Repair and Maintenance of Roads and Allied Works at Sundar Industrial Estate", with (Name of the Contractor)hereinafter called the Contractor).

AND WHEREAS

1. The Employer has agreed to pay advance to the Contractor, at the Contractor's request, an amount of Rs. (_____Figure_____) Rupees (_____Words_____) which amount shall be advanced to the Contractor as per provisions of the Contract.
2. The Employer has asked the Contractor to furnish Guarantee to secure the advance payment for the performance of his obligations under the said Contract.
3. _____ (Scheduled Bank) (hereinafter called the Guarantor) at the request of the Contractor and in consideration of the Employer agreeing to make the above advance to the Contractor, has agreed to furnish the said Guarantee.

NOW THEREFORE

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

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

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

This Guarantee shall expire not later than _____

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

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) |

SECTION 9
SPECIFICATIONS

GENERAL

1. Specs and Drawings

This General Specification is to be taken as applying to all the works in this Contract. Figured dimensions on the working drawings shall be followed in preference to the scale.

2. Local Materials

Until and unless specified otherwise, all goods and materials are to be Pakistan manufactured and to be of the best quality, and where not otherwise specified shall be according to latest engineering practice and conforming to Pakistan Standards (P.S) or British Standard Specifications (B.S.S) or Standard of American Society of Testing Materials (ASTM). The Engineer or the Consultants may also supplement such specifications during the progress of work.

3. Material Testing

All materials and goods used for such and other items shall be subjected to standard testing and if found below the specified standard such as PS or BSS or ASTM or their equivalent shall be removed from the site immediately at Contractor's own expense. All testing of materials finished and unfinished, shall be carried out by the Contractor at his cost, in the presence of Engineer or Engineer or his Representative for which the Contractor shall maintain a reasonably well equipped laboratory of his own, close to the site of work or make any other additional arrangement to the satisfaction and convenience of the Engineer. The Contractor shall include testing charges in his quotations and shall not be entitled to any reimbursement on this account for routine testing.

4. Material Samples

The Contractor must give early attention to the submission of samples of materials for approval of the Engineer, indicating the names of the manufacturing firms where applicable especially of cement, sand, aggregates, steel, water, tiles, hard-core and all fittings. Whenever practicable, samples shall be submitted at least three weeks before it is proposed to use the materials. Until and unless specified otherwise and whenever materials are ordered to be forwarded to a testing laboratory other than site laboratory for check/ testing, the Contractor will be reimbursed the cost of fees for such tests if proved satisfactory, by the Employer. The Contractor, however, will be required to bear the cost of the fees for tests, which proved unsatisfactory.

5. Care of Work

The Contractor must take all steps necessary to prevent damage or interference with all supply lines such as water, electric power, fuel, telephones, drains, buried cables and any construction designed for the use of the public, government or semi government authorities or the Employer. The Contractor shall be responsible for any damage caused to such services or constructions and settle all claims in respect of such damage.

6. Protection of Works

The Contractor shall protect from injury by covering all work, internally and externally needing

protection including new concrete, brickwork, surface renderings, floors, etc., to the satisfaction of the Engineer, including the work of his subcontractors at his own cost.

7. Work to Conform

The whole work shall be carried out in the best manner in accordance with the instructions contained in these documents and those given by the Engineer from time to time during the progress of the work. The work shall be carried out in conformity with the best of the standard construction practices preferably the British Codes of Practices.

8. Program of Work

The Contractor shall submit to the Engineer for his approval before beginning the work, a complete plan of the proposed sequence and methods of operations for the execution of the works. Detailed drawings showing the location and construction of dumping and working platforms, cranes, building and all other structures in connection with the Contractor's plant and material storage sheds shall also be submitted to the Engineer for his approval before construction.

9. Orders by the Engineer

Orders and directions may be given orally by the Engineer or his Representative, and shall be received and promptly obeyed by the Contractor or his Representative or any superintendent or foreman or any supervisor of the Contractor whosoever may have charge of the particular part or section of work in relation to which the orders or directions are given, and a confirmation in writing of such order or directions will be given to the Contractor by the Engineer, if so requested. The Contractor shall provide and maintain at his own expense during the performance of the work an office in the vicinity of work. Orders or directions, written or oral, from the Engineer or his Representative delivered at such office shall be considered as delivered to the Contractor. The Contractor's office shall be fitted with a telephone connected to the local Telephone Exchange.

10. Use of Site

The Contractor shall not use the site for any other purpose than that of carrying out this Contract work. The operations of the Contractor shall be confined to the area immediately adjoining the buildings and the works included in this Contract but site clearance shall be kept to the satisfaction of the Engineer to permit carrying out of other works by other Contractors. The Contractor shall not affix advertisements; neither shall he permit advertisements to be displayed without the written consent of the Engineer.

11. Shop Drawings

The contract drawings are the working drawings to guide the Contractor generally about the shape and size of all the structures and fittings. Before proceeding to make preparations, fabrication, execution, erection of any such fittings and other details of any temporary works, scaffolds, railings, shuttering, details of doors, windows, partitions, iron mongers work, etc; the Contractor shall be under obligation to prepare and submit all detailed shop drawings to the satisfaction and the approval of the Engineer, before doing any or all of that described above

or as directed. Approval of the contractor's drawings shall not relieve the Contractor for any part of his obligation to meet all the requirements of the specifications or correctness of his drawings.

12. Cement Work

No cement work shall be permitted during extreme cold weather when unless otherwise authorized by the engineer.

13. Payment

Contractor shall not be entitled to any separate or additional payment on account of all these general requirements and any other arrangement or action Contractor has to undertake under the direction of the Engineer for a proper carrying out of the works and meeting all obligations of the Contract.

SITE CLEARING, GRUBBING AND SETTING OUT OF WORKS

1. Scope of Work

The work covered by this section of specifications consist of furnishing all labour, necessary equipment, services, miscellaneous and necessary items required to satisfactorily complete the clearing, grubbing and setting out of the works, as indicated on drawings, specified herein or both.

2. Clearing

Clearing shall consist of cutting, or trimming of trees, if any, and the satisfactory disposal of tree and other vegetation designated for removal, together with the timber snags, bushes, and rubbish occurring within the area. Trees, other vegetation stumps, roots, and bushes in area to be cleared shall be cut off flush with or below the original ground surface except such individual trees, group of trees and vegetation as may be indicated on the drawing or designated by Engineer or his Representative to be left standing. Individual trees and other vegetation, to be left standing shall be thoroughly protected from damage during construction operation, by erection of barriers or by such other means as the circumstances require and as approved by the Engineer or his Representative. Clearing operation shall be conducted in a manner that existing structures and installations under construction, employees and others remain safe.

3. Grubbing

Grubbing shall consist of the removal and disposal of all stumps, roots and matted roots in the designated grubbing areas. Stumps, roots, logs and timber and other debris, shall be excavated and removed to a depth not less than 2 feet below any subgrade level. In areas where the cut is over 3'-6" grubbing shall not be necessary.

4. Disposal of Debris

Timber and other refuse to be disposed off by burning shall be burned at location, approved by the Engineer or his Representative, in a manner that will avoid all hazard such as damage to existing structures, construction in progress, trees and vegetation. The contractor shall be responsible for compliance with all pertinent laws and regulations pertaining to the burning of fire. Disposal by burning shall be kept under constant attendance, and residual, until materials will not be permitted to be pushed or placed on the adjacent areas without written approval of the owner/owners. The stones and concrete shall be broken and removed from the site for receiving the structure/flooring where required. All debris shall be disposed off by the Contractor as directed by the Engineer.

5. Setting out of Works

The Contractor shall set out the works and shall be responsible for true and perfect setting out of the same and for correctness of the direction, levels, dimension and alignment of all parts thereof. If at any time any error in this respect shall appear during the progress of the works, the Contractor shall, at his own expense, rectify the error to the satisfaction of the Engineer. The Contractor shall construct accurate benchmarks so that the lines and levels can easily be checked

by the Engineer.

6. Drainage Ditches

The Contractor shall construct and maintain such ditches, in addition to those shown on drawings or as may be ordered by the Engineer to adequately drain and areas under construction.

7. Payment

Lump sum payment shall be made for the work covered in this section of the specification and all costs of site clearing and setting out shall be covered in the unit rates of the Contractor for this item.

EXCAVATION, FILLING, BACKFILLING AND DISPOSAL

1. Scope of Work

The work covered by this section of the Specifications consists of furnishing all Plant, Labour, Equipment, Appliances and materials and in performing all operations in connection with excavating, filling, backfilling and disposal for building construction, and other foundations complete in strict accordance with this section of the Specifications and the applicable drawings and subject to the terms and conditions of the Contract.

2. Boring Log Data

A preliminary report on Subsoil investigation and exploratory data of the site area is available for reference only in the office of the Engineer. The Employer or Engineer's predications, regarding character or extent of soil or other subsurface conditions to be encountered during the work are not bounding on the Contractor. The Contractor shall make his own deductions for subsurface conditions which may affect methods or cost of constructions of the work hereunder and he shall make no claim whatsoever for damages or compensation, should he find conditions during the progress of the work, different from those indicated by the soil investigation report of Engineer.

3. Excavation

a. Classification

Excavation shall include the removal of all materials of every category and nature. If rock is encountered it shall be removed carefully and without excessive noise and vibration. Blasting shall not be resorted to without specific permission in writing from the Engineer.

b. Dimensions

The excavation shall conform to the dimensions and elevations as indicated on the Drawings. Foundations on made up ground shall be taken down to natural bottom soil as per direction and approval of the Engineer. Excavation shall extend a sufficient distance from walls and footings to allow for placing and removal of forms installation of services and for inspection but the same shall not be paid.

c. Beyond Limits

In the event of any excavations being carried out wider or deeper than authorized, the same shall be filled in by the Contractor at his own cost to the required levels with lean concrete if below footing or with properly compacted, local river sand if beneath slabs or as directed by the Engineer.

d. Shoring and Bracing:

The Contractor shall provide at his own cost, where required all shoring walls, supports etc. to the sides of the excavation to prevent sliding or any movement; where necessary, excavated sides shall be sloped as directed by the Engineer.

e. Dewatering and Drainage:

The Contractor shall control the grading in the vicinity of site of work in order to prevent any water from running into the excavated areas. He shall at his own cost keep dry all pits and trenches during construction and all de- watering and pumping out whether due to ground water seepage or otherwise, shall be included in the rates as quoted by the Contractor. The method employed in all cases shall be approved and agreed by the Engineer or his Representative.

f. Protection of utility lines:

When any existing utility lines whether to be retained or be removed are encountered within the area of operations, the Contractor shall notify the Engineer and his Representative, and shall not proceed until necessary measures are taken for protection or removal of the lines and instructions are obtained from the Engineer.

g. Excess and undesirable material:

Excess and undesirable material from excavation not required for fill or backfill of at the site, shall be disposed off, removed and/or deposited and levelled on the work site as directed by the Engineer. Earth suitable and meant for backfill shall be stored at site in a manner not to interfere with the progress of construction works.

4. Fill and Backfill

Where concrete slabs are to be placed on the ground, any loam, organic and other unsuitable material shall be removed. Fill where required to raise the subgrade for concrete slabs shall be clean, unadulterated local river sand or gravel and shall be free from wood, stones and other debris. Excavated material shall only be used for fill if approved by the Engineer in writing. All the backfill behind the subgrade walls shall be done with clean local river sand or approved excavated soil. Fill shall be compacted up to 95% modified AASHTO Density by a Power vibratory roller, mechanical rammer, or other approved equipment, in layers not more than 6 inch thick. Each layer shall be uniformly spread, watered to the extent of optimum moisture requirement for the required degree of compaction and then compacted. Contractor shall arrange at his own cost the testing of the filling where required by the Engineer or his Representative, after completion of foundation footings, walls, slabs and other construction below the elevation of the final grades and prior to backfilling. Backfill shall be placed in horizontal layers not more than 6 inches thick and shall have proper moisture content for the required degree of compaction of 95%. Each layer

shall be compacted by mechanical tampers or by other suitable equipment approved by the Engineer. Backfill shall be brought to a suitable elevation above grade to provide for anticipated settlement and shrinkage thereof.

Backfill shall not be placed against foundation, walls etc., prior to the damp proofing treatment, if specified and approved by the Engineer or his Representative. Backfill shall be brought up evenly on each side walls as far as practicable. Heavy equipment for spreading and compacting backfill shall not be operated closer to the wall than distance equal to the height of the backfill above the top of footing.

5. Compaction:

Fill and/or backfill within the building or structures and for a distance of 6 ft. outside structures shall be compacted to a density of not less than 95% maximum density at optimum moisture content.

6. Rough Grading:

- a. Necessary rough grading shall be carried out by the Contractor to establish grade or construction requirements of the site. Grades not otherwise indicated shall be uniform levels or slopes between points on existing and finished grades. Abrupt changes in slopes shall be rounded. Additional fill required to complete rough grading shall be provided as directed by the Engineer or his Representative.
- b. Where paving or slabs are specified, all rough grading shall be done to the subgrade of the base course, removing all large stones and debris and shall be compacted uniform to the correct lines and levels ready to receive the paving or slab. Refilling, where required shall be executed with suitable selected materials in layers not exceeding 6 inch thick and thoroughly compacted to the required density. In place density tests shall be carried out by the Contractor for the approval of the compaction by the Engineer.

7. Footing Bottom Levels:

The levels as noted in the Drawings are only approximate and must be adjusted in the field with the approval of Engineer, depending on the soil conditions encountered. No concreting shall begin until the soil bearing capacity is substantiated by visual inspection by the Engineer or his Representative. The Contractor in planning his work shall make arrangement and provisions to construct the lowest level footings first.

8. Field Levels:

Prior to starting the work, the Contractor shall arrange to take the levels of the piece of land on which the building is located as directed by the Engineer. The same shall be simultaneously checked by the Engineer or his Representative and shall form the basis of payments for excavation and filling etc.

9. Disposal of Surplus Earth and Rubbish:

All surplus earth and rubbish shall be disposed off at site as directed by the Engineer. Disposal of

surplus earth and rubbish can only be carried out in timings allowed by the local authorities. The term disposal shall include all operations of loading, unloading, stacking, spreading, re-handling, filling in depressions, including consolidating and ramming in layers not exceeding 6 inch thickness.

10. Measurements And Payments:

All excavation shall be measured net and perpendicular and no allowance shall be made for any increase in bulk of the excavated material after excavation or for sloping sides, or widened trenches to accommodate formwork, shoring and bracing etc. Similarly the measurements for filling/backfilling shall be thoroughly compacted and measured net and no allowance shall be made for any increase in bulk after excavation. Excavation, filling and Disposal shall include all leads and lifts as specified elsewhere in these specifications. Payment for all the items under this section shall be made at the rates entered in the BOQ appended to the contract and in accordance with the applicable conditions of the contract.

WATER

1. Scope:

The work covered by this section of the Specification consists of furnishing all labour, appliances and in performing all operations in connection with obtaining, conveying and storing water at site of work.

2. Quality of Water:

The water used for construction the contractor shall supply sufficient water for all purposes, including mixing the concrete, curing and cleaning plants and tools. Where doubt exists as to the suitability of the water, it shall be tested at the cost of the contractor in accordance with BS3148. Where water shall be shown to contain any organic impurities sugar or an excess of acid, alkali or salt or inorganic impurities in solution or suspension, the engineer shall refuse to permit its use. The suitability of water shall be subject to test when required by the engineer.

3. Chemical Requirements

As a guide, water may be used as mixing water if the chemical contents do not exceed the following limits, otherwise control test's to show the suitability have to be made.

Ingredients	Unit	Limits
Dissolved Solids	ppm	2000
Alkali Carbonate and Bicarbonate	ppm	1000
Maximum concentration of chloride in prestressed concrete	ppm	500
Sulphate (So ₄)	ppm	3000
Alkalies (Na ₂ O+0.658 K ₂ O)	ppm	600
Minimum pH – Value		4

In general, for reinforcement concrete in moist environment, or concrete containing imbedded aluminium structures with dissimilar metals, a maximum concentration of 1000 ppm is acceptable.

If the result of the acceptance tests are within 90% of the permissible limits, the quality control tests for above impurities shall be down each month, of not otherwise directed by the engineer.

If the amounts of each chemical ingredient are lower than specified in the section, and trial mixes show that no harmful effects appear due to the subject tested, the water can be used as mixing water.

4. Temporary Storage Tank:

The Contractor shall provide onsite at his own cost temporary storage water tank with all necessary G.I. Pipes and fittings as per instructions of the Engineer. No separate payment will be made for tank, pipes and accessories, etc. These tanks shall be removed or dismantled or demolished and the area shall be cleaned and made good on completion of work as per direction of Engineer.

5. Payment:

No separate payment will be made for the work covered under this section, and all costs in

connection therewith shall be deemed to be included in the unit rates.

STEEL REINFORCEMENT

1. Scope of Work:

The work covered by the section of the specification consists of furnishing all materials, tools, labour, equipment & appliances and in performing all operations in connection with the providing, straightening, cutting, bending, binding, fixing, elsewhere with necessary overlaps, wastage including binding wire, chairs, pins, spacer block complete in strict accordance with this section of the Specifications, the applicable drawings, approved bar bending schedule according to BS-4466 and the terms and conditions of the Contract. All steel reinforcement should be placed at locations, to lines and level as shown in the drawings and as the directed by the Engineer.

2. Materials:

2.1 Reinforcing steel to be new billet stock of mild steel (plain bar), hard grade (deformed bar) and Ribbed Tor steel as specified on the drawings and shall conform to British Standard Specifications or equivalent ASTM or Pakistan Standard.

2.2 The Contractor shall furnish to the Engineer's Representative Manufacturers' mills certificate to guarantee that steel meets the standard, specifications requirements and minimum certified yield stresses as follows:-

- i) Mild Steel plain bars conforming to B.S.S. 4449 or PS-231
 - a) Tensile Strength: 438 to 517 N/Sq.mm (63.5 to 75 Kips/Sq. in).
 - b) Yield Strength : 250 N/Sq. mm (36 Kips/Sq. in)
 - c) Elongation : 16% to 24% (average 20%).
- ii) Hot rolled deformed bars conforming to ASTM A-615 Grade 60 or PS-605
 - a) Tensile Strength: 560 N/Sq. mm (81 Kips/Sq. in).
 - b) Yield Strength : 415 N/Sq. mm (60 Kips/Sq. in).
 - c) Elongation : 11%

2.3 All steel to be true to the Standard Specifications with regard to bend ability specially the hard grade deformed bars under 19 mm (3/4") dia. shall be capable of being bent cold through 90 degree round a bar of four times its own diameter without fractures or injury of any kind. In case of deformed bars over 19 mm (3/4") dia. and under 28 mm (1-1/8") dia. round a bar of 6 times its own diameter.

2.4 18 gauge galvanized wire shall be used for binding the steel reinforcement.

3. Testing:

Reinforcement shall be obtained only from manufacturers approved by the Engineer or his Representative. All reinforcement shall be tested according to ASTM standard. If and when required samples shall be tested for above specification in an approved laboratory when required by the Engineer or his Representative and all costs of such tests shall be borne by

the Contractor as a minimum three (03) samples will be tasted per twenty (20) ton of steel.

4. Storage

Reinforcing bars shall be stored on platforms above surface of ground and be free from scales, oil, structural defects prior to placement in works. Rusted or dirty steel bars shall not be used in the works unless brushed and cleaned by proper steel wire brushes and after being approved for use by the Engineer or his Representative.

5. Cutting and Placing

5.1 All reinforcement steel shall be cut and bent cold in strict accordance with bar bending schedules approved and drawings supplied by Engineer. The Contractor shall prepare bar bending schedule from approved structural working drawings conform to ACI 318-02 section 12.5. The bending schedules shall be drawn on approved forms and submitted to the Engineer or his Representative for checking and approval. The steel reinforcement shall be cut and bent to sizes as per drawings and approved bending schedules. In case any bars, cut, bent or even fixed in position are found incorrect in dimensions size or shape according to the requirements of the drawings and instructions of Engineer, the Contractor shall replace such steel bars cut bent or fixed in position by correct sized bars at his own cost and no extra payment shall be made to the Contractor on such account. The system of holding bars in place shall ensure that all steel in top section will support weight of workmen without displacement or distortion. Suitable spacers and chairs as approved by the Engineer or his Representative shall be used for supporting and spacing purposes of bars. In case any bars are bent or displaced they shall be straightened or replaced prior to pouring. All reinforcement bars within the limit of a day's pour shall be in place and firmly tied with 18 gauge G.I. wires. Bars with kinks or bends not shown on drawings shall not be used.

5.2 Where indicated in the drawings, mesh shall be of the sizes as shown on drawings and conform to British Standard B.S.785. Mesh reinforcement when used in slabs shall be supported at proper elevations by standard accessories. In slabs on ground, pre cast concrete blocks may be substituted for chairs.

6. Laps and Splices

6.1 No splicing of bars shall be allowed at position other than shown on the drawings. All lap lengths shall be of the minimum sizes as indicated on the drawings or in conform to ACI-318-02 section 12.5 and in no case shall lap length be less than 40 times the diameter of the bigger lapping bars for nominal M.S. bars. Hard grade bars and tor steel shall have laps of 50 times the bigger diameter of lapping bars. Splices of adjacent bars shall be staggered unless approved otherwise by the Engineer or his Representative.

6.2 All reinforcing steel fixed in position shall be inspected by the Engineers Representative and no concrete shall be poured until steel placement has been approved by the Engineers Representative. For inspection purposes the Contractor shall give to the Engineers Representative reasonable notice before the scheduled pouring time. Clear concrete cover to reinforcement steel shall be as indicated on the drawings/specified.

7. Manufacture

Steel shall be manufactured from prime Pakistan Steel billets.

8. Measurement and Payment

8.1 The quantity to be paid for shall be the calculated in theoretical number of metric ton of reinforcement steel bars or mesh as determined from the approved bar bending diagrams and incorporated in the concrete and accepted, except when reinforcement is paid for under other items.

8.2 The weight of plain or deformed bars will be computed from the theoretical weight of plain round bars of the same nominal size as shown in the following tabulation:

Size Inch	Weight in		Size Inch	Weight in	
	Lbs / ft.	Kg. / ft.		Lbs / ft.	Kg / ft.
¼	0.167	0.076	¾	1.502	0.681
3/8	0.376	0.170	7/8	2.044	0.927
½	0.668	0.303	1	2.672	1.212
5/8`	1.043	0.473	1-1/18	3.382	1.534

8.3 Clips, ties, separators, and other material used for positioning and fastening the reinforcement in place, and structural steel, shall not be included in the weight calculated for payment under this item. If bars are substituted upon the Contractor's request and as a result more steel is used than specified only the amount specified shall be included.

8.4 When laps are made for splices, other than those shown on the drawings or required by the Engineer and for the convenience of the Contractor, the extra steel shall not be measured nor paid for.

8.5 When continuous bars are shown on the drawings, without the splices being shown, the necessary steel in the splices will be paid for on the basis of the individual bars not being shorter than 40 ft (12 m).

8.6 The accepted quantity measured as provided above shall be paid for at the contract unit price for the items listed in the Bill of Quantities, which price and payment shall be full compensation for furnishing materials, labour, equipment and incidentals necessary to complete the item.

BRICK WORK

1. Scope

The work under this section includes First Class brick work in walls, both internal and external of any thickness and of the heights shown on the drawings. The brick work shall be carried out in cement sand mortar of proportion specified in the Bill of Quantities.

2. Conformity To Specifications

Except as otherwise specified, all brickwork shall be erected in conformity with West Pakistan Schedule of Rates Volume I Part II Section 21.1 "Brick Work General" as applicable to the work shown on the drawings and as specified.

3. Materials

3.1 Bricks

Brick shall be first class, strong and sound of well burnt clay, uniform in shape, colour and shall measure 220x105x67 mm with dimensional tolerance of 1.6mm so that every four courses laid shall measure 305mm in height. Bricks should produce a ringing sound when struck. The brick shall be free from flaws, cracks, chip stones, nodules of lime or kankar or other blemishes. The brick shall not absorb more than 1/6th its weight when soaked in water for an hour. Minimum compressive strength shall not be less than 140kg/sq.cm. Bricks of only one size shall be used throughout the work and bricks from different kilns not having the same size shall not be allowed. All the bricks shall conform to W.P. Specifications Vol. I, Part II 4.4.1 for First Class Burnt Clay Bricks.

3.2 Mortar for Brickwork

- a. Mortar shall be mixed in proportion as specified in Bill of Quantities and shall be done by volume except directed otherwise by the Engineer.
- b. Cement and sand shall be thoroughly mixed in a dry state on a paved platform or in a trough & appropriate quantity of water shall be added to make the mortar of workable consistency. The mortar in any single batch shall be of quantity which could be used within 30 minutes of mixing water. Such mortar which has not been used within 30 minutes of addition of water shall be discarded. The mixing platform or, trough shall be thoroughly, washed and cleaned at the close of the day's work.
- c. Portland cement shall conform to BS: 12.1958.
- d. Sand shall be as specified under section "Concrete Work".
- e. Water shall be clean, free from any organic impurities & acids, alkaline, greasy or oily substances, either in solution or in suspension as specified under section "Concrete Work".

3.3 Wall Ties

Mild steel bars, wall ties, lugs, anchors etc. shall be provided as per drawing and instructions of the Engineer.

4. Samples

The samples of all the material used for brick work shall be approved by the Consultants.

Material as approved by the Consultants shall be used during the work in progress. If the Engineer, desires to get the material tested, this will be done by the Contractor from a Laboratory approved by the Engineer at the Contractor's expenses.

5. Workmanship

5.1 Brick Lying:

Brick lying shall conform to the applicable requirements of W.P. Specifications Vol. 1, Part II. All brick work shall be 'done with approved bricks and shall be strictly in accordance with the drawings. The bricks shall be laid in mortar specified in the Bill of Quantities. Before the bricks are used they shall be soaked in water tanks (to be constructed by the Contractor at his own cost) for at least four hours. They shall be placed in the water tanks in a manner that they do not get damaged.

5.2 Bricks Bond

Bricks Bond shall always be laid in English bond (unless otherwise directed by the Consultants) with frogs upwards. Bricks shall be laid with bed and vertical Joints pa tilled with specified mortar. Brick work must be truly plumb and must be checked by plumb bob and straight 4dge frequently. Brick work should present a perfect straight and vertical surface and no chipping or rubbing shall be allowed. Brick work where necessitated by the d have curved or chamfer surface shall be cut and chiselled finely such as when placed in position they do not present an ugly look or require levelling up with extra mortar. Where work has to be left incomplete, it shall be left in slope and in no case the difference of height between different walls shall be more than 1.5 Here at any section of the building.

5.3 Location of Bond

All brick work shall be bonded where it abuts other brick work, concrete walls and concrete columns. Where brick walls and partitions intersect or abut, it is absolutely necessary to interlock the masonry of the two walls in a way as not to leave a straight vertical joint between the two walls. In such cases the bond shall be obtained by placing the closer 115mm from the face in every alternate course of the wall or masonry ties shall be provided. Where brick work abuts concrete, wall ties engaging in dovetail, slots shall be provided at every fourth course. 76mm long brick course height shall be considered sufficient under these specifications, unless the Contractor considers continuous length of slots convenient for his working. %there 14.S.bar wall ties are shown on drawings; these shall supercede dovetail wall ties specified herein.

5.4 Bricks Wedged

Brick work shall be wedged to the underside of floor and roof slabs and the top most horizontal joints shall be, filled with mortar well compacted. Putlog holes shall always be along headers and not more than one brick in length and shall be neatly bricked in on removal of scaffolding.

5.5 Built-in Items

All the built-in items such as anchor bolts, inserts, pipe supports, hangers, pipe sleeves, dowels, ties and all items shown on the drawings or specified are required to be built into the masonry as the work progresses.

Frames and other built-in work shall be maintained in their proper position and bracing shall not be removed until they are securely held in position by the masonry. The spaces around all built in items shall be filled with masonry. Where required for later building in, opening in masonry for heating and plumbing pipes, electric conduits etc. shall be left, and after piping or conduits have been installed, filled around with brick work and mortar.

All cutting and patching of masonry required for installation of built in work or work supported by masonry shall be kept properly cured, for at least 10 days where cement mortar is used. Where according to plans and sections the masonry work requires cut bricks to be used, the same shall be done by the Contractor free of cost, to obtain correct thickness according to drawings.

5.6 Jointing

Vertical joints in alternate course must be directly one over the other, horizontal joints shall be truly level. The thickness of joints shall be between 8mm to 13mm or as shown otherwise on the drawings. The thickness of joints must be kept uniform throughout the progress of work and varying sizes of joints shall not be allowed. The joints of the masonry must be raked out uniformly at the close of each day's work and any extra mortar sticking on the face of the work must be scrubbed out and cleaned daily.

6. Measurement And Payment

6.1

Brick work in wall having 230 mm thickness shall be measured in square metre i.e. multiplying the length or breadth of wall with height of the wall. 115 and 76 mm thick walls shall also be measured in square metre. All the openings left in masonry wall will be deducted. All mild steel reinforcement shall be measured as specified in section "Concrete Work". The rate for items of work in this section shall include:

6.2

The cost of material, labour, curing, scaffolding and appliances at site and all operations in connection with the installation of brick work in accordance with the drawings, finish schedules and as specified above, and cutting and patching work required for installation built in work.

PLASTERING

1. Scope of Work:

The work covered by this section of the Specifications consists of furnishing all plant, labour, appliances, and materials and in performing all operations in connection with the installation of plastering complete in strict accordance with this section of the Contract.

2. General

Except as may be otherwise shown on the drawings or specified elsewhere; the plaster surfaces shall include walls, partitions jambs, returns, reveals, backs of recesses and jambs and heads of windows and doors and all the soffits, alcoves etc.

3. Materials:

- a. "WATER" as specified in respective section.
- b. "CEMENT" shall be ordinarily Portland cement and shall conform to B.S.S.12.
- c. "SAND" shall be from approved source and free from dust and salt as specified in Section on concrete.
- d. "METAL LATH" shall be expanded metal not less than 9" wide strips, and weighing at least 2.5 lbs, per square yard or as directed by the Engineer.
- e. "CORNER LATH" shall be strips 6" wide bent to form two 3-inches wings.

STANDARD SPECIFICATION FIRE HYDRANT NAD VALVE ASSEMBLIES

Part 1 General

1.1 Description

This section includes materials, installation, and testing of fire hydrant valve assemblies for various working pressures. Assemblies shall be installed at the locations as shown on the Drawings or as established in the field by the Employer's Representative.

1.2 Related Work Specified Elsewhere

- A. Standard Drawings.
- B. Record Drawings and Submittals: STD SPEC 01300.
- C. Trenching, Backfilling, and Compacting: STD SPEC 02223.
- D. General Concrete Construction: STD SPEC 03000.
- E. Miscellaneous Metalwork: STD SPEC 05121.
- F. Painting and Coating: STD SPEC 09900.
- G. Polyethylene Sheet or Tube Encasement: STD SPEC 09954.
- H. General Piping Requirements: STD SPEC 15050.
- I. Steel Transmission Pipe: STD SPEC 15061.
- J. Resilient Seated Gate Valves: STD SPEC 15101.
- K. Disinfection of Piping: STD SPEC 15141.
- L. Pressure Testing of Piping: STD SPEC 15144.
- M. Ductile Iron Pipe: STD SPEC 15240.
- N. Steel Pipe for Minor Applications: STD SPEC 15253.
- O. Polyvinyl Chloride (PVC) Pressure Pipe (AWWA C900): STD SPEC 15292.
- P. Polyvinyl Chloride (PVC) Distribution Pipe (AWWA C905): STD SPEC 15293.

1.3 Submittals

- A. Submit submittal packages in accordance with Standard Specification Section 01300.
- B. Submit manufacturer's catalogue data, descriptive literature, and assembly drawings. Show dimensions, materials of construction by specification reference and grade, linings, and coatings.
- C. Submit manufacturer's certificate of compliance with AWWA C503 for fire hydrants designed for a working pressure of 150 psi.

1.4 Masonry Retaining Walls

If the aboveground portion of the assembly is located within a cut slope or embankment fill, a

masonry retaining wall shall be constructed on three sides around the assembly. Construct the concrete foundation and retaining wall similar to the requirements that San Diego Gas and Electric uses for their facilities. The face of wall shall be a minimum of one foot beyond the dimensional values of the concrete pad to be poured for the assembly as shown on the Standard Drawings. Use tan colour slump block and grout each cell solid. The concrete pad to be poured around the assembly shall extend to the face of the three walls and also to the adjacent sidewalk or curb. The District's Representative will decide whether the requirements of this paragraph are being followed by the Contractor. If in the opinion of the District's Representative modifications or changes are necessary, the work shall be performed as directed.

PART 2 - MATERIALS

2.1 General

- A. Provide wet barrel hydrants with a rated working pressure suitable for the pressure zone of the installation.
- B. Unless noted otherwise, provide two-way fire hydrants having one 2-1/2-inch and one 4-inch outlet. In commercial zoned areas, or as shown on the Drawings, provide three-way fire hydrants with two 2-1/2-inch and one 4-inch outlet. Threads on outlets shall conform to NFPA No. 1963, Standard for Screw Threads and Gaskets for Fire Hose Connections. Provide bronze or plastic cap with chain on each outlet.
- C. Equip wet barrel fire hydrants with slow opening and closing type valves.

2.2 Flanged Outlets

See Standard Specification Sections 15061, 15240, 15292, or 15293 as indicated by the pipeline material shown on the Drawings. Use 6-inch flanged outlets for the fire hydrant assemblies. Use Class 150 flanges for working pressures of 250 psi or less. Use Class 300 flanges for working pressures greater than 250 psi, but less than 300 psi.

2.3 Resilient Seated Gate Valves

See Standard Specification Section 15101. Use 6 -inch resilient seated gate valves for the fire hydrant assemblies with working pressures of 250 psi or less, and with valve ends as shown in the Standard Drawings.

2.4 Ball Valves

Use 6-inch flanged ball valves for the fire hydrant assemblies with working pressure greater than 250 psi.

2.5 PVC Pressure Pipe (AWWA C900) See Standard Specification Section 15292.

2.6 Steel Pipe for Minor Applications See Standard Specification Section 15253.

2.7 Hydrants

- A. For 150 psi maximum working pressure, provide hydrants that conform to AWWA C503. Construct hydrant of all bronze conforming to ASTM B 62 and cast head in

either one or two parts. Drill base flange of hydrant to the 6 holes San Diego standard with six 7/8-inch diameter bolt holes on a 9-1/2-inch bolt circle. Use O-ring gaskets for stem seals and between head pieces. Outlets shall be fully serviceable in the field. Two-way hydrants shall be Long Beach Model 125, Clow Model 2050, or approved equal. Three-way hydrants shall be Long Beach Model 130, Clow Model 2060, or approved equal.

- B. For 200 psi maximum working pressure, provide hydrants that are constructed similar to the requirements of AWWA C503 but are designed for a working pressure of 200 psi. Construct hydrant of all bronze conforming to ASTM B 62 and cast head in either one or two parts. Drill base flange of hydrant to the 6 holes San Diego standard with six 7/8-inch diameter bolt holes on a 9-1/2-inch bolt circle. Use O-ring gaskets for stem seals and between head pieces. Outlets shall be fully serviceable in the field. Two-way hydrants shall be Clow Model 2050, or approved equal.
- C. For 300 psi maximum working pressure, provide wharf hydrants with angle plug design and single outlet. Construct hydrant of all bronze conforming to ASTM B 62. Threaded inlet shall be 4-inch and conform to ANSI B1.20.1, NPT. Threaded outlet shall be 2-1/2-inch, conform to NFPA No. 1963, and have cap and chain. Wharf hydrants shall be James Jones J-344 H.P. or approved equal. Connect hydrant to riser flange with a 5-inch long threaded brass nipple conforming to ASTM B 43, regular wall thickness; and a ductile iron reducing threaded flange conforming to ANSI B16.42 Class 150 or 300 as shown.

2.8 Break-Off Risers

- A. For working pressures of 200 psi and less, provide pipe spools of the indicated length with flat faced flanged ends. Provide Class 53 ductile iron pipe with Class 150 threaded flanges. Drill flanged ends to the 6 holes San Diego standard with six 7/8-inch diameter bolt holes on a 9-1/2-inch bolt circle. Line interior of pipe with cement mortar and provide double thickness (1/8-inch minimum) per AWWA C104. Score one end of the spool 4 inches from the flange face. Cut a V-groove 1/4-inch wide and to a depth of 1/8-inch minimum to 3/16-inch maximum on the pipe exterior.
- B. For working pressures greater than 200 psi, but less than 300 psi, provide pipe spools of the indicated length with flat faced flanged ends. Provide Class 53 ductile iron pipe with Class 150 threaded flanges conforming to Standard Specification Section 15240. Line interior of pipe with cement mortar and provide double thickness (1/8-inch minimum) per AWWA C104. Score one end of the spool 4 inches from the flange face. Cut a V-groove 1/4-inch wide and to a depth of 1/8-inch minimum to 3/16-inch maximum on the pipe exterior.
- C. For working pressures greater than 250 psi, but less than 300 psi, provide pipe spools of the indicated length with flat faced flanged ends. Provide Class 53 ductile iron pipe with Class 300 threaded flanges conforming to Standard Specification Section 15240. Line interior of pipe with cement mortar and provide double thickness (1/8-inch minimum) per AWWA C104. Score one end of the spool 5 inches from the flange face. Cut a V-groove 1/4-inch wide and to a depth of 1/8-inch minimum to 3/16-inch maximum on the pipe exterior.

2.9 Bury Sections

Provide two-piece bury sections consisting of an elbow and extension. Designs bury sections for a working pressure of 200 psi. Construct of cast iron conforming to ASTM A-126 Class B, or ductile iron conforming to ASTM A-395 or A-536. Provide bury elbow with integral base and

mechanical joint by flat faced flanged end. Provide pipe extension with flat faced flanged ends and of the required length to adjust the hydrant to grade. Drill flanged ends to the 6 holes San Diego standard with six 7/8-inch diameter bolt holes on a 9-1/2-inch bolt circle. Line the interior of the bury section with cement mortar to a 5/16-inch thickness. Coat the exterior with asphalt varnish.

2.10 BOLTS, NUTS AND GASKETS FOR RISERS AND BURY SECTIONS See Standard Specification Section 15050.

2.11 Polyethylene Encasement See Standard Specification Section 09954.

2.12 Guard Posts

See Standard Specification Section 05121. Provide two guard posts for each fire hydrant assembly except where assembly is located adjacent to a paved street with concrete curbs.

2.13 Reflective Pavement Markers

Fire hydrant markers shall be of the reflective type and colour blue. Markers shall conform to Section 85 of the State Standard Specifications, State of California, Department of Transportation, Caltrans, latest editions.

PART 3 - EXECUTION

3.1 Inspection Before Installation

Operate the valves on the fire hydrant from closed to fully open, then close again before installing. Check for broken, cracked, or missing parts; malfunctioning stems; and faulty operation.

3.2 Installation

- A. See Standard Specification Section 02223 for earthwork requirements. Use imported sand in the pipe base and pipe zone.
- B. Install piping and valves per the instructions contained in the appropriate Standard Specification for the material used.
- C. Piping from the main to the hydrant shall be placed level or on a continuous upward grade to avoid pocketing air.
- D. Clean threaded joints by wire brushing or swabbing. Apply Teflon joint compound or Teflon tape to pipe threads before installing screwed hydrants. Joints shall be watertight.
- E. Install flanged joints per the installation instructions in Standard Specification Section 15050.

3.3 Installing Polyethylene Encasement

After applying primer for wax tape coating to all buried bolts and nuts, wrap bury section including mechanical joint and flanged ends with polyethylene material per Standard Specification Section 09954. Complete the wrap prior to placing concrete thrust block,

concrete anchor block on bury section, and concrete pad on grade. Repair polyethylene material damaged during construction.

3.4 Placing Concrete

Place concrete against the bury elbow section and the undisturbed ground with the bearing area as shown on the Standard Drawings. Allow concrete to set and be hard enough to be self-supporting. Place and compact trench backfill up to the subgrade of the concrete anchor block. Pour a concrete anchor block below grade around the bury section to force the aboveground grooved spool to break on an impact. Cover the anchor block with backfill material and compact up to the subgrade of the concrete pad on grade. Pour a concrete pad on grade around the break-off riser. Concrete shall be Class C per Standard Specification Section 03000.

3.5 Setting Guard Posts

Position guard posts to protect the fire hydrant assembly. Locate posts 2-1/2 feet to each side and 2 feet in front of the hydrant. Excavate a hole 16 inches in diameter by 3-1/2 feet deep for each post. Set posts plumb, fill holes with concrete to 2 inches above finish grade, and crown to slope away from post. Posts shall be embedded a minimum of 3 feet in concrete. Fill posts with grout and crown top. Concrete shall be Class C per Standard Specification Section 03000.

3.6 Painting And Coating

Paint aboveground surfaces of the break-off riser, hydrant, guard posts, and top side of valve box cover per Standard Specification Section 09900, System No. 20. Colour of finish coat shall be OSHA Yellow.

3.7 Installing Fire Hydrant Markers

Install a blue reflective marker opposite each fire hydrant. Place the marker on the pavement and locate 6 inches off the centerline of the traffic striping or reflective pavement markers towards the hydrant. Install markers in accordance with Section 85 of the State Standard Specifications.

3.8 Pressure Testing

Test fire hydrant assemblies at the same time that the connecting pipelines are pressure tested. See Standard Specification Section 15144 for pressure testing requirements. Repair leaks in the fire hydrant assemblies and joints of the interconnecting piping and retest.

3.9 Disinfection

See Standard Specification Section 15141 for chlorination requirements.

Section 10

PLUMBING PIPING

1. **GENERAL** To be read with General Requirements.

1.1 SECTION INCLUDES

- a. Pipes and pipe fittings.
- b. Valves.
- c. Domestic cold and hot water piping.
- d. Soil, waste and vent piping.
- e. Storm and waste water piping.

1.2 REFERENCES

- a. DIN 8074 High density polyethylene (HDPE) soil waste and vent pipe and fittings; dimensions.
- b. DIN 8075 High density polyethylene (HDPE) pipes, general quality requirements and testing.
- c. DIN 19535 Pipes and fittings of high density PE for hot water resistant waste and soil installation within buildings.
- d. DIN 19537 Pipes and fittings of high density PE for drainage and sewerage.
- e. ASTM A 120 Pipe, steel, black and hot dipped zinc coated (galvanized), welded and seamless, dimensions.
- f. ASTM A 106 Wrought steel pipes for corrosion resistant service.
- g. ANSI B 16.3 Malleable iron threaded fittings class 150 and 300.
- h. ANSI B 2.1 Pipe threads.
- i. ANSI B 16.5 Steel flanges.
- j. ANSI B 16.1 Cast iron flanges.
- k. BS 4375 PTFE tape for pipe threads sealing application.
- l. DIN 16968 Pipe of polybutylene (PB), general quality requirements (BS 7291: Part 1 &2)
- m. DIN 16969 Pipes of polybutylene (PB), dimensions.
- n. DIN 16962 Pipe Joint assemblies and fittings for polypropylene pressure pipes.
- o. DIN 16892/3 (PEX) Pipes of cross linked polyethylene.
- p. ISB 4065 Fittings for (PEX) cross linked polyethylene.
- q. ASTM B 88 Seamless copper water tube.
- r. ANSI B 16.18 Cast bronze solder joints pressure fittings.
- s. ANSI B 16.22 Wrought coppers solder joint pressure fittings.
- t. ASTM B 32 Solder metal.
- u. ASTM D 1785 PVC pressure pipe, schedules 40, 80, and 120.

- v. ASTM D 2466 Socket type PVC fittings, schedule 40.
- w. ASTM D 2467 Socket type PVC fittings, schedule 80.
- x. ASTM D 2564 Solvent cement for PVC pipes and fittings.
- y. ASTM D 2855 Making solvent cemented joints with PVC pipes and fittings.
- z. ANSI B 16.21 Non-metallic gaskets for pipe flanges.
- aa. API 600 General design specifications for gate, globe and check valves.
- bb. ANSI B 16.34 Pressure temperature ratings for valves.
- cc. ANSI B 16.10 Face to face dimensions of cast iron gate globe and check valves.
- dd. ANSI B 16.24 End flange dimensions of bronze valves.
- ee. ANSI B 16.1 End flange dimensions of cast iron valves.
- ff. ASME Sec. 9 Welding and brazing qualifications.
- gg. AWS A 5.8 Brazing filler metal.
- hh. AWS D 10.9 Standard for building services piping.
- ii. ASME Boiler and pressure vessel code.
- jj. ASTM D 3212 Flexible elastomeric joints.
- kk. ASTM F 477 Electrometric seals (gaskets) for joining plastic pipe.
- ll. AWWA C 601 Standard methods for the examination of water and waste water.

1.3 QUALITY ASSURANCE

- a. All valves and similar control gear shall have the manufacturer's name or logo, size, pressure rating and direction of flow cast-on, on the body.
- b. Welding materials and procedures: Conform to AWS codes.
- c. Employ welders certified in accordance with ASME.
- d. Equivalent British (BS), German (DIN), or Japanese (JIS) or other international standards are acceptable, provided that the Contractor substantiates their equivalence and ensures their compatibility with other components of the system.
- e. For each product specified, provide from same manufacturer throughout, where possible.
- f. Test certificates from approved independent laboratories or testing agencies shall be furnished at no extra cost if required by the Engineer.
- g. Maintain uniformity in respect of connection standards (threads or flanges) throughout. Where this is not practical due to justifiable reasons, ensure compatibility, by using appropriate adaptors, conversion spools, mating flanges and the like, with the written approval of the Engineer.
- h. For UPVC piping preferred Kite Mark or equivalent certifications.

1.4 SUBMITTALS

- a. Submit product data, samples and manufacturer's installation instructions or recommendations.
- b. Include data on pipe materials, pipe fittings, valve and accessories and recommended coating materials.
- c. Submit copies of valve ordering schedules for approval prior to ordering valves.

1.5 DELIVERY, STORAGE AND HANDLING

- a. Store plastic and copper pipes on elevated racks only.
- b. Store plastic and rubber products out of direct sunlight.
- c. Keep ends of pipes closed with factory manufactured plugs to prevent entry of foreign matter.
- d. Apply two coats of approved primer to all untreated ferrous pipes prior to storage.
- e. Repaint ductile iron and cast iron pipes and fittings with factory recommended paint, prior to installation; where factory coating has been damaged.
- f. Deliver and store valves in shipping containers with labelling in place.
- g. Store plug and ball valves in open position and gate / globe valves in closed position to prevent damage to valve seats. Retain flange protectors on the valves, until installation to prevent damage to the flange faces.

1.6 JOINTS

- a. Type of joints.
 - HDPE: Butt weld / electro-weld sleeve, coupling / ring seal socket / expansion socket and screw threaded joint as appropriate.
 - UPVC: Solvent welded joints - used flanged spigots / sockets where required.
 - PPR/PE: Socket fusion, electro fusion or compression as appropriate.

1.7 FLANGES, UNIONS, AND COUPLINGS

- a. For pipe sizes 50 mm (2 inch) nom. dia. and under:
 - Copper piping: Bronze unions, brazing ends
 - UPVC and HDPE Piping: Unions of respective materials, solvent or fusion ends.
- b. For pipe sizes 65 mm (2 1/2 inch) nom. dia. and over:
 - Copper piping: Bronze flanges with pipe stop, brazing ends.
 - Plastic piping: Flanges of respective materials, solvent or fusion ends.
 - Use compressed fibre gaskets at all flanges (use of rubber gaskets is prohibited).
- c. Grooved and shouldered pipe end couplings: Malleable iron housing clamps to engage and lock, designed to permit some angular deflection, contraction, and expansion; "C" shape composition sealing gasket; steel bolts, nuts, and washers; galvanized couplings for galvanized pipe.

- d. Dielectric connections: Use dielectric unions with one end malleable iron threaded and the other end copper solder for pipe sizes 50 mm (2 inch) nom. dia. and under. Use dielectric flanged fittings for pipe sizes 65 mm (2 1/2 inch) nom. dia. and above. Both unions and flanges shall have water impervious isolation barrier certified to withstand a minimum 600 volts on a dry line with no flashover.
- e. All flanges, unions and couplings shall be pressure rated as the pipe joints.

2. VALVES - GENERAL

- a. Provide valves from same manufacturer throughout where possible.
- b. ACCEPTABLE MANUFACTURERS

Refer to approved Manufacturer List

2.1 GATE VALVES

- a. Upto 50 mm (2 inch) nom. size: Bronze body; rising stem and solid wedge or disc; union bonnet; threaded ends.
- b. Over 50 mm (2 inch) nom. size: Iron body, bronze mounted (IBBM); outside screw and Yoke (OS&Y); solid wedge; renewable seats; flanged ends.

2.2 PRESSURE RATINGS

- a. Unless otherwise indicated all valves shall be rated for 1379 KPa (200 psig) working water / air (WOG) pressure at system temperature.
- b. Contractor shall allow for selecting higher pressure rated valves to meet the valve construction features.

2.3 VALVE OPERATORS

- a. Provide hand wheels / operating levers for valves as appropriate. Hand wheels for gate and globe valves 50 mm (2 inches) nom. dia. and smaller, shall be malleable iron.
- b. Provide one key / wrench of appropriate size per lever operated valve installed.
- c. Provide chain operated sheaves for valves located more than 2 Ms (7 feet) above floor. Extend chains to about 150 cm (5 feet) above floor and hook to clips in order to clear walk ways and equipment.
- d. Provide geared operators for butterfly valves 200 mm (8 inch) nom. size and larger, unless otherwise specified.

2.4 CEMENT

- e. All cement used for the drainage works shall be fresh and of approved quality Portland, sulphate resisting cements Type V, complying with the requirements of ASTM C150.

3. EXECUTION

3.1 PREPARATION

- a. Ream pipe and tube ends. Remove burrs.
- b. Remove scale and dirt, on inside and outside, before assembly.
- c. Prepare piping connections to equipment with flanges or unions.

3.2 INSTALLATION - GENERAL

- a. Route piping in orderly manner and maintain gradient.
- b. Install piping in a way that conserves building space and does not interfere with the use of space.
- c. Group piping whenever practical at common elevations.
- d. Install piping to allow for expansion and contraction without stressing pipe joints or connected equipment.
- e. Install exposed piping parallel or at right angles to the building walls, except where otherwise shown on the Contract Drawings.
- f. Where changes in pipe sizes occur, install tapered reducer fittings. Use of bushings is not permitted. Install eccentric reducer fittings with level crown.
- g. Where changes in pipe direction occur install factory manufactured fittings. Bending or forming of piping is not permitted without Engineer's written permission.
- h. Provide adequate clearance for installation of insulation and access to valves and fittings.
- i. Provide minimum clearances between piping covered by this Section and other services.
- j. Provide access doors where valves and fittings are not exposed. Coordinate size and location of access doors.
- k. Slope water piping and arrange to drain at system low points.
- l. Establish elevations of buried piping outside the building to ensure not less than 90 cm (3 ft) of cover.
- m. Where pipe support members are welded to structural building framing, scrape, brush clean and apply one coat of zinc rich primer to welding.
- n. Use main sized saddle branch connections or directly connecting profiled branches (weldolets) to mains in steel piping if main is two pipe sizes larger than branch. Do not project branch pipes inside the main pipe.
- o. Establish invert elevations; slope drainage pipes to one percent minimum unless otherwise stated. Maintain gradients as shown on the contract drawings.
- p. Install test-tees in soil, waste, vent and rainwater pipe risers at minimum 450 mm (18 inch) above the ground floor level, at every alternate level and at other locations as shown on the contract drawings.

- q. During progress of work keep the ends of all piping closed with factory manufactured plugs or blind flanges to prevent entry of foreign matter. Ensure the removal of such plugs or flanges on completion of the works. All blind flanges shall have integral indicating flags.
- r. Install bell and spigot pipe with bell end upstream.
- s. Install valves with stems upright or horizontal, not inverted, except with written permission of the Engineer for each location.
- t. All valves shall be same size as pipeline except if otherwise noted on the contract drawings.
- u. Provide flanges / unions on above grade horizontal pressure piping at spacing not exceeding 18.0 Ms (60 feet) on straight runs so as to enable taking down of the piping easily, when required.
- v. Use valves with flanged ends in valve pits and when directly buried, irrespective of size.

3.3 APPLICATION

- a. Use grooved mechanical couplings and fasteners only in accessible locations.
- b. Install unions or flanges downstream of valves and at equipment or apparatus connections.
- c. Install dielectric unions or flanged fittings wherever joining dissimilar metals.
- d. Install drain valves at system low points and at each riser base. Use ball valves with flanged connections for drainage of below grade mains in valve pits.
- e. Install gate valves for shutoff and to isolate equipment, part of systems, or vertical risers.
- f. Install butterfly valves for isolation of life support system underground mains.
- g. Install globe valves for throttling, bypass or manual flow control services.
- h. Install spring loaded check valves on discharge of water pumps.
- i. Install lever and weight type check valves on discharge of sump pumps and sewage ejectors.

3.4 SETTING OUT AND EXCAVATION OF TRENCHES FOR BELOW GRADE MAINS

- a. Trenches shall be excavated only after completion of site development work like backfilling, if any. Care shall be taken to ensure that no heavy equipment shall be worked or moved over piping which is not designed to take up such loads.
- b. Clear the existing ground levels along the line of all mains, particularly at all manholes, building connections etc.
- c. Where long lengths of piping mains are to be laid in trenches at slight slope, sight rails should be fixed across the trench at intervals of at least 5 meters at a height equal to the length of the boning rod to be used above the required invert level of the drain or sewer

at the point where the sight rail is fixed. There shall be not less than two sight rails in position on each length of the main under construction.

- d. The trench shall be excavated to the actual required depth such that the pipe shall bear uniformly on undisturbed ground at every point between joint holes.
- e. The Contractor shall examine any unfitting or weak ground material, which may be found below the pipe laying level and report the same in writing to the Engineer, before laying any pipe. In such cases, the unsuitable material shall be removed and made up by backfilling, at additional cost to the Employer.

3.5 INSTALLATION - PARTICULAR FOR BELOW GRADE MAINS

- a. Handle pipes with utmost care so as not to subject the pipes to shocks, which may crack or break the internal lining, if any. Cement lined pipes which are cut to length on site shall be tapered at their spigot ends by a grinder and a fast drying coal tar coat applied at the uncoated areas.
- b. The pipes shall be laid directly on the undisturbed bottom of the trench with special recesses made for the joints or placed on a concrete bed. The pipes must be aligned carefully both in line and level. Wooden supports must not be placed under the pipes. Precautions shall be taken to prevent dirt from entering the pipe.
- c. Ductile iron pipes shall be wrapped up with polyethylene sleeves before lying. Adhesive tapes shall be used to secure the sleeves at socket and spigot ends. Plastic coated wire shall be used to secure the encasement at every one third length of the pipe. After jointing is done and testing completed, encasement shall be pulled to close the whole joint and be secured with plastic coated wire strapping. The pipes shall be laid with the folded part of the polyethylene encasement on the crown of the piping.
- d. Piping shall be protected against the ingress of foreign material before the pipe is placed in the trench. If the case is such that the pipe cannot be laid, in the trench and in place, without getting earth into it; each end shall be covered with a heavy, tightly woven canvas bag of suitable size before lowering the pipe into the trench. The bag shall be left there until the connection is to be made to the adjacent pipe.
- e. When jointing pipes, a mark shall be made to check the position of the end of the barrel. Leave a gap of 5 to 10mm between the ends of the pipes, for piping with flexible joints.
- f. The joints shall be left exposed until the line is pressure tested and approved by the Engineer.
- g. Deviations from given levels may not be greater than + or - 1 cm at any point and gradients not greater than 1/20 of the given value.

3.6 BACKFILLING OF PIPE TRENCHES

- a. All surplus, suitable and approved excavation material shall be used for backfilling the trenches.
- b. All backfill material shall be free of cinders, ashes, refuse, vegetable or organic matter, boulders, stones or other material which are unsuitable for the purpose, in the opinion of the Engineer.
- c. Excavations shall be backfilled without unnecessary delay, but not before completion of testing of the piping. The first 30 cm fill shall only be compacted by hand tamping;

subsequent layers being compacted by power tampers as approved by the Engineer. No heavy mechanical equipment shall be used for backfilling or compaction.

- d. The pipe trenches shall be backfilled and compacted to a minimum of 95 % of AASHTO T - 180 density, in layers of not exceeding 15 centimetres and fills shall be brought up simultaneously on the full width of the trench.

3.7 TESTING OF PRESSURIZED PIPING

- a. The pipes shall be jointed, plugged and shall have been in position for at least 24 hours, before the tests are carried out.
- b. The piping shall be tested for line, gradient and water tightness. The Contractor shall furnish all labour, and necessary testing instruments such as gauges, pumps etc. as directed by the Engineer. A minimum of two (2) number identical pressure gauges shall be installed at extremities of the piping circuit to be tested.
- c. Fill the piping with clean fresh water, leaving all high points open to allow for purging of air. Allow a soaking period of at least 24 hours for cement lined or concrete pipes.
- d. Pressurize the system using manual pumps in increments of 25 percent of the test pressure. Allow a standing period of 10 minutes after each pressure increment. Pressure testing using motor driven pump is not permitted.
- e. Do not over pressurize the system under any circumstance. If the test pressure is close to the maximum permissible pressure of any of the system components, install calibrated pressure relief valves in the tested circuit.
- f. Prior to testing keep all valves and control devices in open position. After completion of pressure test, close each valve one at a time starting from the pressure release end, so as to ensure tightness of the valve.
- g. The piping shall be hydrostatically tested at a pressure of 690 KPa (100 psig) or 1.5 times the system working pressure, whichever is greater, but limited to 1379 KPa (200 psig) for copper and steel piping and 1034 KPa (150 psig) for UPVC piping. The pressure shall be maintained for at least 4 hours. In metallic piping, allow for pressure fluctuations due to ambient temperature variations. Record the circuit temperature along with the pressure readings.
- h. Check for leaks by swabbing with a dry tissue. Drop in pressure to the order of 10 KPa (1.5 psig) per hour shall be considered as acceptable.
- i. Do not subject sanitary fixture chrome fittings to the test pressure.
- j. Piping shall be tested in segments during the progress of the work. Maintain an official log book for recording the tests carried out on sections of piping, including test pressure, date of test and approval signature of Engineer's representative witnessing the test.

SECTION 10
DRAWINGS
