NATIONAL BANK OF PAKISTAN

MAJOR RENOVATION & REFURBISHMENT WORK OF NBP AIBG REGIONAL OFFICE AT 2ND FLOOR OF NBP G-6 BUILDING MELODY ISLAMABAD

Standard Bidding Documents for Procurement of Works

Bidding Opening Procedure: PPRA Rule 36 (a)

(For the purpose of this tender, all references to manual processes and manual submission of tender/bid should be deemed to have been replaced with the processes and procedures in pursuant E-Pak Acquisition & Disposal System (EPADS) and defined in E-PAK Procurement Regulation, 2023.)

This completed Bidding Documents; along with Bid Security Instrument and all necessary documents forthe responsiveness of the bid as specified in the bidding documents; shall be submitted / uploaded on PPRA's EPADS Portal; before close of bid submission time.

May 2025

National Bank of Pakistan ENGINEERING Federal Capital Region Isd

30/04/2025

PREFACE

Public Procurement is carried out in Pakistan in accordance with the provisions laid down in Public Procurement Regulatory Framework consisted of Public Procurement Ordinance- 2002; Public Procurement Rules-2004 and allied Regulations, Regulatory Guides and Guidelines.

National Standard Bidding/Procurement Documents are developed for standardizing the procurement procedures and practices in the procuring agencies of the Federation of Pakistan and has the status of the Regulations in terms of section 27 of the PPRA Ordinance read with Rule-23(4) of Public Procurement Rules.

The document consists of general as well as specific provisions to be applicable for the procurement of works and can be used with or without pre-qualification process. The specific provisions supplement to the general provisions and may be amended or opted by the procuring agencies in the manner and to the extent prescribed in the respective sections.

This document is a live document, and may be updated on 30th June of each financial year (as an when required) considering the regulatory experience feedback based on monitoring the procurement practices and valuable suggestions of the stakeholders (i.e. procuring agencies, vendors and general public).

Standard Bidding Documents

for

Procurement of Works

PART-A – BIDDING PROCEDURE & REQUIREMENTS

Section I - Invitation for Bids
Section II- Instructions to Bidders (ITB)

This Section provides information to help Bidders prepare their Bids. Information is also provided on the submission, opening, and evaluation of Bids and on the award of Contracts. (***This Section contains provisions that are to be used without modifications.)***

Section III- Bid Data Sheet (BDS)

This Section includes provisions specific to procurement and to supplement Section-II, Instructions to Bidders. ***(This section may be customized where option is available, in accordance with the requirements of the Procuring agency/Employer)***.

Section IV - Eligible Countries

This Section contains information regarding eligible countries.

Section V – Evaluation and Qualification Criteria

This section contains information regarding evaluation and qualification criteria including domestic preference.

Section VI – Works Requirements, Technical Specifications, Drawings, Supplementary Information and Bill of Quantities

This Section includes the Drawings, and supplementary information that describe the Works to be procured. ***(To be filled by the Procuring agency/Employer).***

Section VII – Standard Bidding Forms

This Section includes the standard forms for the Bid Submission, Price Schedules, and Bid Security etc. These forms are to be completed and submitted by the Bidder as part of its Bid.

PART-B – CONDITIONS OF CONTRACT AND CONTRACT FORMS

Section VIII - General Conditions of Contract (GCC)

This Section includes the general clauses to be applied in all the contracts. (***This Section contains provisions that are to be used without modifications).***

Section IX - Special Conditions of Contract (SCC)

This Section consists of Contract Data and Specific Provisions which contains clauses specific to this contract. ***(This section may be customized where option is available, in accordance with the requirements of the Procuring agency/Employer***).

Section X - Contract Forms

This Section contains forms which, once completed, will become part of the Contract including Letter of Acceptance, Contract Agreement, Integrity Pact **[Procurement exceeding the limit of PKR 10 Million shall be subject to an integrity pact between the User Group and the vendor]** and other relevant forms. The forms for **Performance Security/ Guarantee and Beneficial Owners Information, integrity pact as per SBD** will be provided by the successful bidder to whom Letter of Acceptance is issued, before the award of contract.

PART-A

BIDDING PROCEDURE & REQUIREMENTS

SECTION I: INVITATION FOR BIDS

NATIONAL BANK OF PAKISTAN

MAJOR RENOVATION & REFURBISHMENT WORK OF NBP AIBG REGIONAL OFFICE AT 2ND FLOOR OF NBP G-6 BUILDING MELODY ISLAMABAD

INVITATION TO e-BID

1. This Invitation to Bids follows the Procurement Notice for the subject Project/Procurement which appeared in Newspapers and on **NBP** and **PPRA** Websites.

2. The National Bank of Pakistan has reserved the funds for the procurement planned during the financial year 2024. It is intended that part of the proceeds of the fund will be used to cover eligible payment under the contract for the aforesaid procurement.

3. The National Bank of Pakistan; now invites bids through EPADS from the original contractors, registered with Pakistan Engineering Council (PEC), Income tax & Provisional Tax department for **MAJOR RENOVATION & REFURBISHMENT WORK OF NBP AIBG REGIONAL OFFICE AT 2ND FLOOR OF NBP G-6 BUILDING MELODY ISLAMABAD** eligible Renovation & Refurbishment with related Services; **through EPADS only.**

4. The bidding shall be conducted in line with the Single Stage Single Envelope procedure of the Public Procurement Rules 2004 and any Regulations, Regulatory Guides, Procurement Guidelines or Instructions issued by the Authority (from time to time), and is open to all potential bidders.

5. All bids must be accompanied by a scanned Copy of Bid Security in the form of Banker's Cheque or Payment Order or Bank Guarantee in the amount of **RS. 1,500,000/-.** The ORIGINAL BID SECURITY MUST be submitted to the National Bank of Pakistan any time before the Closing time of Bid Submission, failing which the bid shall be rejected.

6. The original bid, along with all the required documents as stated in the bidding documents; properly filled in, must be submitted Only through e-Pak Acquisition & Disposal System (EPADS) at or before **11:00 am** dated: **12 August, 2025**. The bids will be opened promptly thereafter on **EPADS** at **11:30 am** the same day, and in the presence of bidders' representatives who choose to attend in the opening at the under mentioned address.

Office of VP/Wing Head, Engineering Wing (North), Engineering Group, LCMG, 2nd Floor, National Bank of Pakistan, G-5/1 Building Islamabad

WING HEAD (Central & North) Procurement
Division, LCMG
NATIONAL BANK OF PAKISTAN
Regional Head Quarters, 26 McLagan Road, Lahore-Pakistan|
Direct: +92-42-99212694|PABX: +92-42-99210641|Ext: 3510 |

Table of Contents

A. INTRODUCTION 13
1. Scope of Bid 13
2. Source of Funds 13
3. Eligible Bidders 13
4. Eligible Material and Equipment 16
5. One Bid per Bidder 17
6. Cost of Bidding 17
B. BIDDING DOCUMENTS 17
7. Contents of Bidding Documents 17
8. Clarification of Bidding Document, Pre-bid Meeting 18
9. Amendment of Bidding Documents 20
C. PREPARATION OF BIDS 20
10. Language of Bid 20
11. Documents Establishing Eligibility of Material, Equipment and Works, their Conformity to Bidding Documents 21
12. Documents Establishing Eligibility and Qualification of the Bidder 22
13. Letter of Bid and Schedules 23
14. Letter of Bid 23
15. Bid Prices 23
16. Currencies of Bid and Payment 25
17. Documents Comprising the Technical Proposal 25
18. Bid Validity Period 25
19. Bid Security or Bid Securing Declaration 26
20. Alternative Bids by Bidders 28
21. Withdrawal of Bids 29
22. Format and Signing of Bid 29
D. SUBMISSION OF BIDS 30
23. Sealing and Marking of Bids 30
24. Deadline for Submission of Bids 30
25. Late Bids 30
26. Substitution and Modification of bids 30

E. OPENING AND EVALUATION OF BIDS 30
27. Opening of Bids 30
28. Confidentiality 33
29. Clarification of Bids 35

30. Preliminary Examination of Bids 36
31. Examination of Terms and Conditions; Technical Evaluation 38
32. Correction of Arithmetic Errors 39
33. Conversion to Single Currency 40
34. Evaluation of Bids 40
35. Domestic Preference 40
36. Determination of Most Advantageous Bid 40
37. Qualification of Bidder 40
38. Sub-Contractors 40
39. Abnormally Low Financial Bid 41
F. AWARD OF CONTRACT 46
40. Criteria of Award 46
41. Negotiations 46
42. Procuring agency/Employer's Right to reject All Bids 46
43. Variations 48
44. Instructions for variations 48
45. Valuation of Variations 49
46. Notification of Award 49
47. Signing of Contract 50
48. Performance Security (or Guarantee) 50
49. Advance Payment 51
50. General Performance of the Bidders 48
51. Corrupt & Fraudulent Practices 48
F. GRIEVANCE REDRESSAL & COMPLAINT REVIEW MECHANISM 48
52. Constitution of Grievance Redressal 48
53. GRC Procedure 48
G. MECHANISM OF BLACKLISTING 50
54. Mechanism of Blacklisting 50
SECTION III: BID DATA SHEETBid Data Sheet (BDS) 57
Section IV. Eligible Countries 64
Section V. Evaluation and Qualification Criteria 60
SECTION V: WORKS REQUIREMENT, TECHNICAL SPECIFICATIONS, DRAWINGS, SUPPLEMENTARY INFORMATION AND BILL OF QUANTITIES 72
Scope of Works 78
Technical Specifications 79
Drawings 80
Supplementary Information 81
Bill of Quantities 82

Bill of Quantities..... 80
Grand Sammary 116
Specification of Materials 119
SECTION VI: STANDARD BIDDING FORMS 220
Notification of Award..... 268
Performance Guarantee Form..... 306
Integrity Pact..... 277

SECTION II: INSTRUCTION TO BIDDERS (ITBs)

[This Section contains provisions that are to be used without modifications.]

A. INTRODUCTION

1. Scope of Bid	1.1	The Procuring agency/Employer (PA), as indicated in the **Bid Data Sheet** (BDS) invites Bids for the execution of Works as specified in the BDS and **Section V- Works Requirements**. The name, identification, and number of lots (contracts) of this National/ International Competitive Bidding process are specified in BDS.
2. Source of Funds	2.1	Source of funds as referred in Bid Data Sheet.
3. Eligible Bidders	3.1	A bidder may be natural person, company or firm or public or semi-public agency of Pakistan or any foreign country**,** or any combination of them with a formal existing agreement (on Judicial Papers) in the form of a joint venture or consortium. In the case of a joint venture or consortium, all members shall be jointly and severally liable for the execution of the Contract in accordance with the terms and conditions of the Contract. The joint venture or consortium shall nominate a Lead Member as nominated in the BDS, who shall have the authority to conduct all business for and on behalf of any and all the members of the joint venture or consortium during the Bidding process, and in case of award of contract, during the execution of contract. *(The limit on the number of members of JV or Consortium may be prescribed in BDS, in accordance with the guidelines issued by the PPRA)*.
	3.2	The appointment of Lead Member in the joint venture or consortium shall be confirmed by submission of a valid Power of Attorney to the Procuring agency/Employer
	3.3	Verifiable copy of the agreement that forms a joint venture or consortium shall be required to be submitted as part of the Bid.
	3.4	Any bid submitted by the joint venture or consortium shall indicate the part of proposed contract to be performed by each party and each party shall be evaluated (or post qualified if required) with respect to its contribution only, and the

		responsibilities of each party shall not be substantially altered without prior written approval of the Procuring agency/Employer and in line with any instructions issued by the Authority.
	3.5	The invitation for bids is open to all prospective bidders subject to any provisions of incorporation or licensing by the respective national/ international incorporating agency or statutory body established for that particular trade or business.
	3.6 .	Foreign Bidders must be locally registered with the appropriate national incorporating body or the statutory body, before participating in the national/international competitive bidding with the exception of such procurements made by the foreign missions of Pakistan. For such purpose the bidder must have to initiate the registration process before the bid submission and the necessary evidence shall be submitted to the Procuring agency/Employer along with their bid, however, the final award will be subject to the complete registration process.
	3.7	A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidders may be considered to have a conflict of interest with one or more parties in this Bidding process, if they: a) are associated or have been associated in the past, directly or indirectly with a firm or any of its affiliates which have been engaged by the Procuring agency/Employer to provide consulting services for the preparation of design or technical specifications of the works that are the subject of the bid; or b) any of its affiliates has been hired (or is proposed to be hired) by the Procuring agency/Employer as Engineer for the Contract implementation; or c) The works to be executed are resulting from or directly related to consulting services for the preparation or implementation of the project that the bidder provided or were provided by any affiliate that directly or

		indirectly controls, is controlled by, or is under common control with that firm; d) have controlling shareholders in common; or e) receive or have received any direct or indirect subsidy from any of them; or f) have the same legal representative for purposes of this Bid; or g) have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another bidder, or influence the decisions of the Procuring agency/Employer regarding this Bidding process; or h) Submit more than one bid in this bidding process.
	3.8	A Bidder may be ineligible if – (a) he is declared bankrupt or, in the case of company or firm, insolvent; (b) payments in favor of the bidder is suspended in accordance with the judgment of a court of law other than a judgment declaring bankruptcy and resulting (in accordance with the national laws) in the total or partial loss of the right to administer and dispose of its property; (c) legal proceedings are instituted against such bidder involving an order suspending payments and which may result, in accordance with the national laws, in a declaration of bankruptcy or in any other situation entailing the total or partial loss of the right to administer and dispose of the property; (d) the bidder is convicted, by a final judgment of a Court of Law or relevant Professional Statuary Body, of any offence involving professional conduct; (e) The bidder is debarred/ blacklisted by a national level Procuring agency/Employer and hence debarred due to involvement in corrupt and fraudulent practices, or

		performance failure or due to breach of bid securing declaration. (f) The bidder is blacklisted or debarred by a foreign country, international organization, or other foreign institutions for the period defined by them.
	3.9	Bidders shall provide to the Procuring agency/Employer evidence of their eligibility, proof of compliance with the necessary legal requirements to carry out the contract effectively.
	3.10	Bidders shall provide such evidence of their continued eligibility to the satisfaction of the Procuring agency/Employer, as the Procuring agency/Employer shall reasonably request.
	3.11	Bidders shall submit proposal relating to the nature, conditions and modalities of sub-contracting wherever the sub-contracting of any elements of the contract is envisaged.
4. Eligible Material and Equipment	4.1	All the material and equipment to be mobilized under the contract shall have their origin in eligible source countries, and all expenditures made under the contract will be limited to such materials and equipment. For this purpose, ineligible countries are stated in the section-IV titled as "Eligible Countries".
	4.2	For purposes of this Clause, "origin" means the place where the material, equipment is produced, manufactured, or processed, or through manufacture, procession, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its imported components or the place from where the services are/to be supplied.
	4.3	The nationality of the bidder shall not determine the origin of the material and equipment.
	4.4	To establish the eligibility of the material and equipment, Bidders shall fill the country-of-origin declarations included in the Form of Bid.

5. One Bid per Bidder	5.1	A bidder shall submit only one bid, in the same bidding process, either individually as a bidder or as a member in a joint venture or any similar arrangement.
	5.2	No bidder can be a sub-contractor while submitting a bid individually or as a member of a joint venture in the same bidding process.
6. Cost of Bidding	6.1	The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Procuring agency/Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

B. BIDDING DOCUMENTS

7. Contents of Bidding Documents	7.1	The scope of Works, bidding procedures, and terms and conditions of the contract are prescribed in the bidding documents. In addition to the Invitation for Bids, the bidding documents which should be read in conjunction with any addenda issued in accordance with **ITB 9.2** include: **Section I -**Invitation for Bids **Section II** Instructions to Bidders (ITBs) **Section III** Bid Data Sheet (BDS) **Section IV** Eligible Countries **Section V** Works Requirements Technical Specifications & Schedule of Requirements **Section VI** Standard Bidding Forms **Section VII** General Conditions of Contract (GCC) **Section VIII** Special Conditions of Contract (SCC) **Section IX** Contract Forms
	7.2	The number of copies to be completed and submitted with the Bid is specified in the **BDS.**
	7.3	The Procuring agency/Employer is not responsible for the completeness of the bidding documents and their addenda, if they were not obtained directly from the Procuring agency/Employer or the signed pdf version downloaded from the website of the Procuring agency/Employer or the Authority's website or **e-Procurement System** as the case may be. However, procuring agency/Employer shall place both the pdf and editable version of the same on its website and

		Authority's website or **e-Procurement System** to facilitate the bidder for filling the standard bidding forms. **Note: Bidding Documents are downloaded from PPRA's EPADS Portal**
	7.4	The bidder is expected to examine all instructions, forms, specifications, terms and conditions prescribed in the bidding documents. Failure to furnish all the information required in the bidding documents will be at the bidder's risk and may result in the rejection of his bid.
8. Clarification of Bidding Document, Pre-bid Meeting	8.1	A prospective bidder requiring any clarification of the bidding document may notify the Procuring agency/Employer in writing or in **electronic form** that provides record of the contents of communication at the Procuring agency/Employer's address indicated in the **BDS. Note: All clarifications may be notified through PPRA's EPADS Portal**
	8.2	The Procuring agency/Employer will within three (3) working days after receiving the request for clarification, respond in writing or in **electronic form** to any request for clarification provided that such request is received not later than three (03) days prior to the deadline for the submission of Bids as prescribed in **ITB 24.1.** However, this clause shall not apply in case of alternate methods of procurement. **Note: Response shall be through PPRA's EPADS Portal**
	8.3	Copies of the Procuring agency/Employer's response will be forwarded to all identified prospective bidders through an identified source of communication, including a description of the inquiry, but without specifying its source. In case of downloading of the bidding documents from the website of Procuring agency/Employer or **e-Procurement System**, the response of all such queries will also be available on the same platform available at the website. **Note: Employer's response(s) to the clarification(s); will be made available to all the identified prospective bidders at PPRA's EPADS Portal**
	8.4	Should the Procuring agency/Employer deem it necessary to amend the bidding documents as a result of a clarification, it shall do so following the procedure as prescribed under **ITB 09.**

	8.5	If indicated **in the BDS**, the bidder's designated representative is invited at the bidder's cost to attend a pre-bid meeting at the place, date and time mentioned in the **BDS**. During this pre-bid meeting, prospective bidders may request clarification of the schedule of requirement, the evaluation criteria or any other aspects of the bidding documents.
	8.6	Minutes of the pre-bid meeting, if applicable, including the text of the questions asked by bidders, including those during the meeting (without identifying the source) and the responses given, together with any responses prepared after the meeting will be transmitted promptly to all prospective bidders who have obtained the bidding documents. Any modification to the bidding documents that may become necessary as a result of the pre-bid meeting shall be made by the Procuring agency/Employer exclusively through the use of an Addendum pursuant to **ITB 9.** Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder. **Note: Minutes of meeting will be uploaded on PPRA's EPADS Portal.**
	8.7	The bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the bidder's own expense.
	8.8	The bidder and any of its authorized personnel will be granted permission by the Procuring agency/Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the bidder and its personnel will release and indemnify the Procuring agency/Employer from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.

9. Amendment of Bidding Documents	9.1	Before the deadline for submission of bids, the Procuring agency/Employer for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder or pre-bid meeting may modify the bidding documents by issuing addenda.
	9.2	Any addendum issued including the notice of any extension of the deadline shall be part of the bidding documents pursuant to **ITB 7.1** and shall be communicated in a timely manner and on equal opportunity basis. Where notification of such change, addition, modification or deletion becomes essential, such notification shall be made in a manner similar to the original advertisement. *Provided that the bidder who had either already submitted their bid or handed over the bid to the courier prior to the issuance of any such addendum shall have the right to withdraw his already filed bid and submit the revised bid prior to the original or extended bid submission deadline.* **Note: Addendum at PPRA's EPADS Portal, ww.ppra.org.pk or NBP Website: http://www.nbp.com.pk**.
	9.3	To give prospective bidders reasonable time in which to take an addendum/corrigendum into account in preparing their bids, the Procuring agency/Employer may, at its discretion, extend the deadline for the submission of bids: *Provided that the Procuring agency/Employer shall extend the deadline for submission of bid, if such an addendum is issued within last three (03) days of the bid submission deadline.*

C. PREPARATION OF BIDS

10. Language of Bid	10.1	The bid prepared by the bidder, as well as all correspondence and documents relating to the bid exchanged by the bidder and the Procuring agency/Employer shall be written in the English language unless specified in the B**DS.** Supporting documents

		and printed literature furnished by the bidder may be in another language provided they are accompanied by an accurate translation of the relevant pages in the English language unless specified in the **BDS**, in which case, for purposes of interpretation of the bidder, the translation shall govern.
11. Documents Establishing Eligibility of Material, Equipment and Works, their Conformity to Bidding Documents	11.1	The bid prepared by the bidder shall constitute the following components: - a) Documentary evidence established in accordance with **ITB 11** that the material, equipment and services to be provided by the Bidder are eligible material, equipment and services, and conform to the Bidding Documents; b) Documentary evidence established in accordance with **ITB 12** that the bidder has been authorized to carry out the Construction works; c) Documentary evidence established in accordance with **ITB 12** that the bidder is eligible and/or qualified for the subject bidding process; d) Form of Bid and Bid Prices completed in accordance with **ITB 14 and 15;** **e)** Completed schedules as required, including priced Bill of Quantities in accordance with **ITB 13 & 15.** **f)** Technical Proposal completed in all aspects in accordance with **ITB-17**. g) Bid security or Bid Securing Declaration furnished in accordance with **ITB 19;** h) Alternative bids, if permissible, in accordance with **ITB 20;** i) Duly Notarized Power of Attorney authorizing the signatory of the Bidder to submit the bid**;** and j) Any other document required in the **BDS**. **Note: The Bid prepared by the Bidder to be uploaded on PPRA's EPADS Portal**;

	11.2	In addition to the requirements, bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all members and submitted with the bid, together with a copy of the proposed Agreement.
	11.3	The bidder shall furnish, as part of its bid, all those documents establishing the eligibility in conformity to the terms and conditions specified in the bidding documents for all material, equipment and works which the bidder proposes to execute.
	11.4	The documentary evidence of conformity of the material, equipment and works to the Bidding Documents may be in the form of literature, drawings, and data, and shall consist of: a) a detailed description of the work methodology, approach, schedule and resources to be mobilized at site; b) an item-by-item commentary on the Procuring agency/Employer's Technical Specifications demonstrating substantial responsiveness of the material, equipment and works to those specifications, or a statement of deviations and exceptions to the provisions of the Technical Specifications; c) any other procurement specific documentation requirement as stated in the **BDS**.
	11.5	The required documents and other accompanying documents must be in English. In case any other language than English is used the pertinent translation into English shall be attached to the original version.
12. Documents Establishing Eligibility and Qualification of the Bidder	12.1	The bidder shall furnish, as part of its bid, all those documents establishing the bidder's eligibility to participate in the bidding process and/or its qualification to perform the contract if its bid is accepted.
	12.2	The documentary evidence of the bidder's eligibility to bid shall establish to the satisfaction of the Procuring agency/Employer that the bidder, at the time of submission of its bid, is from an

		eligible country as defined in Section-IV titled as "Eligible Countries".
	12.3	The documentary evidence of the bidder's qualification to perform the contract if its bid is accepted shall establish to the satisfaction of Procuring agency/Employer that: a) The bidder has the financial and technical capability necessary to perform the Contract, meets the qualification criteria specified in Section-V, Evaluation and Qualification Criteria and **BDS**. b) In the case of a bidder not doing business within Pakistan, the bidder is or will be (if awarded the contract) represented by a local bidder (Joint Venture) in accordance with the PEC works bylaws, and in case of award of works such foreign firm is required to participate in the execution of works to carry out its obligations as prescribed in the Conditions of Contract and /or Technical Specifications. c) That the bidder meets the qualification criteria listed in Section-V, Evaluation and Qualification Criteria and **BDS.**
13. Letter of Bid and Schedules	13.1	The Letter of Bid (Technical or Financial as the case may be) and Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Standard Bid Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under **ITB 22.** All blank spaces shall be filled in with the information requested.
14. Letter of Bid	14.1	The bidder shall fill the Letter of Bid (Technical or Financial as the case may be) furnished in the bidding documents. The Standard Bid Forms must be completed without any alterations to its format and no substitute shall be accepted.
15. Bid Prices	15.1	The bid prices quoted by the bidder in the Standard bid Forms, Bill of Quantities and in the Price Schedules shall conform to the requirements specified below or exclusively mentioned hereafter in the bidding documents.
	15.2	The bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. If a Price Schedule shows items listed but not priced, their prices shall be construed to be

		included in the prices of other items in the Bill of Quantities and will not be paid for separately by the Procuring agency/Employer.
	15.3	Items not listed in the Price Schedule shall be assumed not to be included in the bid, and provided that the bid is still substantially responsive in their absence or due to their nominal nature, the corresponding average price of the respective item(s) of the remaining substantially responsive bidder(s) shall be construed to be the price of those missing item(s): Provided that: a) where there is only one (substantially) responsive bidder, or b) where there is provision for alternate proposals and the respective items are not listed in the other bids, The Procuring agency/Employer may fix the price of missing items in accordance with market survey, and the same shall be considered as final price.
	15.4	The Bid price to be quoted in the Form of Bid in accordance with **ITB 15.1** shall be the total price of the bid.
	15.5	Unless otherwise specified in the **BDS** and the Contract, the rates and prices quoted by the bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract.
	15.6	If so specified in **ITB 1.1**, bids may be invited for individual lots (contracts) or for any combination of lots (packages).
	15.7	Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price will be treated as non-responsive and shall be rejected, pursuant to **ITB 30,** unless otherwise price adjustment is permissible under Conditions of the Contract.
	15.8	All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date twenty-eight (28) days prior to the deadline for submission of

		bids, shall be included in the rates and prices and the total bid price submitted by the bidder.
16. Currencies of Bid and Payment	16.1	The currency(ies) of the bid and the currency(ies) of payments shall be as specified in the **BDS.**
	16.2	For the purposes of comparison of bids quoted in different currencies, the price shall be converted into a single currency specified in the bidding documents. The rate of exchange shall be the selling rate, prevailing on the date of opening of (financial part of) bids specified in the bidding documents, as notified by the State Bank of Pakistan on that day.
	16.3	Bidders shall indicate details of their expected foreign currency requirements in the Bid, if prescribed in the BDS.
	16.4	Bidders may be required by the Procuring agency/Employer to clarify their foreign currency requirements, if prescribed in the BDS and to substantiate that the amounts included in Lump Sum and in the **SCC** are reasonable and responsive to **ITB 16.1**.
17. Documents Comprising the Technical Proposal	17.1	The bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in **Section IV – Standard Bid Forms**, in sufficient detail to demonstrate the adequacy of the bidder's proposal to meet the work requirements and the completion time.
18. Bid Validity Period	18.1	Bids shall remain valid for the period specified in the **BDS** after the bid submission deadline prescribed by the Procuring agency/Employer. A bid valid for a shorter period shall be rejected by the Procuring agency/Employer as non-responsive**.** The period of bid validity will be determined from the complementary bid securing instrument i.e. the expiry period of bid security or bid securing declaration as the case may be.
	18.2	Under exceptional circumstances, prior to the expiration of the initial bid validity period, the Procuring agency/Employer may request the bidders' consent to an extension of the period of validity of their bids only once, for the period not more than the period of initial bid validity. The request and the bidders' responses shall be made in writing or in electronic forms that

		provide record of the content of communication. The Bid Security provided under **ITB 19** shall also be extended 28 days beyond the deadline of extended bid validity period. A bidder may refuse the request for the extension of his bid without forfeiting his bid security or causing to be executed his Bid Securing Declaration. A bidder agreeing to the request will not be required nor permitted to modify its bid, but will be required to extend the validity of its Bid Security or Bid Securing Declaration for the period of the extension, and in compliance with **ITB 19** in all respects.
19. Bid Security or Bid Securing Declaration	19.1	Pursuant to **ITB 11.1** unless otherwise specified in the **BDS**, the bidder shall furnish as part of its bid, a Bid Security in form of fixed amount not exceeding five percent of the estimated value of procurement determined by the Procuring agency/Employer and in the amount and currency specified in the **BDS** or Bid Securing Declaration as specified in the **BDS** in the format provided in **Section VI (Standard Bidding Forms)**. In case Procuring agency/Employer is inviting bids in lots / packages, the bidder shall be required to submit his bid security against the respective lot/ package for which he is submitting his bid, which shall not exceed five percent of the estimated value of that particular lot/ package.
	19.2	The Bid Security or Bid Securing Declaration is required to protect the Procuring agency/Employer against the risk of Bidder's conduct before award of the contract to the most advantageous bidder which would warrant the security's forfeiture, pursuant to **ITB 19.9.**
	19.3	The Bid Security shall be denominated in the local currency or in another freely convertible currency, and it shall be in the form specified in the **BDS** which shall be in any of the following: a) A bank guarantee, an irrevocable letter of credit issued by a Scheduled bank in the form provided in the Bidding Documents or another form acceptable to the Procuring agency/Employer and valid for twenty-eight (28) days beyond the end of the validity of the Bid. This shall also

		apply if the period for Bid Validity is extended. In either case, the form must include the complete name of the bidder; b) A cashier's or certified cheque; or c) Another security as indicated in the **BDS.**
	19.4	The Bid Security or Bid Securing Declaration shall be in accordance with the Form of the Bid Security or Bid Securing Declaration included in **Section VI (Standard Bidding Forms)** or another form approved by the Procuring agency/Employer prior to the bid submission.
	19.5	The Bid Security shall be payable promptly upon written demand by the Procuring agency/Employer in case any of the conditions listed in **ITB 19.9** are invoked.
	19.6	Any bid not accompanied by a Bid Security or Bid Securing Declaration in accordance with **ITB 19.1 or 19.3** shall be rejected by the Procuring agency/Employer and shall be declared as non-responsive bid, pursuant to **ITB 30**.
	19.7	Unsuccessful bidders' Bid Security will be discharged or returned as promptly as possible, however in no case later than thirty (30) days after the expiration of the period of Bid Validity prescribed by the Procuring agency/Employer pursuant to **ITB 18**. The Procuring agency/Employer shall make no claim to the amount of the Bid Security, and shall promptly return the Bid Security document, after whichever of the following that occurs earliest: (a) The expiry of the Bid Security; (b) The entry into force of a procurement contract and the provision of a performance security (or guarantee), for the performance of the contract if such a security (or guarantee), is required by the Biding documents; (c) The rejection by the Procuring agency/Employer of all Bids; (d) The withdrawal of the bid prior to the deadline for the submission of bids, unless the biding documents stipulate that no such withdrawal is permitted.

	19.8	The successful bidder's Bid Security will be discharged upon the bidder signing the contract pursuant to **ITB 47,** or furnishing the performance security (or guarantee), pursuant to **ITB 48**.
	19.9	The Bid Security may be forfeited or the Bid Securing Declaration executed: a) if a Bidder: i) Withdraws its Bid during the period of Bid Validity as specified by the Procuring agency/Employer, and referred by the bidder on the Form of Bid except as provided for in **ITB 18.2**; or ii) Does not accept the correction of errors pursuant to **ITB 32;** or b) In the case of a successful bidder, if the bidder fails: i) to sign the contract in accordance with **ITB 47**; or ii) to furnish performance security (or guarantee) in accordance with **ITB 48.**
	19.10	In case of Bid Security issued by the foreign bank is allowed by the Procuring agency/Employer, the same should be counter guaranteed by a corresponding bank in Pakistan. Furthermore, in case of joint venture, it should be in the name of Joint venture to ensure joint responsibility.
20. Alternative Bids by Bidders	20.1	Bidders shall submit offers that comply with the requirements of the bidding documents, including the basic bidder's technical design as indicated in the specifications and Bill of Quantities. Alternatives will not be considered, unless specifically allowed for in the **BDS**. If so allowed, **ITB 20** shall prevail.
	20.2	When alternative schedule for execution of works is explicitly invited, a statement of that effect will be included in the **BDS** as will the method for evaluating different schedule for execution of works.
	20.3	If so allowed in the **BDS**, bidders wishing to offer technical alternatives to the requirements of the bidding documents must also submit a bid that complies with the requirements of the bidding documents, including the basic technical design as indicated in the specifications. In addition to submitting the basic bid, the bidder shall provide all information necessary for

		a complete evaluation of the alternative by the Procuring agency/Employer, including technical specifications, breakdown of prices, and other relevant details. Only the technical alternatives, if any, of the Most Advantageous Bidder conforming to the basic technical requirements (without altering the bid price) shall be considered by the Procuring agency/Employer.
21. Withdrawal of Bids	21.1	Before bid submission deadline, any bidder may withdraw, substitute, or modify its bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and the corresponding must accompany the respective written notice. **Note: Before bid submission deadline, any bidder may withdraw, substitute, or modify its Bid after it has been submitted through EPADS.**
	21.2	Bids requested to be withdrawn in accordance with **ITB 21.1** shall be returned unopened to the bidders.
22. Format and Signing of Bid	22.1	The Bidder shall prepare an original and the number of copies of the bid as indicated in the **BDS**, clearly marking each **"ORIGINAL"** and **"COPY"** as appropriate. In the event of any discrepancy between them, the original shall prevail: *Provided that except in Single Stage One Envelope Procedure, the bid shall include only the copies of technical proposal.* **Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
	22.2	The original and the copy (ies) of the bid shall be typed or written in indelible ink and shall be signed by the bidder or a person or persons duly authorized to sign on behalf of the bidder. This authorization shall consist of a written confirmation as specified in the **BDS** 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, except for un-amended printed literature, shall be initialed by the person or persons signing the bid. **Note: The**

		submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument
	22.3	Any interlineations, erasures, or overwriting shall be valid only if they are signed by the person(s) authorized for signing the Bid.

D. SUBMISSION OF BIDS

23. Sealing and Marking of Bids	23.1	In case of Single Stage One Envelope Procedure, the bidder shall seal the original and each copy of the bid in separate envelopes, duly marking the envelopes as **"ORIGINAL"** and **"COPY".** The envelopes shall then be sealed in an outer envelope securely sealed in such a manner that opening and resealing cannot be achieved undetected. **Note:** *The envelopes shall be sealed and marked in accordance with the bidding procedure adopted as referred in Rule-36 of Public Procurement Rules,2004.* **Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
	23.2	The inner and outer envelopes shall: a) be addressed to the Procuring agency/Employer at the address given in the **BDS**; and b) bear the title of the subject procurement or project name, as the case may be as indicated in the **BDS**, the Invitation for Bids (ITB) title and number indicated in the **BDS**, and a statement: **"DO NOT OPEN BEFORE",** to be completed with the time and the date specified in the **BDS**, pursuant to **ITB 24.1. Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
	23.3	In case of Single Stage Two Envelope Procedure, The Bid shall comprise two envelopes submitted simultaneously, one called the Technical Proposal and the other Financial Proposal. Both envelopes to be enclosed together in an outer single envelope called the Bid. Each Bidder shall submit his bid as under: a) Bidder shall submit his **TECHNICAL PROPOSAL** and **FINANCIAL PROPOSAL** in separate inner envelopes and enclosed in a single outer envelope.

		b) **ORIGINAL** and each copy of the Bid shall be separately sealed and put in separate envelopes and marked as such. c)The envelopes containing the **ORIGINAL** and copies will be put in one sealed envelope and addressed / identified as given in **ITB 23.2.** **Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
	23.4	The inner and outer envelopes shall: a) be addressed to the Procuring agency/Employer at the address provided in the **BDS**; b) bear the name and identification number of the contract as defined in the **BDS**; and provide a warning not to open before the time and date for bid opening, as specified in the **BDS** pursuant to **ITB 24.1.** c)In addition to the identification required in **ITB 23** hereof, the inner envelope shall indicate the name and address of the bidder to enable the bid to be returned unopened in case it is declared "late" pursuant to **ITB 25. Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
	23.5	If all envelopes are not sealed and marked as required by **ITB 23.2**, **ITB 23.3** and **ITB 23.4** or incorrectly marked, the Procuring agency/Employer will assume no responsibility for the misplacement or premature opening of bid. **Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
24. Deadline for Submission of Bids	24.1	Bids shall be received to the Procuring agency/Employer no later than the date and time specified in the **BDS. Note: EPADS will not allow bid submission later than the deadline**
	24.2	The Procuring agency/Employer may, under exceptional circumstances and at its discretion, extend the deadline for the submission of bids by amending the Bidding Documents in accordance with **ITB 9**, in which case all rights and obligations of

		the Procuring agency/Employer and bidders previously subject to the deadline will thereafter be subject to the new deadline.
25. Late Bids	25.1	The Procuring agency/Employer shall not consider for evaluation of any bid that arrives after the deadline for submission of bids, in accordance with **ITB 24**. **Note: EPADS will not allow bid submission later than the deadline**
	25.2	Any bid received by the Procuring agency/Employer after the deadline for submission of bids shall be declared late, recorded, rejected and returned unopened to the bidder. **Note: EPADS will not allow bid submission later than the deadline**
26. Substitution and Modification of bids	26.1	A bidder may substitute or modify his bid after it has been submitted, provided that written notice of the substitution or modification of the bid, is received by the Procuring agency/Employer prior to the deadline for submission of bids. **Note: Process through EPADS**
	26.2	Revised bid may be submitted after the substitution or modification made in the original bid in accordance with the provisions referred in **ITB 22.**

E. OPENING AND EVALUATION OF BIDS

27. Opening of Bids	27.1	The Procuring agency/Employer will open all bids, in public, in the presence of bidders' or their representatives who choose to attend, and other parties with a legitimate interest in the bid proceedings at the place, on the date and at the time, specified in the **BDS**. The bidders' representatives present shall sign a attendance sheet as a proof of their attendance. **Note: Process through EPADS**
	27.2	First, envelopes marked **"WITHDRAWAL"** shall be opened and read out and the envelope with the corresponding bid shall not be opened, but returned to the bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening. **Note: Process through EPADS**
	27.3	Second, outer envelopes marked **"SUBSTITUTION**" shall be opened. The inner envelopes containing the Substitution Bid shall be exchanged for the corresponding Original Bid being substituted, which is to be returned to the bidder unopened.

		No envelope shall be substituted unless the corresponding Substitution Notice contains a valid authorization to request the substitution and is read out and recorded at bid opening. **Note: Process through EPADS**
	27.4	Next, outer envelopes marked **"MODIFICATION"** shall be opened. No Technical Proposal and/or Financial Proposal shall be modified unless the corresponding Modification Notice contains a valid authorization to request the modification and is read out and recorded at the opening of the bids. Any modification shall be read out along with the Original Bid except in case of Single Stage Two Envelope Procedure where only the Technical Proposal, both Original as well as Modification, are to be opened, read out, and recorded at the opening. Financial Proposal, both Original and Modification, will remain unopened till the prescribed financial bid opening date. **Note: Process through EPADS**
	27.5	Other envelopes holding the bids shall be opened one at a time, in case of Single Stage One Envelope Procedure, the bidders' names, the bid prices, the total amount of each bid and of any alternative bid (if alternatives have been requested or permitted), the presence or absence of Bid Security, Bid Securing Declaration and such other details as the Procuring agency/Employer may consider appropriate, will be announced by the Procurement Evaluation Committee. **Note: Process through EPADS**
	27.6	In case of Single Stage Two Envelope Procedure, the Procuring agency/Employer will open the Technical Proposals in public at the address, date and time specified in the **BDS** in the presence of bidders' designated representatives who choose to attend and other parties with a legitimate interest in the bid proceedings. The Financial Proposals will remain unopened and will be held in custody of the Procuring agency/Employer until the specified time of their opening. **Note: Process through EPADS**
	27.7	The envelopes holding the Technical Proposals shall be opened one at a time, and the following read out and recorded: (a) the

		name of the bidder; (b) whether there is a modification or substitution; (c) the presence of a Bid Security or Bid Securing Declaration, if required; and (d) Any other details as the Procuring agency/Employer may consider appropriate. **Note: Process through EPADS**
	27.8	Bids not opened and not read out at the bid opening shall not be considered further for evaluation, irrespective of the circumstances.
	27.9	Bidders are advised to send in a representative with the knowledge of the content of the bid who shall verify the information read out from the submitted documents. Failure to send a representative or to point out any un-read information by the sent bidder's representative shall indemnify the Procuring agency/Employer against any claim or failure to read out the correct information contained in the bidder's bid. **Note: Process through EPADS**
	27.10	No bid will be rejected at the time of bid opening except for late bids which will be returned unopened to the bidder, pursuant to **ITB 25.**
	27.11	The Procuring agency/Employer shall prepare minutes of the bid opening. The record of the bid opening shall include, as a minimum: the name of the bidder and whether or not there is a withdrawal, substitution or modification, the bid price if applicable and the presence or absence of a Bid Security or Bid Securing Declaration.
	27.12	The bidders' representatives who are present shall be requested to sign on the attendance sheet. The omission of a bidder's signature on the record shall not invalidate the contents and affect the record. A copy of the record shall be distributed to all the bidders.
	27.13	A copy of the minutes of the bid opening shall be furnished to individual bidders upon request.
	27.14	In case of Single Stage -Two Envelop Bidding Procedure, after the announcement of technical evaluation report, the Procuring agency/Employer, shall at a time within the bid validity period, publicly open the financial proposals of the

		technically responsive bidder only. The financial proposal of bidders found technically non-responsive shall be returned un-opened to the respective bidders after seven days of the announcement of technical evaluation report, except those aggrieved bidder(s) whose complaints are pending before the Grievance Redressal Committee. **Note: Process through EPADS**
28. Confidentiality	28.1	Information relating to the examination, clarification, evaluation and comparison of bids and recommendation of contract award shall not be disclosed to bidders or any other persons not officially concerned with such process until the time of the announcement of the respective evaluation report.
	28.2	Any effort by a bidder to influence the Procuring agency/Employer processing of bids or award decisions may result in the rejection of its bid.
	28.3	Notwithstanding **ITB 28.2** from the time of bid opening to the time of contract award, if any bidder wishes to contact the Procuring agency/Employer on any matter related to the bidding process, it should do so in writing or in electronic forms that provides record of the content of communication.
29. Clarification of Bids	29.1	To assist in the examination, evaluation and comparison of bids, the Procuring agency/Employer may, ask any bidder for a clarification of its bid including breakdown of prices invariably in writing. Any clarification submitted by a bidder that is not in response to a request by the Procuring agency/Employer shall not be considered.
	29.2	The request for clarification and the response shall be in writing or in electronic forms that provide record of the content of communication. No change in the prices or substance of the bid shall be sought, offered, or permitted, except clarification for the correction of arithmetic errors discovered by the Procuring agency/Employer during the evaluation of bids which shall be sought in accordance with **ITB 32**.
	29.3	The alteration or modification in the bid which in any case affect the following parameters will be considered as a change in the substance of a bid: a) evaluation & qualification criteria;

		b) required scope of work; c) contract price; d) all securities requirements; e) tax requirements; f) terms and conditions of bidding documents. g) change in the ranking of the bidder
	29.4	From the time of bid opening to the time of Contract award if any bidder wishes to contact the Procuring agency/Employer on any matter related to the bid it should do so in writing or in electronic forms that provide record of the content of communication.
30. Preliminary Examination of Bids	30.1	Prior to the detailed evaluation of bids, the Procuring agency/Employer will determine whether each bid: a) meets the eligibility criteria defined in **ITB 3** and **ITB 4**; b) has been prepared as per the format and contents defined by the Procuring agency/Employer in the bidding documents; c) has been properly signed; d) is accompanied by the required securities; and e) is substantially responsive to the requirements of the bidding documents. The Procuring agency/Employer's determination of a bid's substantial responsiveness will be based on the contents of the bid itself.
	30.2	A substantially responsive Bid is one which conforms to all the terms, conditions, and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one that: - a) affects in any substantial way the scope, quality, or performance of the Works; b) limits in any substantial way, inconsistent with the bidding documents, the Procuring

		agency/Employer's rights or the bidders' obligations under the Contract; or c) if rectified, would affect unfairly the competitive position of other bidders presenting substantially responsive bids.
	30.3	The Procuring agency/Employer will confirm that the documents and information specified under **ITB 11, 12** and **13** have been provided in the bid. If any of these documents or information is missing, or is not provided in accordance with the Instructions to Bidders, the bid shall be rejected.
	30.4	The Procuring agency/Employer may waive-off any minor informality, nonconformity, or irregularity in a bid which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Bidder. ***Explanation:*** *A minor informality, non-conformity or irregularity is one that is merely a matter of form and not of substance. It also pertains to some immaterial defect in a Bid or variation of a bid from the exact requirements of the invitation that can be corrected or waived without being prejudicial to other bidders. The defect or variation is immaterial when the effect on quantity, quality, or delivery is negligible when contrasted with the total cost or scope of the works. The Procuring agency/Employer either shall give the bidder an opportunity to cure any deficiency resulting from a minor informality or irregularity in a bid or waive the deficiency, whichever is advantageous to the Procuring agency/Employer. Examples of minor informalities or irregularities include failure of a bidder to –* (a) *Submit the number of copies of signed bids required by the invitation;* (b) *Furnish required information concerning the number of its employees;* (c) *the firm submitting a bid has formally adopted or authorized, before the date set for opening of bids, the*

		execution of documents by typewritten, printed, or stamped signature and submits evidence of such authorization and the bid carries such a signature.
	30.5	Provided that a Technical Bid is substantially responsive, the Procuring agency/Employer may request the bidder to submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any such aspect of the technical Proposal linked with the ranking of the bidders. Failure of the bidder to comply with the request may result in the rejection of its bid.
	30.6	Provided that a Technical Bid is substantially responsive, the Procuring agency/Employer shall rectify quantifiable nonmaterial nonconformities or omissions related to the Financial Proposal. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of the missing or nonconforming item or component.
	30.7	If a bid is not substantially responsive, it will be rejected by the Procuring agency/Employer and may not subsequently be evaluated for complete technical responsiveness.
31. Examination of Terms and Conditions; Technical Evaluation	31.1	The Procuring agency/Employer shall examine the bid to confirm that all terms and conditions specified in the **GCC** and the **SCC** have been accepted by the bidder without any material deviation or reservation. For this purpose: "Deviation" means departure from the requirements specified in the Bidding Document. "Reservation" means setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document.
	31.2	The Procuring agency/Employer shall evaluate the technical aspects of the bid submitted in accordance with **ITB 31,** to confirm that all requirements specified in **Section V – Works**

		Requirement, **Technical Specifications of** the Bidding Documents have been met without material deviation or reservation.
	31.3	If after the examination of the terms and conditions and the technical evaluation, the Procuring agency/Employer determines that the bid is not substantially responsive in accordance with **ITB 30,** it shall reject the bid.
32. Correction of Arithmetic Errors	32.1	Bids determined to be substantially responsive will be checked for any arithmetic errors. Errors will be corrected as follows: - a) if there is a discrepancy between unit prices and the sub-total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the sub-total price shall be corrected, unless in the opinion of the Procuring agency/Employer there is an obvious misplacement of the decimal point in the unit price, in which the total price as quoted shall govern and the unit price shall be corrected; b) if there is an error in a total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail, and the total shall be corrected; and c) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern. d) Where there is discrepancy between grand total of price schedule and amount mentioned on the Form of Bid, the amount referred in Price Schedule shall be treated as correct subject to elimination of other errors.
	32.2	The amount stated in the Bid will, be rectified by the Procuring agency/Employer in accordance with the above procedure for the correction of errors and, with, the concurrence of the bidder, shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount, its bid shall be

		rejected after forfeiture of Bid Security or execution of the Bid Securing Declaration, as the case may be, in accordance with **ITB 19.9.**
33. Conversion to Single Currency	33.1	The unit rates and the prices shall be quoted by the bidder entirely in Pak rupees. A bidder expecting to incur expenditures in other currencies for inputs to the Works from outside the Procuring agency/Employer's country (referred to as the "Foreign Currency Requirements") shall indicate the same in the letter of bid-financial proposal. The proportion of the Bid Price (excluding Provisional Sums) needed by him for the payment of such Foreign Currency Requirements either (i) entirely in the currency of the Bidder's home country or, (ii) at the bidder's option, entirely in Pak rupees provided always that a bidder expecting to incur expenditures in a currency or currencies other than those stated in (i) and (ii) above for a portion of the foreign currency requirements, and wishing to be paid accordingly, shall indicate the respective portions in his bid.
	33.2	To facilitate evaluation and comparison, the Procuring agency/Employer will convert all bid prices expressed in the amounts in various currencies in which the bid prices are payable. For the purposes of comparison of bids quoted in different currencies, the price shall be converted into a single currency specified in the bidding documents. The rate of exchange shall be the selling rate, prevailing on the date of opening of (financial part of) bids specified in the bidding documents, as notified by the State Bank of Pakistan on that day.
	33.3	The currency selected for converting bid prices to a common base for the purpose of evaluation, along with the source and date of the exchange rate, are specified in the **BDS**.
34. Evaluation of Bids	34.1	The Procuring agency/Employer shall evaluate and compare only the bids determined to be substantially responsive, pursuant to **ITB 30**.
	34.2	In evaluating the Technical Proposal of each Bid, the Procuring agency/Employer shall use the criteria and methodologies

		listed in the **BDS** and in terms of works requirement. No other evaluation criteria or methodologies shall be permitted.
	34.3	The Procuring agency/Employer's evaluation of a bid will take into account: a) the bid price, excluding provisional sums and the provision, if any, for contingencies in the summary bill of quantities, but including day work items, where priced competitively; b) price adjustment for correction of arithmetic errors in accordance with **ITB 32.1;** c) converting the amount resulting from applying (a) and (b) above, if relevant, to a single currency in accordance with **ITB 33**;
	34.4	The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.
	34.5	If these bidding documents allow bidders to quote separate prices for different lots, and the award to a single bidder of multiple lots, the methodology of evaluation to determine the lowest evaluated lot combinations in the Form of Bid, is specified in the **BDS.**
	34.6	If the bid, which results in the Evaluated Bid Price (Most Advantageous Bid), is seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against

		financial loss in the event of default of the successful Bidder under the Contract. **Explanation:** *"Unbalanced" or "front-loaded" bids consist of deliberately submitting bids with artificially high prices or unit rates for the early stages of a construction project, offset by artificially low prices or unit rates for the later stages of the project, to improve the contractor's cash flow.*
35. Domestic Preference	35.1	If the **BDS** so specifies, the Procuring agency/Employer will grant a margin of preference to the domestic contractor in line with the rules, regulations, regulatory guides or instructions issued by the Authority from time to time.
36. Determination of Most Advantageous Bid	36.1	The Procuring agency/Employer shall compare the evaluated bids in accordance with the predefined bidding procedure, of all substantially responsive bids to determine the Most Advantageous bidder.
37. Qualification of Bidder	37.1	The Procuring agency/Employer shall determine to its satisfaction whether the bidder is substantially responsive and whose bid is declared as most advantageous bid either continues to meet (if prequalification applies) or meets (if post-qualification applies) the qualifying criteria specified in Evaluation and Qualification Criteria. *Note: In case of International bidding, the parameters for incorporation or licensing within Pakistan may be fulfilled as part of post qualification.*
	37.2	The determination shall be based upon an examination of the documentary evidence of the bidder's qualifications submitted by the bidder, pursuant to **ITB 12**.

	37.3	Prior to contract award, the Procuring agency/Employer will verify that the successful bidder (including each member of a JV) is not blacklisted/debarred. The Procuring agency/Employer will conduct the same verification for each sub-contractor proposed by the successful bidder.
38. Sub-Contractors	38.1	The bidder shall provide details regarding any specialized sub-contractor to the Procuring agency/Employer. In case change of sub-contractors, the bidder shall promptly notify the Procuring agency/Employer and obtain approval for replacement of sub-contractors.
	38.2	Bidders may propose sub-contracting up to the percentage of total value of contracts or the volume of works as specified in the **BDS.**

39. Abnormally Low Financial Bid	39.1	Where the bid price is considered to be abnormally low, the Procuring agency/Employer shall perform price analysis either during determination of Most Advantageous Bid or as a part of the post-qualification process. The following process shall apply: a) The Procuring agency/Employer may reject a bid if the Procuring agency/Employer has determined that the price in combination with other constituent elements of the bid is abnormally low in relation to the subject matter of the procurement (i.e. scope of the procurement or ancillary services) and raises concerns as to the capability and capacity of the respective Bidder to perform that contract; b) Before rejecting an abnormally low bid the Procuring agency/Employer shall request the bidder an explanation of the bid or of those sections which it considers contribute to the bid being abnormally low; take account of the evidence provided in response to a request in writing; and subsequently verify the bid or parts of the bid being abnormally low; c) The decision of the Procuring agency/Employer to reject a bid and reasons for the decision shall be recorded in the procurement proceedings and promptly communicated to the bidder concerned; d) The Procuring agency/Employer shall not incur any liability solely by rejecting abnormally bid; and e) An abnormally low bid means, in the light of the Procuring agency/Employer's estimate and of all the bids submitted, the bid appears to be abnormally low by not providing a margin for normal levels of profit. **Guidance for Procuring agency/Employer:** In order to identify the Abnormally Low Bid (ALB) following approaches can be considered to minimize the scope of subjectivity: (i) Comparing the bid price with the cost estimate;

		(ii) Comparing the bid price with the bids offered by other bidders submitting substantially responsive bids; and (iii) Comparing the bid price with prices paid in similar contracts in the recent past either government- or development partner-funded.
	39.2	The Procuring agency/Employer will determine to its satisfaction whether the bidder that is selected as having submitted the most advantageous bid is qualified to perform the contract satisfactorily, in accordance with the criteria listed in **ITB 12**
	39.3	The determination will take into account the bidder's financial and technical capabilities. It will be based upon an examination of the documentary evidence of the bidder's qualifications submitted by the bidder, pursuant to **ITB 12,** as well as such other information as the Procuring agency/Employer deems necessary and appropriate. Factors not included in these bidding documents shall not be used in the evaluation of the bidders' qualifications.
	39.4	Procuring agency/Employer may seek "Certificate for Independent Price Determination" from the bidder and the results of reference checks may be used in determining award of contract. ***Explanation:*** *The Certificate shall be furnished by the bidder. The bidder shall certify that the price is determined keeping in view of all the essential aspects such as raw material, its processing, value addition, optimization of resources due to economy of scale, transportation, insurance and margin of profit etc.*
	39.5	An affirmative determination will be a prerequisite for award of the contract to the bidder. A negative determination will result in rejection of the bidder's bid, in which event the Procuring agency/Employer will proceed to the next ranked bidder to make a similar determination of that bidder's capabilities to perform satisfactorily.

F. AWARD OF CONTRACT

40. Criteria of Award	40.1	Subject to **ITB 36** and **37**, the Procuring agency/Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the bidding documents and who has been declared as Most Advantageous Bidder, provided that such bidder has been determined to be: a) eligible in accordance with the provisions of **ITB 3;** b) is determined to be qualified to perform the Contract satisfactorily; and c) Successful negotiations have been concluded, if any. **Note: Process through EPADS**
41. Negotiations	41.1	The Committee of the Procuring agency/Employer may negotiate with the Most Advantageous Bidder relating to the following areas: (a) a minor alteration to the technical (drawings, design technical specifications) details of the statement of works; (b) Methodology, work plan, staffing in view to streamline the work; (c) a minor amendment to the special conditions of Contract; (d) finalizing payment arrangements; (e) clarifying details that were not apparent or could not be finalized at the time of Bidding;
	41.2	Where negotiation fails to result into an agreement, the Procuring agency/Employer may invite the next ranked bidder for negotiations. Where negotiations are commenced with the next ranked bidder, the Procuring agency/Employer shall not reopen earlier negotiations.
42. Procuring agency/Employer's Right to reject All Bids	42.1	Notwithstanding **ITB 37**, the Procuring agency/Employer reserves the right to reject all the bids, and to annul the bidding process at any time prior to acceptance of bid, without thereby incurring any liability to the affected bidder(s). However, the Authority (i.e. PPRA) may call from the Procuring agency/Employer the justification of those grounds.
	42.2	Notice of the rejection of all bids shall be given promptly to all bidders that have submitted bids.

	42.3	The Procuring agency/Employer shall upon request communicate to any bidder the grounds for its rejection of its bids, but is not required to justify those grounds.

43. Variations	43.1	The Engineer shall make any variation in the quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct the Contractor to do and the Contractor shall do any of the following: a) increase or decrease the quantity of any work included in the Contract, b) omit any such work (but not if the omitted work is to be carried out by the Employer or by another contractor), c) change the character or quality or kind of any such work, d) change the levels, lines, position and dimensions of any part of the Works, e) execute additional work of any kind necessary for the completion of the Works, or f) change any specified sequence or timing of construction of any part of the Works. No such variation shall in any way vitiate or invalidate the Contract, but the effect, if any, of all such variations shall be valued in accordance with **ITB 15**. Provided that where the issue of an instruction to vary the Works is necessitated by some default of or breach of contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor.
44. Instructions for variations	44.1	The Contractor shall not make any such variation without an instruction of the Engineer. Provided that no instruction shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an instruction given under this Clause, but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

45. Valuation of Variations	45.1	All variations and any additions to the Contract Price which are required to be determined in accordance with **ITB 15** (for the purposes of this Clause referred to as "varied work"), shall be valued at the rates and prices set out in the Contract if, in the opinion of the Engineer, the same shall be applicable. If the Contract does not contain any rates or prices applicable to the varied work, the rates and prices in the Contract shall be used as the basis for valuation so far as may be reasonable, failing which, after due consultation by the Engineer with the Procuring agency/Employer and the Contractor, suitable rates or prices shall be agreed upon between the Engineer and the Contractor. In the event of disagreement, the Engineer shall fix such rates or prices as are, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with **ITB 15.**
46. Notification of Award	46.1	Prior to the award of contract, the Procuring agency/Employer shall issue a Final Evaluation Report giving justification for acceptance or rejection of the bids. **Note: Process through EPADS**
	46.2	Where no complaints have been lodged, the bidder whose bid has been accepted will be notified of the award by the Procuring agency/Employer prior to expiration of the bid validity period in writing or through electronic means that provide record of the content of communication. However, the Procuring agency/Employer shall not award any procurement contract atleast for fifteen (15) days after the acceptance of bid. The notification letter (herein after and in the condition of the contract and contract form called “Letter of Acceptance” will specify the sum that the Procuring agency/Employer will pay the successful bidder in consideration for the execution and completion of the works as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price).

	46.3	The notification of award will constitute the formation of the Contract, subject to the bidder furnishing the Performance Security (or guarantee) in accordance with **ITB 48** and signing of the contract in accordance with **ITB 47.**
	46.4	Upon the successful bidder's furnishing of the performance security (or guarantee) pursuant to **ITB 48**, the Procuring agency/Employer will promptly notify each unsuccessful bidder, the name of the successful bidder and the Contract amount and will discharge the Bid Security or Bid Securing Declaration of the bidder(s) pursuant to **ITB 19**.
47. Signing of Contract	47.1	Promptly after notification of award, Procuring agency/Employer shall send the successful bidder the draft agreement, incorporating all terms and conditions as agreed by the parties to the contract.
	47.2	Immediately after the Redressal of grievance by the GRC, and after fulfillment of all conditions precedent of the Contract Form, the successful bidder and the Procuring agency/Employer shall sign the contract.
	47.3	Where no formal signing of a contract is required, work order issued to the bidder shall be construed to be the contract.
48. Performance Security (or Guarantee)	48.1	After the receipt of the Letter of Acceptance, the successful bidder, within the specified time, shall deliver to the Procuring agency/Employer a Performance Guarantee in the amount and in the form stipulated in the **BDS and SCC**, denominated in the type and proportions of currencies in the Letter of Acceptance and in accordance with the Conditions of Contract.
	48.2	If the Performance Guarantee is provided by the successful bidder and it shall be in the form specified in the **BDS** which shall be in any of the following: (a) certified cheque, cashier's or manager's cheque, or bank draft; (b) irrevocable letter of credit issued by a scheduled bank of Pakistan or in the case of an irrevocable letter of credit issued by a foreign bank, the letter shall be confirmed or authenticated by a scheduled bank of Pakistan;

		(c) bank guarantee confirmed by a reputable local bank or, in the case of a successful foreign bidder, bonded by a foreign bank; or (d) surety bond callable upon demand issued by any reputable surety or insurance company. Any Performance Guarantee submitted shall be enforceable in Pakistan.
	48.3	Failure of the Most Advantageous Bidder to comply with the requirement of **ITB 47** shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security or declare blacklisted (in case bid securing declaration is submitted) in which event the Procuring agency/Employer may make the award to the next most advantageous bidder or reinitiate the procurement process afresh (as a case may be).
49. Advance Payment	49.1	Advance payment will be provided to the bidder in percentage and in the manner as agreed by the both parties in terms of Conditions of the Contract.
	49.2	The Procuring agency/Employer will provide an advance payment as stipulated in the Conditions of Contract, subject to a maximum amount, as stated and/or Conditions of the Contract. The advance payment request shall be accompanied by an advance payment security (guarantee) in the form provided in Section X. For the purpose of receiving the advance payment, the bidder shall make and estimate of, and include in its bid, the expenses that will relate to the purchase of equipment, machinery, materials, and on the engagement of labor during the first month beginning with the date of the Procuring agency/Employer's "Notice to Commence" as specified in the **SCC.**

50. General Performance of the Bidders	50.1	The Procuring agency/Employer reserves the right to obtain information regarding performance of the bidders on their previously awarded contracts / works. The Procuring agency/Employer may seek information / report from the previous employer for consideration. However, the Procuring agency/Employer shall incorporate such parameters in the evaluation criteria and accordingly decide the fate of the bid submitted.
51. Corrupt & Fraudulent Practices	51.1	Procuring agencies (including beneficiaries of Government funded projects and procurement) as well as Bidders/Suppliers/Contractors under Government financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts, and will avoid to engage in any corrupt and fraudulent practices.

F. GRIEVANCE REDRESSAL & COMPLAINT REVIEW MECHANISM

52. Constitution of Grievance Redressal	52.1	Procuring agency/Employer shall constitute a Grievance Redressal Committee (GRC) comprising of odd number of persons with proper power and authorization to address the complaint. The GRC shall not have any of the members of Procurement Evaluation Committee. The committee must have one subject specialist depending the nature of the procurement.
53. GRC Procedure	53.1	Any party can file its written complaint against the eligibility parameters or any other terms and conditions prescribed in the prequalification or bidding documents found contrary to provision of Procurement Regulatory Framework, and the same shall be addressed by the GRC well before the bid submission deadline.
	53.2	Any bidder feeling aggrieved by any act of the Procuring agency/Employer after the submission of his bid may lodge a written complaint concerning his grievances not later than seven days of the announcement of technical evaluation report and five days after issuance of final evaluation report.

	53.3	In case, the complaint is filed against the technical evaluation report, the GRC shall suspend the procurement proceedings.
	53.4	In case, the complaint is filed after the issuance of the final evaluation report, the complainant cannot raise any objection on technical evaluation of the report: Provided that the complainant may raise the objection on any part of the final evaluation report in case where single stage one envelope bidding procedure is adopted.
	53.5	The GRC, in both the cases shall investigate and decide upon the complaint within ten days of its receipt.
	53.6	Any bidder or the Procuring agency/Employer not satisfied with the decision of the GRC may file Appeal before the Appellate Committee of the Authority on prescribed format after depositing the Prescribed fee.
	53.7	The Committee, upon receipt of the Appeal against the decision of the GRC complete in all respect shall serve notices in writing upon all the parties to Appeal.
	53.8	The committee shall call the record from the concerned Procuring agency/Employer or the GRC as the case may be, and the same shall be provided within prescribed time.
	53.9	The committee may after examination of the relevant record and hearing all the concerned parties, shall decide the complaint within fifteen (15) days of receipt of the Appeal.
	53.10	The decision of the Committee shall be in writing and shall be signed by the Head and each Member of the Committee. The decision of the committee shall be final.

G. MECHANISM OF BLACKLISTING

54. Mechanism of Blacklisting	54.1	The Procuring agency/Employer shall bar for not more than the time prescribed in Rule-19 of the Public Procurement Rules, 2004, from participating in their respective procurement proceedings, bidder or contractor who either: Involved in corrupt and fraudulent practices as defined in Rule-2 of Public Procurement Rules; i) Fails to perform his contractual obligations; and ii) Fails to abide by the id securing declaration;
	54.2	The show cause notice shall contain: (a) precise allegation, against the bidder or contractor; (b) the maximum period for which the Procuring agency/Employer proposes to debar the bidder or contractor from participating in any public procurement of the Procuring agency/Employer; and (c) the statement, if needed, about the intention of the Procuring agency/Employer to make a request to the Authority for debarring the bidder or contractor from participating in public procurements of all the procuring agencies.
	54.3	The Procuring agency/Employer shall give minimum of seven days to the bidder or contractor for submission of written reply of the show cause notice.
	54.4	In case, the bidder or contractor fails to submit written reply within the requisite time, the Procuring agency/Employer may issue notice for personal hearing to the bidder or contractor/ authorize representative of the bidder or contractor and the Procuring agency/Employer shall decide the matter on the basis of available record and personal hearing, if availed.
	54.5	In case the bidder or contractor submits written reply of the show cause notice, the Procuring agency/Employer may decide to file the matter or direct issuance of a notice to the bidder or contractor for personal hearing.
	54.6	The Procuring agency/Employer shall give minimum of seven days to the bidder or contractor for appearance before the designated officer of the Procuring agency/Employer for personal hearing. The designated officer shall decide the matter on the basis of the available record and personal hearing of the bidder or contractor, if availed.

	54.7	The Procuring agency/Employer shall decide the matter within fifteen (15) days from the date of personal hearing unless the personal hearing is adjourned to a next date and in such an eventuality, the period of personal hearing shall be reckoned from the last date of personal hearing.
	54.8	The Procuring agency/Employer shall communicate to the bidder or contractor the order of debarring the bidder or contractor from participating in any public procurement with a statement that the bidder or contractor may, within thirty (30) days, prefer a representation against the order before the Authority.
	54.9	Such blacklisting or barring action shall be communicated by the Procuring agency/Employer to the Authority and respective bidder or bidders in the form of decision containing the grounds for such action. The same shall be publicized by the Authority after examining the record whether the procedure defined in blacklisting and debarment mechanism has been adhered to by the Procuring agency/Employer.
	54.10	The bidder may file the review petition before the Review Petition Committee Authority within thirty (30) days of communication of such blacklisting or barring action after depositing the prescribed fee and in accordance with "Procedure of filing and disposal of review petition under Rule-19(3) Regulations, 2021". The Committee shall evaluate the case and decide within ninety (90) days of filing of review petition.
	54.11	The committee shall serve a notice in writing upon all respondent of the review petition. The notices shall be accompanied by the copies of review petition and all attached documents of the review petition including the decision of the Procuring agency/Employer. The parties may file written statements along with essential documents in support of their contentions. The Committee may pass such order on the representation may deem fit.

	54.12	The Authority on the basis of decision made by the committee either may debar a bidder or contractor from participating in any public procurement process of all or some of the procuring agencies for such period as the deemed appropriate or acquit the bidder from the allegations. The decision of the Authority shall be final.

SECTION III: BID DATA SHEET

Bid Data Sheet (BDS)

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

BDS Clause Number	ITB Number	Amendments of, and Supplements to, Clauses in the Instruction to Bidders
A. Introduction		
1.	**1.1**	Name of Procuring agency/Employer: **NATIONAL BANK OF PAKISTAN (NBP)** The subject of procurement is: **MAJOR RENOVATION & REFURBISHMENT WORK OF NBP AIBG REGIONAL OFFICE AT 2ND FLOOR OF NBP G-6 BUILDING MELODY ISLAMABAD** Period for completion of the works **(270 Days)** Commencement date execution of the works: **(_____)** [*insert: insert immediately or number of days after signing the contract*] Type of Procurement **[*National competitive bidding]***
2.	**2.1**	Financial year for the operations of the Procuring agency/Employer: **[*2024-25*]** Name of Project **MAJOR RENOVATION & REFURBISHMENT WORK OF NBP AIBG REGIONAL OFFICE AT 2ND FLOOR OF NBP G-6 BUILDING MELODY ISLAMABAD** Name of financing institution: **[*NBP*]** Name and identification number of the Contract: **[……]**
3.	**3.1**	Maximum number of members in the joint venture, consortium shall be: **[……]**.

B. Bidding Documents

4.	**7.2**	The number of copies to be completed and returned is one original and [*specify number of certified copies of original*] **Note: As per EPADS provisions (if any)**
5.	**8.1**	The address for clarification of Bidding Documents is [*insert full address*] **Note: Through EPADS**
	8.5	Pre-bid meeting Nil *[Insert address of venue, or indicate that the meeting will not take place. The meeting should take place not later than one week before the deadline for Bid submission.]*

C. Preparation of Bids

6.	**10.1**	The Language of all correspondences and documents related to the Bid is: [*ENGLISH*]
7.	**11.1 (i)**	In addition to the documents stated in **ITB 11,** the following documents must be included with the Bid ***a)*** *The bidder should have an active status on FBR Active Taxpayer List and with Provincial Revenue Board.* ***b)*** *valid registration in Pakistan Engineering Council in financial category C-5 or above with Specialization Code CE-10 & EE-04 on bidding date.* ***c)*** *The bidder must fulfill all requisite information in* ***Section V Evaluation and Qualification Criteria, Section VI Standard Forms, Form of Bid & forms in*** **Eligibility and Qualification Criteria** **Note: Through EPADS**
8.	**11.5 (c)**	Other procurement specific documentation requirements are: [*specify the requirements*]. **Note: Through EPADS**
9.	**15.5**	The bid price shall be adjusted in accordance with Appendix A – Formula for Price Adjustment.
10.	**15.6**	Name of the works **MAJOR RENOVATION & REFURBISHMENT WORK OF NBP AIBG REGIONAL OFFICE AT 2ND FLOOR OF NBP G-6 BUILDING MELODY ISLAMABAD**

		The identification No. _____ The No. and identification of lots (contracts) comprising this open competitive bid **NIL**
11.	**16.1**	The currency of the Bid shall be ***(PKR);***
12.	**18.1**	The Bid Validity period shall be ***[365]*** days.
13.	**19.1**	The amount of Bid Security shall be (**RS: *1,500,000/-***) The currency of the Bid Security shall be: **PKR**. Or Indicate whether Bid Securing Declaration is applicable ***["No"]***
14.	**19.3**	The Bid Security shall be in the form of: **Pay Order or Bankers cheque or Bank Guaranty.**
15.	**19.3 (c)**	Other forms of security are:[***N/A***]
16.	**20.1**	Alternative Bids to the requirements of the Bidding Documents [*insert "will' or "will not,' as appropriate*] be permitted with respect to [***N/A***]
17.	**20.2**	If alternative scheduled for execution of work is explicitly invited (please insert the method for evaluation of different schedules for execution of works) [**N/A**]
18.	**22.1**	The number of copies of the Bid to be completed and returned shall be [insert number]. **Note: Through EPADS**
19.	**22.2**	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: **Note: Through EPADS**

D. Submission of Bids

20.	**23.2 (a)**	Bid shall be submitted [*specify the PA's address* below] Street address: *[insert street address]* Building/Plot No. *[insert Building/Plot]*

		Floor/Room No.: *[insert floor/room]* City/Town: *[insert city/town]* **Note: Through EPADS and as specified in the Notice for Invitation for Bids published in Press and posted on PPRA and NBP Websites**
21.	**23.2 (b)**	Title of the subject Procurement or Project name: **MAJOR RENOVATION & REFURBISHMENT WORK OF NBP AIBG REGIONAL OFFICE AT 2ND FLOOR OF NBP G-6 BUILDING MELODY ISLAMABAD** ITB title and No: *[insert IFB title and number]* ***Note: Through EPADS*** Time and date for submission: *[Date: _____ Time: _____]*
22.	**24.1**	The deadline for Bid submission is a) Day*:* ***Tuesday*** b) Date*:* **12 August, 2025** c) Time*:* ***11:00 AM***

E. Opening and Evaluation of Bids

23.	**27.1**	The Bid opening shall take place at: **Wing Head Engineering North, NBP 2nd Floor, G-5/1 Building Islamabad,** Day*:* ***Tuesday*** a) Date: **12 August, 2025** Time*:* ***11:30 AM*** **Note: Through EPADS and as specified in the Notice for Invitation for Bids published in Press and posted on PPRA and NBP Websites**

24.	**33.2**	The currency that shall be used for Bid evaluation and comparison purposes to convert all Bid prices expressed in various currencies is: *[**PKR**]* The source of exchange rate shall be: *[State Bank of Pakistan Exchange Rate* ***https://www.sbp.org.pk/ecodata/rates/m2m/m2m-current.asp****]* The date of exchange rate shall be: *[**Date Of Bid Opening**]*
25.	**33.3**	The bids shall be quoted in (**PKR**)
26.	**34**	**Evaluation Techniques** **Least Cost Based Selection (LCBS)** After meeting the requirements of eligibility, qualification and substantial responsiveness, the bid in compliance with all the mandatory (drawings/ design/ technical specifications /requirements and/or requisite quality threshold (if any), and having lowest evaluated cost (or financial proposal) shall be considered highest ranked bid. **Quality and Cost Based Selection (QCBS) Note: N/A** In such combination, there shall be some specific weightage of both the technical features (such as prescribed in **ITB 35.2**) and financial aspects of the proposal. The financial marks shall be awarded in accordance with the formula stipulated in the BDS or Evaluation Criteria prescribed in the bidding documents. The highest ranked bid shall be declared, on the basis of combined evaluation.
27.	**34**	Specific criteria in case evaluating the bids submitted by JVs and consortium to be used in the evaluation and their evaluation method or reference to the Technical Specifications. [*specify*]

28.	34	In case of award to a single Bidder of multiple lots; the methodology of evaluation to determine the lowest evaluated Lot combinations, in the Form of Bid is [**Most Advantageous Bid**].
29.	**35**	Domestic preference to apply. **or** Domestic preference not applicable. *[Delete the non-applicable option.]* Preference to domestic or national suppliers or contractors shall be provided in accordance with policies of the Federal Government and/or in accordance with the regulations issued by the Authority. *The percentage for the domestic preference along with calculation formula is provided in the evaluation and qualification criteria.*
30.	**38.2**	Sub-contracting (please insert percentage) of the total value of the contract. **Note: N/A**
F. Award of Contract		
31.	**48**	The Performance Security (or guarantee) shall be *5 percent of the Contract Price:* **Contracts Worth Rs. 10 Mn. or above**
32.	**48**	The Performance Security (or guarantee) shall be in the form of Bank Guarantee/Insurance Bond and is valid till the completion date of the project as per the LOI. **Contracts Worth Rs. 10 Mn. or above**
G. Review of Procurement Decisions		
33.	**53.6**	The Address of PPRA to submit a **copy** of appeal: Grievance Redressal Appellate Committee, Public Procurement Regulatory Authority 1st Floor, G-5/2, Islamabad, Pakistan Tel: +92-51-9202254

Section IV. Eligible Countries

All the bidders are allowed to participate in the subject procurement without regard to nationality, except bidders of some nationality, prohibited in accordance with policy of the Federal Government.

Following countries are ineligible to participate in the procurement process:

1. India
2. Israel

Section V. Evaluation and Qualification Criteria

The Procuring agency/Employer shall evaluate the bids in accordance with predefined evaluation and qualification criteria mentioned in this document. No other factors, methods or criteria shall be used. The Bidder shall provide all the information requested in the forms included in the Bidding Forms.

Wherever a Bidder is required to state a monetary amount, Bidders should indicate the currency prescribed in the BDS. In case of foreign currency, the exchange rates shall be taken from State Bank of Pakistan on that bid opening day. Any error in determining the exchange rates in the Bid may be corrected in accordance with **ITB 32** (Correction of Arithmetic Errors)

1. Domestic Preference

If allowed in the BDS, a margin of preference shall be granted to domestic contractors, in accordance with policy of the Federal Government and guidelines issued by the Authority, and subject to, the following provisions:

(a) Contractors applying for such preference shall provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring agency/Employer, a particular contractor or group of contractors qualifies for a domestic preference. The bidding documents shall clearly indicate the preference and the method that will be followed in the evaluation and comparison of bids to give effect to such preference.

(b) After bids have been received and reviewed by the Procuring agency/Employer, responsive bids shall be classified into the following groups:
   (i) Group A: bidder eligible for the domestic preference.
   (ii) Group B: other bidder.

(c) All evaluated bids in each group shall, as a first evaluation step, be compared to determine the most advantageous bid, and the most advantageous bids in each group shall be further compared with each other. If, as a result of this comparison, a bid from Group A is the most advantageous, it shall be selected for the award. If a bid from Group B is the most advantageous, as a second evaluation step, all bids from Group B shall then be further compared with the most advantageous bid from Group A. For the purpose of this further comparison only, the percentage of price preference of the respective bid price corrected for arithmetical errors, shall be added to the evaluated price offered in each bid from Group B. If the bid from Group A is the most advantageous, it shall be selected for award. If not, the most advantageous bid from Group B based on the first evaluation step shall be awarded the contract.

Evaluation

In addition to the criteria listed in **ITB 34.3** the following criteria shall be applied for the evaluation of bids:

2.1 Assessment of adequacy of Technical Proposal with Requirements

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section V Works Requirements.

2.2 Technical Alternatives:

Technical alternatives, if permitted under BDS, will be evaluated as follows;
(*The Procuring agency/Employer shall describe how this factor will be evaluated).*

2.3 **Multiple Contracts**:

If works are grouped in multiple contracts and pursuant to **ITB 34**, the Procuring agency/Employer shall evaluate and compare Bids on the basis of a contract, or a combination of contracts, or as a total of contracts in order to arrive at the Most advantageous bid for the Procuring agency/Employer by taking into account bids offered by Bidders in case of award of multiple contracts. If a Bidder submits several successful (lowest evaluated substantially responsive) bids, the evaluation will also include an assessment of the Bidder's capacity to meet the following aggregated requirements as presented in the bid:

1) Average annual construction turnover,
2) Financial resources,
3) Equipment to be allocated, and
4) Personnel to be fielded

If permitted under ITB 34, will be evaluated as follows:

Award Criteria for Multiple Contracts:

Lots
If specified in the procurement planning and allowed in the BDS, the Procuring agency/Employer may ask to the bidder to bid for any one or more lots. Bids will be evaluated lot-wise for combined lots. The contract(s) will be awarded to the Bidder or Bidders offering the most advantageous bid to the Procuring agency/Employer for

combined lots, subject to the selected Bidder(s) meeting the required qualification criteria for lot or combination of lots as the case may be.

Packages

If specified in the procurement planning and allowed in the BDS the bidder may choose to Bid for any one or more packages and for any one or more lots within a package. Bids will be evaluated package-wise, for combined packages and/or lots within a package. The contract(s) will be awarded to the Bidder or Bidders offering the most advantageous bid to the Procuring agency/Employer for combined packages, subject to the selected Bidder(s) meeting the required qualification criteria for combination of packages and or lots as the case may be.

2.4 Specialized Subcontractors

Only the specific experience of sub-contractors for specialized works permitted by the Procuring agency/Employer will be considered. The general experience and financial resources of the specialized sub-contractors shall not be added to those of the Bidder for purposes of qualification of the Bidder.

The specialized sub-contractors proposed shall be fully qualified for their work proposed, and meet the following criteria: (*Specify Criteria below)*

Qualification

The Procuring agency/Employer may utilize this criteria if the pre-qualification process is not carried out separately prior to the bidding process.

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
1. Eligibility							
1.1	**Nationality**	Nationality in accordance with **ITB 4.3**	Must meet requirement	Must meet requirement	Must meet requirement	N/A	**Forms ELI – 1.1 and 1.2, with attachments**
1.2	**Conflict of Interest**	No conflicts of interest in accordance with **ITB 3.7**	Must meet requirement	Must meet requirement	Must meet requirement	N/A	**Letter of Bid**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
Historical Contract Non-Performance							
2.1	**History of Non-Performing Contracts**	Non-performance of a contract did not occur as a result of contractor default since ***[3 years]*.**	Must meet requirement	Must meet requirements	Must meet requirement	N/A	**Form CON-2**
2.2	**Pending Litigation**	Bidder's financial position and prospective long term profitability sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Bidder	Must meet requirement	N/A	Must meet requirement	N/A	**Form CON – 2**
2.3	**Litigation History**	No consistent history of court/arbitral award decisions against the Bidder since 1st **January *[2022]***	Must meet requirement	Must meet requirement	Must meet requirement	N/A	**Form CON – 2**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
3. Financial Situation and Performance							
3.1	**Financial Capabilities**	(i) The Bidder shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as **PKR 4.0 (M)** for the subject contract(s) net of the Bidders other commitments	Must meet requirement	Must meet requirement	N/A	N/A	**Form FIN – 3.1, with attachments**
		(ii) The Bidders shall also demonstrate, to the satisfaction of the Procuring agency/Employer, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.	Must meet requirement	Must meet requirement	N/A	N/A	
		(iii) The audited					

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
		balance sheets or, if not required by the laws of the Bidder's country, other financial statements acceptable to the Procuring agency/Employer for the last ***03*** **years** shall be submitted and must demonstrate the current soundness of the Bidder's financial position and indicate its prospective long-term profitability.	Must meet requirement	N/A	Must meet requirement	N/A	
3.2	**Average Annual Construction Turnover**	Minimum average annual construction turnover of **PKR 10 Million**, calculated as total certified payments received for contracts in progress and/or completed within the last 03 years, divided by **03 years**	Must meet requirement	Must meet requirement	Must meet _____%, _____of the requirement	Must meet _____ _%, _____ __of the requiremen t	**Form FIN – 3.2**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
4. Experience							
4.1 (a)	**General Construction Experience**	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last **03 years**, starting from (insert date) 1st **November *2021***	Must meet requirement	N/A	Must meet requirement	N/A	**Form EXP – 4.1**
4.2 (a)	**Specific Construction & Contract Management Experience**	(i) A minimum number of similar contracts specified below that have been satisfactorily and substantially completed as a prime contractor, joint venture member, management contractor or sub-contractor between **03 years** and application submission deadline: (i) N contracts, each of minimum value V; Or (ii) Less than or equal to N contracts, each of minimum value V, but with total value of all contracts equal	Must meet requirement	Must meet requirement	N/A	N/A	**Form EXP 4.2(a)**

Eligibility and Qualification Criteria			Compliance Requirements				Documentation
No.	Subject	Requirement	Single Entity	Joint Venture (existing or intended)			Submission Requirements
				All Parties Combined	Each Member	One Member	
		or more than N x V; ***03 x 10.0 (M),*** *delete (ii) above if not applicable]*. *[In case the Works are to be bid as individual contracts under a slice and package (multiple contract) procedure, the minimum number of contracts required for purposes of evaluating qualification shall be selected from the options specified in ITB 34.5]*					
		[Add the following if specialized sub-contractor is permitted and describe nature and characteristics of specialized works:] *"(ii) For the following specialized works, the Procuring agency/Employer permits specialized sub-contractors as per ITB 38.2"*	*"Must meet requirement for one contract (Requirement can be met through a Specialized Sub-contractor)"*	*Must meet requirement*	*N/A*	*"Must meet requirement (Requirement can be met through a Specialized Sub-contractor)"*	**Note: N/A**
4.2 (b)		For the above and any other contracts	Must meet requirements	Must meet requirements	N/A	Must meet the following	**Form EXP – 4.2 (b)**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
		completed and under implementation as prime contractor, joint venture member, management contractor or sub-contractor on or after the first day of the calendar year during the period stipulated in 4.2 (a) above, a minimum construction experience in the following key activities successfully completed: *[list activities indicating volume, number or rate of production as applicable]*				requirements for the key activities listed below *[list key activities and the corresponding minimum requirements]*	
4.2 (c)	**Specific Experience in managing ES aspects (Note N/A)**	For the contracts in 4.2 (a) above and/or any other contracts [substantially completed and under implementation] as prime contractor, joint venture member, or Subcontractor between 1st January *[insert year]* and Application submission deadline,	Must meet requirements	Must meet requirement	Must meet the following requirements: [*list key requirements to be met by each member otherwise state: "N/A"]*	Must meet the following requirements: *[list key requirements to be met by one member otherwise state: "N/A"]*	Form EXP – 4.2 (c) **Note; N/A**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
		experience in managing ES risks and impacts in the following aspects: *[Based on the ES assessment, specify, as appropriate, specific experience requirements to manage ES aspects.]*					

Note: [For Multiple lots (contracts) specify financial and experience criteria for each lot under 3.1, 3.2, 4.2]

Contractor's Representative and Key Personnel

The Bidder must demonstrate that it will have a suitably qualified Contractor's Representative and suitably qualified (and in adequate numbers) Key Personnel, as described in the Specification.

The Bidder shall provide details of the Representative and Key Personnel and such other Key Personnel that the Bidder considers appropriate to perform the Contract, together with their academic qualifications and work experience. The Bidder shall complete the relevant Forms in the Bidding Forms.

Equipment

The Bidder must demonstrate that it has access to the key equipment listed hereafter:

[Specify requirements for each lot as applicable]

No.	Equipment Type and Characteristics	Minimum Number required
1		
2		
3		
4		
5		

The Bidder shall provide further details of proposed items of equipment using Form EQU in Section V.

SECTION V: WORKS REQUIREMENT, TECHNICAL SPECIFICATIONS, DRAWINGS, SUPPLEMENTARY INFORMATION AND BILL OF QUANTITIES

Scope of Works

(Describe Scope of Work)

Technical Specifications

Notes for Preparing the Technical Specifications

A set of precise and clear specifications is a prerequisite for bidders to respond realistically and competitively to the requirements of the Procuring agency/Employer without qualifying their bids. The specifications must be drafted to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship and materials for the works to be procured. Only if this is done will the objectives of economy, efficiency, and fairness in procurement be realized, responsiveness of bids be ensured, and the subsequent task of bid evaluation facilitated.

Samples of specifications from previous similar procurements are useful in this respect. The use of metric units is encouraged. Depending on the complexity of the works and the repetitiveness of the type of procurement, it may be advantageous to standardize the General Technical Specifications and incorporate them in a separate subsection. The General Technical Specifications should cover all classes of workmanship, materials, and equipment commonly involved in the procurement of works, although not necessarily to be used in a particular procurement. Deletions or addenda should then adapt the General Technical Specifications to the particular procurement.

Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for equipment, materials, and workmanship, recognized international standards should be used as much as possible. Where other particular standards are used, whether national standards of the Procuring agency/Employer's country or other standards, the specifications should state that equipment, materials, and workmanship that meet other authoritative standards, and which ensure at least a substantially equal quality than the standards mentioned, will also be acceptable. The following clause may be inserted in the Special Conditions of Contract or the Technical Specifications.

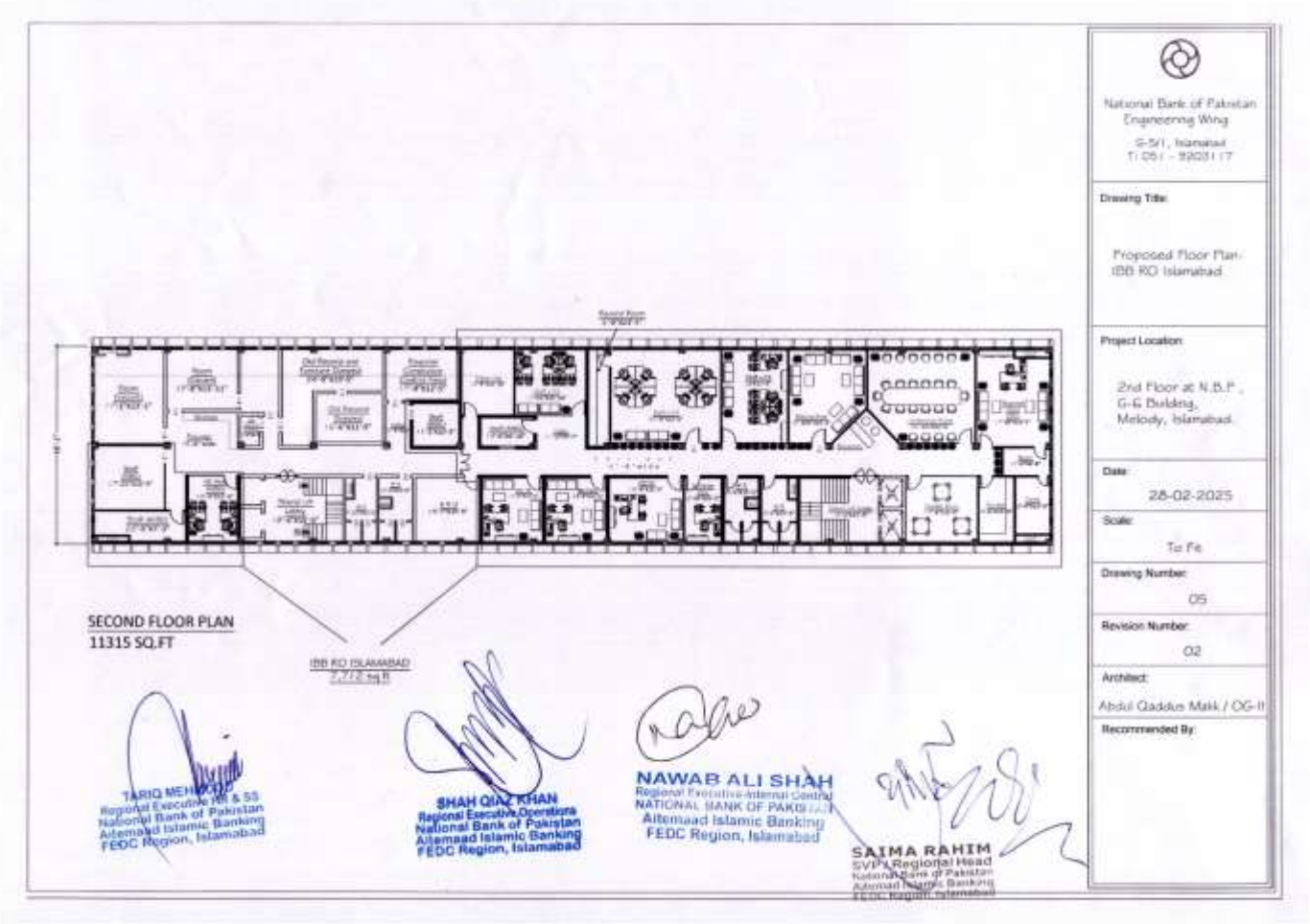
Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Technical Specifications to specific standards and codes to be met by the works and materials to be executed or tested, the provisions of the latest current edition or revision of the relevant shall apply, unless otherwise expressly stated in the Contract.

Where appropriate, drawings, including site plans as required, may be furnished by the Procuring agency/Employer with the bidding documents. Similarly, the Contractor may be requested to provide drawings with its bid or for prior review by the Procuring agency/Employer during contract execution.

Drawings

(Insert reference to the drawing of the Construction works to be carried out under this contract)



APPROVED LOP

Supplementary Information

(Insert any other supplement information related to the procurement of works)

Bill of Quantities

(Note for the Procuring Agencies: For information related to the development of the BoQs, please consult General Instructions Issued by the Authority for preparation of BoQs available on Authority Website).

Sample Bill of Quantities

A. Preamble

1. The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, General and Particular Conditions of Contract, Technical Specifications, and Drawings.
2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates and prices bid in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.
3. The rates and prices bid in the priced Bill of Quantities shall, except insofar as it is otherwise provided under the Contract, include all Constructional Plant, labour, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.
4. A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of Items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.
5. The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bill of Quantities, 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 Work.
6. General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Bill of Quantities.
7. Provisional Sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with Sub-Clauses 13.4 and 13.5 of the General Conditions.
8. The method of measurement of completed work for payment shall be in accordance with *[insert the name of a standard reference guide, or full details of the methods to be used]*.

B. Work Items

1. The Bill of Quantities usually contains the following part Bills, which have been grouped according to the nature or timing of the work:

Bill No. 1—General Items;
Bill No. 2—Earthworks;
Bill No. 3—Culverts and Bridges;
Bill No. 4—etc., as required;
Daywork Schedule; and
Summary Bill of Quantities.

2. If ITB 16.1 applies, Bidders shall price the Bill of Quantities in the applicable currency or currencies (Local or foreign as the case may be).

[Note to the Procuring agency/Employer: The tables in BOQ must be prepared in accordance with the currency alternative retained in BDS – ITB 16.1.]

Bill of Quantities

CIVIL WORKS

S.NO	DESCRIPTION/SPECIFICATION	QTY	UNIT	RATE	AMOUNT
	DISMANTLING WORKS (where required)				
1	Dismantling and removing of existing masonry walls, False ceiling, tile Flooring, tile Cladding, marble steps, Doors, Windows, Glass work, electrical fixtures &fittings, plumbing fitting & fixtures, M.s grills and any other material etc, Stacking at site of serviceable material and handing over to Bank Authority and disposal of dismantled material/debris out of municipal limits with transportation etc complete in all respects as per proposed drawings.	1	Job		
1-a	**DISMANTELING R.C.C WALL (IF ANY)**				
	Dismantling of R.C.C Wall of strong room and locker room including labor, equipment's, scaffolding, throw all dismantled material out of municipal limit with transportation. Dismantled steel and Heavy-duty doors handed over to branch. Complete in all respect.	50	Sft		
2	**SHIFTING/RELOCATING OF EXISTING DEAD STOCK ITEMS/ OLD RECORD,CASH SAFE ETC.**				
i-	Relocating of existing Dead Stock items i-e ,furniture, wooden cabinets, Computers of existing premises during Major Renovation work etc complete in all respect or as directed by Engineer incharge.	1	Job		
ii-	Shifting /Relocating of existing old record/current record /stationary /ledger books or any other items of existing premises during Major Renovation work or to its new location after completion of Major Renovation work etc complete in all respect or as directed by Engineer incharge.	1	Job		

iii-	Shifting /Relocating of existing Dead Stock items i-e, Cash safes, fire proof Almirah's, ATM machine,Lockers,M.S Almirah's /Shelves/cash cages etc from existing to its new location after completion of Major Renovation work etc complete in all respect using chain cupy ,rolling G.I pipes specially dedicated labour for this job to avoid any damages or as directed by Engineer incharge.	0	Job		
3	**REINFORCEMENT CEMENT CONCRETE 3000 PSI**				
	Provide, mix, place and vibrate reinforcement cement concrete in the volumetrix mix. 1:2:4 using one part of op cement to 2- part of 50 % lawrancepur and 50 % chenab sand and 4-parts of sargodha crush nominal size 3/4" and down mesh with min. cube crushing strength of 3000 psi at 28 days finishing the necked surface and curing etc, including water tight finishing the necked surfaces and curing etc, from work including its sub-sequent removal, complete in all respects as per drawings, specifications and as directed by the Consultant/Engineer.				
	I) R.C.C Walls .	0	Cft		
	II) Beam / Lintels/ Shelves etc.	100	Cft		
4	**STEEL REINFORCEMENT**				
	P/F Grade 60 steel reinforcement deformed bars at any floor with minimum yield strength of 60000 psi as per ASTM standards A-615, including cost of binding wire of 16-SWG, chairs. (Wastage of bars, Over laps etc. is to be Contractors accounts).	200	kgs		
	STANDARD STRONG ROOM DOOR				

5	Supply and installation i/c transportation of standard strong room / locker room door of size 7' x 4' x 11", the main frame should be of 9mm thickness angle or U-channel and 6mm thickness main shutter a composite of outer 6mm and inner 3mm. The space between outer and inner sheet should be filled with fire proof material, tale and alum crystals. The outer 6mm plate is reinforced with 3mm thick anti-torch material plate in the locking regions. The lock area should be protected with 1/8x27x30 inch copper sheet. Thickness of door slab is 2". Locking box wall made of wide 4" M.S sheet plate covered with 3mm BS sheet two brass locks with triple control locking system. Hinges made from 2-1/2" dia solid steel bars 9" in length & 12" long 4" wide flat bars with all bearings. Locking system triple control 2 way locking system. Made of 2.5" x 2.5" x 6mm angle iron 2-1/2" long 1-1/2" steel shooting bolts fixed on it with total no 11 bolts 6 at front & 5 at rear. Grill door, main frame and 08 Nos. supporting strips should be of ½" M.S Plates with 6/8" solid rounds bars 13-14 at brass locks with master control keys operation with grill door i/c exact alignment, plumb, welding. Placement of strong room door in vertical position in the opening of the strong room with chain kopi and welding of the the angle bars with steel bars of the strong room bars. (from Banks Approved Vender)	0	Each		
6	**BRICK MASONARY**				
	Providing and laying brick masonry/ Solid Block with 1:4 cement sand mortar in super structure, including raking out joints, scaffolding, curing, drilling for walls/ Ramps where required complete in all respects as per drawings, specifications and as directed by the Consultant/Engineer.				
	9" (228 mm) Thick or Above	0	Cft		
	6" (150 mm) Thick or Above	200	Cft		
	4" or 4-1/2" (114 mm) Thick	350	Sft		
7	**PLASTER WORK**				
	Providing and applying Plaster (thickness and cement / sand ratio as indicate in sub items below) including making edges and corners, curing, scaffolding etc, complete in all respects as per drawings, specifications and as directed by the Consultant/Engineer.				

	12mm Thick in (1:4) on walls	700	Sft		
	19mm Thick in 1:3 on stairs soffit / ceiling	100	Sft		
	P.C.C (1:4:8) UNDER FLOOR				
8	Providing and laying under floor cement concrete of the nominal mixes by volume as indicated, using 1-1/2" down guage stone ballast as coarse aggregate, including formwork and its removal, compacting, curing etc, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	225	Cft		
	P.C.C FLOORING				
9	Providing and laying of PCC 1:2:4 under floor using one part ordinary portland cement, four parts of best quality sand and eight parts of crush stone including leveling, compacting, curing and surface finishing as required, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.				
	50mm Thick (Rough Finish)	0	Sft		
	75mm Thick (Smooth Finish)	0	Sft		
	PORCELAIN TILES				
10	Providing and laying floors of Porcelain tiles 1200mm X 600mm (grit white) 11mm thick of Roka ceram tile imported made (Chaina or equivalent including base mortar 1-1/2" thick c.c and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Engineer.	6300	Sft		
	Providing and laying floors of Porcelain tiles 1200mm X 600mm (Conoliaen Brown) 11mm thick.				
11	Providing and laying floors of Porcelain tiles 1200mm X 600mm (Conoliaen Brown) 11mm thick of takceram tile imported made (China or equavilent including base mortar 1-1/2" thick c.c and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Engineer.	700	Sft		
12	**GRANITE SKIRTING**				

	Providing and laying 19mm thick Pre-polished Cherry Pink / Camel Brown Granite skirting 100mm high of including base mortar and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	0	Rft		
	CONOLIAN BROWN TILE SKIRTING				
13	Providing and laying 11mm thick of Conoliaen Brown tile in Skirting 100mm high of takceram tile imported made (Chaina or equavilent) including base mortar 1-1/2" thick c.c and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Engineer.	3000	Rft		
	GRANITE ON STAIR AND MAIN ENTRANCE PODIUM				
14	Providing and laying 19mm thick pre-polished Cherry Pink Granite / Camel Brown Granite on stair threshold floor, wall etc, including base mortar and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawing, specifications and as directed by the Consultant	0	Sft		
	GRANITE THRESHOLD				
15	Providing and laying 19mm thick pre-polished Cherry Pink Granite / Camel Brown Granite on threshold, including base mortar and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	0	Sft		
	CONOLIAN BROWN TILE THRESHOLD				
16	Providing and laying on Threshold of Porcelain tiles 1200mm X 600mm (Conoliaen Brown) 11mm thick of takceram tile imported made (Chaina or equavilent including base mortar 1-1/2" thick c.c and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Engineer.	0	Sft		
17	**GLASS DOORS**				

	Providing and fixing Tempered **frame less** glass door using 12mm clear glass , imported concealed floor door closers GCC made, door locks,cand approved handles on both sides, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	21	Sft		
	Wooden Frame Glass Door				
18	Providing and fixing Tempered glass door using 12mm clear glass including top and bottom Solid oak wood H section size 6" x 1.5" finished with NC lacqure polish made of Germany , imported concealed floor door closers GCC made, door locks,cand approved handles on both sides, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	465	Sft		
	CARPET TILES				
19	Providing and laying of Carpet Tiles size 500mm x 500mm of approved quality, pattern, (UAE / MILLEKEN or equivalent) make solution dyed fiber including wastage, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	200	Sft		
	PORCELAIN TILES ON TOILET WALLS / Floor				
20	Providing and laying floors of UAE/ Malysian Porcelain tiles size 600mm x 300mm (as approved or equivalent on walls including base mortar and matching colours, cement slurry for fixing of tiles, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	1300	Sft		
	VANITY COUNTER				
21	Providing and fixing 19mm thick pre-polished approved Cherry pink granite on bath and kitchen counters including base mortar with matching colour cement slurry for fixing, grouting and chamfering of edges, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	75	Sft		
22	**WOODEN DOORS**				

	Supply of WOODEN DOOR (WD- 1A), made with 38mm thick sandwich chipboard **(tactile sheet 4024)** of approved design with 19mm thick soft wood vertical rail both sides covered with approved, 9mm thick mahagni wood edging, finish with clear NC lacquer polish, including door frame of **16 SWG GI sheet with red oxide coat** covered with approved laminate/door boarder and hardwares i-e hinges, imported door lock and door stopper etc, complete with hard ware. And complete with all respect as directed by Engineer Incharge.				
	consisting of 12mm thick glass partition including with frosting paper in pattern as shown on drawings, with approved aluminum H section/ solid oak wooden section 6"x2" thick frame finished with lacqure polish approved shade as frame on top and bottom and all necessary joinery details complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	165	Sft		
	GLASS PARTITION				
23	Providing and fixing of Glass partition consisting of 12mm thick imported clear tempered glass with frosting paper in pattern as shown on drawings, with approved aluminum H section/ solid oak wooden section 6"x2" thick frame finished with lacqure polish approved shade as frame on top and bottom and all necessary joinery details complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	50	Sft		
24	Removing and re-fixing of Glass partition consisting of 12mm thick glass partition including with frosting paper in pattern as shown on drawings, with approved aluminum H section/ solid oak wooden section 6"x2" thick frame finished with lacqure polish approved shade as frame on top and bottom and all necessary joinery details complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	0	Sft		
25	**FRONT GLAZZING CURTAIN WALL**				

	Providing and fixing of Glass Partition consisting of 8mm thick imported Tinted tempered glass (Glass color Shade approved by W H/HoD) with approved 2mm thick aluminum section (curtain wall) of chawala or equivalent as frame on top and bottom and all necessary joinery details complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	0	Sft		
26	**OAK VENEER WOODEN PARTITON WALL /COLUMN CLADDINGFULL HEIGHT.**				
	Providing , fabricating and fixing in position 3" thick MDF wooden partition with 5mm thick oak ply pasted both sides and finish with best quality lacquer polish, wooden partition/ Column Cladding consisting of partal wood frame of size 2" x 1 1/2 " @ 2" C/C both ways and 1/2" thick imported MDF board on both faces including vertical partial wooden supports the cost of all srews ,rowel bolts, nails, glue etc . All wood should be termite proof complete in all respect. (Note. Straight dimensions of measurement will be taken at the time of billing.)	0	Sft		
27	**BULK HEAD /MDF PARTITION WALL**				
	Providing and making bulk head/ partition wall using 2" x 2" partal wooden frame @ 2' c/c horizontal and vertical with 11mm thick imported MDF Sheet both sides etc complete in all respect as per drawing, specifications and as directed by the Engineer.	100	Sft		
28	**INTERNALPAINT WORKS**				
	Providing and applying Paint on internal/ External walls of ICI or Berger including rubbing with sand stone, filling the uneven surfaces with putty, rubbing with sand paper and preparation of surface perfect in all respects, applying one coat of primer on prepared surface of plastered and finish paint coats as indicated in sub items, complete in all respects as per drawings.				
	Plastic Emulsion Paint ash white (on Internal walls)	13000	Sft		

	Weather shield paint on external walls (approved by the Engineer)	6000	Sft		
29	Providing and applying Three coats of ICI deluxe distemper paint for roof/ ceiling after scraping, sand papering, plain surface complete with all material labour, equipment scaffolding etc As per entire satisfaction of Regional Engineer/ Engineer Incharge.	1200	Sft		
	Wooden CABINETS (Record Room)				
30	P/fixing of wooden filling cabinets low and full height at any height **made with 16mm MDF laminated 7419 with edging made of laminated 7419 veneer properly fixed** and Internal carcass in 16mm thick lamination chipboard # 7056 , includindg approved handles, hings and shelf approved drawing and design. Complete in all respect. **(Size upto 4'x8' approx.)**	8	No.		
30-i	**KITCHEN CABINETS**				
	P/fixing of wooden filling cabinets low and full height at any height **made with 16mm MDF laminated 7419 with edging made of laminated 7419 veneer properly fixed** and Internal carcass in 16mm thick lamination chipboard # 7056 , includindg approved handles, hings and shelf approved drawing and design. Complete in all respect. **(Size upto 2.5'x6' approx.)**	3	No.		
31	**GYPSUM SHEET FALSE CEILING**				
	Providing and fixing 12mm thick gypsum sheet Fale ceiling with ICI paint including hanging system, making opening for lights or diffuser complete in all respects as per drawing, specifications and as directed by the Engineer, (Note. Straight dimensions of measurement will be taken at the time of billing.)	7000	Sft		
32	**FALSE CEILING**				

	Providing and fixing 7.5mm thick Lamination gypsum tile 600mm x 600mm False including hanging system(Groove), making opening for lights or diffuser complete in all respects as per drawing, specifications and as directed by the Engineer,(Note. Straight dimensions of measurement will be taken at the time of billing.)	1500	Sft		
	CORNICE				
33	Providing and fixing 11mm thick and 75mm high Laminated tactile sheet No.4024 Al-Noor make / MDF Cornice architrave on wall and applying of approved paint, including joinery detail complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	4000	Rft		
	ROLLER BLINDS				
34	Providing and fixing imported sunthetic fibre roller Blinds according to the instructions of the manufacturer, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	1800	Sft		
	WOODEN GLASS RAILING				
35	Providing and fixing of wooden Railing 50mm top of wood with 12mm thick tempered glass 36" high with G.C.C Fittings fixed all necessary joinery details and applying of approved shade of polish etc complete in all respects as per drawing, specifications and as directed by the Engineer.	0	Rft		
	S.S RAILING				
36	Providing and fixing of Stainless steel pipe grade 304 non-magnatic as Railing of 50mm dia Top and 40mm stainless vertical pipe as blustrade, 12mm dia stainless steel horizontal pipe 3 nos including all necessary joinery details and applying of approved paint complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	0	Rft		
	Front Elevation Tiles				

37	Providing and laying floors of Porcelain tiles 1200mm X 600mm (grit white) 11mm thick of Roka ceram tile imported made or equivalent including base mortar 1-1/2" thick c.c and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Engineer.	0	Sft		
	FRONT GLAZZING				
38	Providing and fixing of Glass on fornt elevation consisting of 12mm thick imported clear tempered glass with frosting paper in pattern as shown on drawings, with approved aluminum H Section as frame on top and bottom and all necessary joinery details. Complete in all respects as per drawings.	0	Sft		
	Graffito paint / Rock Wall				
39	P/A Graffito paint/ Rock wall best quality of approved color on front elevation and design by engineer. Including scaffolding, labor, material etc. Complete in all respect.	0	Sft		
	Wooden Texured Tile				
40	P/L wooden textured porcelain tile 300mm x 1200mm made of malaysian tile approved imported porcelain tile flooring or equivalent of desired color and shade over existing flooring using dry bond mortar, including joint filling with approved matching color chemical, cutting tiles where required etc, complete in all respect.	400	Sft		
	WOODEN LAMINATED FLOOR				
41	Providing and fixing impored Wooden laminated floor of approved colour and quality make Malysian 4 rating, 8mm thick with water proof lining, including all necessary joinery details and underlay, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	650	Sft		
42	**GRANITE ON STAIR / FLOOR**				

	Providing and laying 19mm thick pre-polished approved Cherry Pink / Camel Brown granite on floor, including base mortar and matching colour, cement skurry for fixing and grouting, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.		Sft		
	ALUMINUM WINDOWS /V.L				
43	Providing and fixing full glazed Anodized Aluminum Bonze windows/ Ventilator made of Pakistan cable or equivalent (Sliding/ Fixed) of approved manufacturer using Deluxe quality 2mm thick 4" wide extruded section, glazed with distortion free 6mm thick imported tinted glass with fly screen having best quality mesh and aluminum section including all hardware, handles , PVC/ruber gasket and sealent complete in all respect	0	Sft		
	SAFETY GRILL				
44	Providing/ fabricating & fixing mild steel protective grills to windows made up from steel section of 16mm x 16mm square bar at 6" c/c vertically and 8" c/c horizontally and M.S Flat 1 ½" X 3/8" frame (as per sketch) including 3 coats of approved shade of ICI Burger Enamel paint 3 copats over a coat of red lead oxide etc. complete as directed by Engineer Incharge.	0	Sft		
	G.I. SHUTTER				
45	Providing fabricating & fixing at any floor, steel roller fence shutters made of standard M.S Channel ¾"x1/8" M. including roller of C-Iron rail 2-1/2" x1 ½"x ½" with all hangers, bearing box, tracks, guide channel pull handles locking arrangement internal and external, and making good all cut work etc finished with 3 coats of enamel paint to requisite shade over red lead primer, complete in all respect as per specification or as directed by the Engineer Incharge.	0	Sft		
	collapsible doors				

46	Providing fabricating & fixing at any floor, steel grill collapsible doors with louver made of standard M.S Channel ¾"x1/8" M.S Flat ¾"x1/4" including roller of T-Iron rail 1 ½" x1 ½"x ½" with all hangers, bearing box, tracks, guide channel pull handles locking arrangement, and vertical louvers making good all cut work etc finished with 3 coats of enamel paint to requisite shade over red lead primer, complete in all respect as per specification or as directed by the Engineer Incharge.	0	Sft		
	STEEL DOOR FOR ATM, GUARD ROOM & EMERGENCY EXIT				
47	Providing and fixing of M.S steel sheet 14SWG on both sides and M.S pipe frame 16SWG frame at inner side of leaf, door frane of M.S angle Iron+M.S dtrip, applying of approved enamel paint and all necessary joinery details, complete in all respect.	21	Sft		
	WALL / COLUMN CLADDING				
48	Providing and fixing of wall cladding with 17mm thick approved laminated Tactile sheet # 4024 made by Al-Noor or equivalent with partal wood frame and having vertical stripes 1 1/2 " wide X 3/4"thick 2 1/2 " C/C at both ends of wall up to 24" each side. complete in all respect as per specification or as directed by the Engineer Incharge.(Note. Straight dimensions of measurement will be taken at the time of billing.)	2500	Sft		
49	**CASH COUNTER**				

	Teller Counter made of MDF lassani sheet best quality imported. Working top made of MDF Sheet thickness 1-1/2" standard pressed pasted with approved laminated Tactile sheet # 4024 made by Al-Noor or equivalent, front and customer top made of corian approved shade and design, customer top having stainless steel tray/ corian approved shade. Including 12mm clear glass with stainless steel clips supported in 2" thick vertical post laminated with imported stainless steel laminated sheet approved design and shade . wooden hanging beam with wooden strips in top and bottom as per drawing, three coats of matt finish paint on end supports . counter sepration partion made of laminated 1-1/2" thick approved color. **complete in all respect as per approved sample on head office.** Size(mm): W:1200 x D:1813 x H:2440 Exclusive Drawer Pedestsl.	0	Rft		
	wooden drawer				
50	Providing wooden drawer unit with white formica (size 18"X 17" X 22") having 3 drawers and imported handle running on imported rail with central locking arrangement etc complete as per entire satisfaction of Engineer Incharge.	0	No.		
	ROOF SCREEDING				
51	P/Applying water proofing on roof top with best quality water proofing agents made of AL-noor Epoxy/ECO proofing CWP or equivalent over 2-1/2" thick avg: cement concrete layer mix ratio of 1:2:4 with laveling and proper finishing with curing to control seepage / ingrence in concrete / cementiouse etc. complete in all respect.	0	Sft		
	TERMITE PROOFING				
52	P/A Termite proofing and rat killer spry or chemical best quality imported approved before application inside warehouse etc. Complete in all repsect.	1	job		
	Hydraulic door closer				
53	P/F of hydraulic door closer best quality imported etc. Complete in all respect.	5	Each		

	Door Machine for 12mm Thick glass door				
54	P/F of Imported Door machine (New Star) Or Equivalent at floor base supporting Glass door of main enterance, Operation Manager chamber as per entire satisfaction of Engineer .	0	Each		
	TUFF TILES				
55	Providing and laying of Tough Tiles size 1 ft X 1ft X 2 Inch thick, reinforced with wire mesh in approved colour over 2" thick p.c.c avg: and grouting in cement complete in all respect.	0	Sft		
	WOODEN FALSE CEILING				
56	P/F of wooden False Ceiling at required level with MDF lassani sheet imported quality, partal wooden frame internal side of false ceiling size (2"x1-1/2") & (3"x1-1/2") with supports and MS angle supports with approperiate size and ceiling surface finish with approved design by Executive Engineer, including Lacquire polish ICI made in Germany or with 17mm thick approved laminated Tactile sheet # 4024 made by Al-Noor or equivalent with partal wood frame including labor, material and transportation etc. Complete in all respect. (Note. Straight dimensions of measurement will be taken at the time of billing.)	800	Sft		
	Wooden Hanging Beam				
58	Fabricting & Fixing Wooden hanging beam for glass partitions using 2" x 2" partal wooden frame @ 2' c/c horizontal and vertical with 11mm thick imported MDF Sheet both sides and 03 coats of paint approved shade etc complete in all respect as per drawing, specifications and as directed by the Engineer.	0	Rft		
	Logo / Theme Wall				
59	Logo wall at Reception made of chipboard with oak veneer pressed under 100 -150 kg/cm2 of air pressure and 60 C0 of temperature with softwood framing inside. Including complete joinery details. Complete in all respects as per drawing and specifications. Size (mm): W: 2590 x T: 75 x H: 2440	1	job		

	Roof Marble Additional Floor				
60	P/L 1/2" thick boticena marble approved quality at roof top with 2" thick c.c with cement slurry, including marblish griding and polish with machine finaly finish with mension polish best quality imported complete in all respect.	0	Sft		
	Alucobond (Optional)				
61	Aluminum Composite Material (ACM) consists of two sheets of smooth 0.02″ aluminum thermobonded to a polyethylene core in a continuous process. pre-finished with a premium Kynar 500 PVDF resin-based coil coating that is in a spectrum of attractive standard approved colors etc, as per entire specification of Engineer Incharge.	0	Sft		
	Main Hole				
62	Construction of Main Holes made with block masonry size 2'-0" x 2'-0" x 2ft deep including excavation lying plaster inside provision of holes to connect pipe line with curing etc. complete with P/F main hole cover made of cast iron or pre-cast concrete.	0	Each		
	Water Proofing Toilet Area / Basement				
63	Water Proofing in Floor to stop seepage with cutting floor, grouting using Eco-shield Epoxy PU Sealant Different places in basement etc. complete in all respect.	500	Sft		
	BITUMEN Roof Tratment				
64	Providing and Laying **water proof with bitumen flit/ jute in a sold mop coat using** and cement plaster speard sand etc i/c repairing the roof using Ultra bond etc. as per entirer specification of Engineer Incharge.	0	Sft		
	Aluminum louver shutter				
65	P/Fixing Aluminum Louvers shutters below wash basin & sink with Aluminum frame 2mm thick 4" wide extruded section including fixing Aluminum louver shutter with handle, locks etc. complete in all respect as directed by the Engineer Incharge	100	Sft		
	CONCRETE PAVER				

66	Providing and laying of pavers size 4"x8" having 3" thick best quality made of envicrete/ hub crete or equivalent with sand cusion approved colour over 2" thick p.c.c avg: and grouting in cement complete in all respect.	0	Sft		
	Wooden Pelmet				
67	P/F of wooden pelmet made of MDF lassani 1'-6" wide and 4" high with partal wooden frame internal structure size 2"x1-1/2" covered with MDF lassani 1/2" thick with holes light holes and apply three coats of Matt finish paint etc. Complete in all respect etc.	0	Rft		
68	P/F of wooden False Ceiling approved design at required level with MDF lassani sheet imported quality, partal wooden frame internal structure side of false ceiling size (2"x1-1/2") C/C 2'-00 covered with MDF lassani sheet best quality having three coats of matt finish paint approved shade with light holes etc complete in all respect.		Rft		
69	P/F of wooden Oak wall paneling of back side wall of cash counter, Staff area as per design made of MDF lassani 1/2" thick imported quality having partal wooden frame internal structure size 2"x1-1/2"@ 2' c/c covered with oak wooden ply 5mm thick finished lacqure polish made ICI delux approved shade and design etc Complete in all respect or as directed by Engineer.		Sft		
	LOW HEIGHT WOODEN/GLASS PARTITION				
70	P/F of glass partition consisting on 12mm thick imported clear tempered glass with stainless steel U clips full size over wooden paritition 3" thick as per drawing and design partition 3"x3" thick wooden frame in parameters of partition made of partal wooden frame with vertical posts hold in false ceiling at both ends, partition both faces covered with veenered oak ply finished lacqure polish and best quality fabric with fiber / flex as per design and all necessary joinery details. Complete in all respect.	0	Sft		
	FORMICA FINISHED FLUSH DOOR				

71	P/Fixing 11/2" thick wooden flush dooor with solid core face , High quality hinges, door stopper, tower bolt, door lock best quality etc complete in all respect.		Sft		
	ROOF Concrete Screeding				
72	P/Applying water proofing on roof top 3" thick cement concrete layer mix ratio of 1:2:4 with leveling/ slope and proper finishing with curing to control seepage / ingrence in concrete / cementiouse etc. complete in all respect.	0	Sft		
	EXCAVATION OF ALL TYPE SOIL				
73	Excavation in all types of soil and up to any depth including removal of excavated material from site at desired location, job complete in all respects.	0	cft		
	Earth Filling				
74	Providing / filling earth from out side and leveling the plot and compact sweet earth with viberator and watering, each layer having 6" thickness. Complete in all respect as per entire satisfaction.	0	P.Cft		
	Stone Soling				
75	Providing and Laying Stone soling 6" thick including compaction, watering as in foundation complete in all respect	0	cft		
	Burnt Brick Ballast				
76	P/L Brick ballast of 1st class burnt bricks for floor raising including compaction, levelling upto required thickness complete in all respects	0	cft		
	Glass Partition 12mm thick with GCC Fittings				
77	Providing and fixing of Glass Partition consisting of 12mm thick imported clear tempered glass with imported GCC fittings of required design and including frost paper approved design and all hardware, job complete in all respects.	1100	Sft		
	Glass Partition 12mm thick with Wooden frame				
78	Providing and fixing of Glass Partition consisting of 12mm thick imported clear tempered glass with wooden frame (6"x1.5") solid oak wood H-section with imported NC lacquer polish German including all hardware, job complete in all respects.	0	sft		

	Dumpa False Ceiling				
79	Providing & Fixing aluminum perforated 0.6mm thick imported Dumpa false ceiling size 600mx600mm including hanging system making opening for lights or diffuser, complete in all respects. (Kitchen/Washrooms area)	500	Sft		
	Brick Roof Insulation				
80	Roof insulation with 9"x4.5"x1.5" brick tiles grouting with cement/sand mortar including bitumen coating of approved standards, laying of heavy thickness polythene sheet , mud filling 3-4" thickness with proper slope and making required no. of khuras for proper drainage job complete in all respects.	0	sft		
	IMPORTED FROST PAPER				
81	P/F imported glass paper at required places, job complete in all respects	400	Sft		
	NBP LOGO'S				
82	P/F NBP Glass logos of approved standards & design	10	No		
	Stainless Steel Planters				
83	Providing SS planters Non- Magnetic of approved dia, size and standards job complete in all respects as directed by Engineer Incharge.	0	Nos.		
	Stainless Steel Trash Bin				
84	Providing SS Trash bin Non Magnetic of approved size and shape, complete in all respects	0	Nos.		
	Reception Counter				
86	Reception countermade of of MDF with oak veneer pressed under 100-150 kg/ cm2 of air pressure and 60 degree of temmpreture and backing veneer underneath with solid partal wood framing and solid & seasoned oak wood lipping. NC lacquer polish finish including three drawer, railing on drawer runner, having handle, nails, screws glue etc. Customer top and skirting in approved corian. Complete in all respect. Size W:2590x D:762x H: 990	1	Each		
87	**Wooden Rafter**				

87-i	P/Fixing wooden Rafters in 1/2'' thick lassani & laying oak wood ply 4'' x 6'' under lassani ceiling finished with matt finish paint with rafters finished with approved shade of lacquer polish best quality imported etc complete in all respect ,In Entrance lobby.	450	Sft		
87-ii	P/Fixing wooden Rafters vertical posts up to ceiling in waiting area/staff area, rafters made in 1/2'' thick lassani box with partal wooden framing & laying oak wood ply size 3'' x 6'' with laying lacqure polish finish or rafters and back sheet made with laminated tactile sheet etc complete in all respect.	250	Rft		
	REPAIR EXISTING WOODEN FALSE CEILING/DOORS				
88	Repairing of existing wooden false ceiling at first floor made of solid deodar wooden panel of size 36'' x 36'' ceiling surface AND WOODEN DOORS required to finishes with lacqure polish including filling , sand papering /scrapping etc as approved ICI made in Germany etc complete in all respect.	0	Sft		
	ENEMAL PAINT ON M.S GRILL / DOORS				
89	Providing and applying Paint on internal/ External walls of ICI or Berger including rubbing with sand stone, filling the uneven surfaces with putty, rubbing with sand paper and preparation of surface perfect in all respects, applying one coat of primer on prepared surface of plastered and finish paint coats as indicated in sub items, complete in all respects as per drawings.	0	Sft		
	REPAIR OF EXISTING WOODEN DOORS @F/FLOOR				
90	Repair of existing wooden doors at first floor including door frame of **16 SWG GI sheet with red oxide coat** covered with approved laminate/door boarder and hardwares i-e hinges, imported door lock and door stopper, Aluminum kick plates 4'' high L-Shape etc, complete with hard ware. And complete with all respect as per design.	0	Sft		
91	Connecting Sewerage line of Branch to Main Sewerage Line of Municipal including excavation of any kind of soil, dismantling/making opening of main sewerage line with proper jointing with	0	job		

92	Providing /Laying Artificial Grass 40mm thick (approved sample & design from Engineer) at different location of Building Including proper jointing with solution/glue ,laying /pasting with glue ,cutting etc complete in all respect	0	Sft		
93	Providing and applying pvc vinyl flooring Imported make approved size and shade from Bank Engineer Incharge	0	Sft		
	WPC WALL PANELLING				
94 (N.S)	Providing & Fixing of 5mm grove WPC fluted paneling in ,dimension 9.5 feet x 6 inch wide approved quality designed & color complete in all respects as per instruction of Engineer incharge.	500	sft		
	3D DRAWINGS				
95 (N.S)	The Vendor is bound to submit 3D drawings/layout of interior & exterior design (as per Bank's approved standardized specifications of corporate branch/office theme) proposed renovation before execution of works of both floors i-e Ground & Basement floor for approval of the competent authorities.	1	job		
	Poly carbonate sheet				
96 N.S	P/F of Poly carbonate Sheet 2mm thick Imported best quality approved shade with S. S 3" dia pipe vetical Grade 304 non-magnetic round post with foundation mix ratio of 1:2:4 having size of 1-'00x1'-00 and 2'-00 depth of footing, and 1.5"x1.5" S.S Square pipe frame Non magnetic (3.5' x 3.5')C/C including all necessary joinery details and S.S welding Complete in all respect as per entire satisfaction OF ENGINEER INCHARGE	0	Sft		
COST OF CIVIL WORKS				**Rs.**	

PLUMBING WORKS

S.NO	DESCRIPTION/SPECIFICATION	QTY	UNIT	RATE	AMOUNT
	SECTION-01, SUPPLY & INSTALLATION OF PLUMBING FIXTURES				
	Supply and Installation of plumbing fixtures & faucets complete in all respects including all accessories, support, hangers, etc. ready to use as per specifications of consultant.				
1.1	European style W.C. floor mounted type one piece, with seat cover Porta Ceramic make (Original) or as approved, floor mounted brackets with fixing accessories.				
i.	Type - EWC	3	Nos.		
ii.	P/F ORISA type W.C Manufactured by PORTA Ceramic or as approved quality with integral tread 19'' clear opening as measured between flushing rims, C.I. Trap 4'' dia Gallons capacity low level flushing cistern of same manufacturers making good in cement concrete (1:2:4) complete.	3	Nos.		

1.2	European style W.C. wall hung type, with seat cover, flush tank, cover plate floor mounted brackets with fixing accessories.				
i.	Type - EWC-WH	0	Nos.		
1.3	Toilet Hand Spray with flexible chain & telephone type shower Including tee stop cock etc. complete in all respect.				
i.	Type - TS	1	Nos.		
1.4	Wash basin (WB) including bottle trap, waste, stop cocks, etc.				
i.	Type - WB	0	Nos.		
ii.	Type - WB - V (Vanity) Porta make or as approved	5	Nos.		
iii.	Type-WB- Wall Hung type(for PWD's wash room)	0	Nos.		
1.5	Wash basin hot and cold water mixer, etc.				
i.	Type - WB	0	Nos.		
ii.	Type - WB - V (Vanity)	5	Nos.		
iii.	Double Bib Cock for Wash Room with flexible chain S.S with muslim type shower.	6	Nos.		
1.6	Stainless steel kitchen sink including stop cocks, P-trap / Bottle trap, waste pipe etc complete in all respects.				
i	SK - 1, 40" x 20" single bowl and single drainer.	1	Nos.		
ii	SK - 2, 18" x 20" single bowl and single drainer.	0	Nos.		
1.7	Sink hot and cold water mixer etc.				
i.	For SK - I	1	Nos.		
1.8	Toilet accessories complete set.				
i.	Soap Dispenser	5	Nos.		
ii.	Towel Rod	5	Nos.		
iii.	Paper Holder	6	Nos.		
iv.	Coat Hooks	7	Nos.		
v.	Hand Dryer	3	Nos.		
vi.	P/F Looking Mirror best quality balgium made fixed with clips complete in all respect and size as per site requirement	150	Sft		
1.9 N.S	P/F Stainless Steel Handles at Wall and floor support pipes having 1.5 " dia fixed with Rawal bolt, as per approved design by Engineer Incharge **(For PWD)**	1	Set		
	SECTION-02 WATER SUPPLY SYSTEM				

	Supply, installation, testing and commissioning of complete pipe work for cold and hot water system including all accessories required to complete systems ready to operate as per specification, drawings & instruction of Consultant.				
2.1	Polypropylene Random PP-R pipes PN 20 and fittings with fusion jointing along with all types of unions, tees, bends, sockets, clamps hangers, supports, sleeves, masking plates,chiseling, making holes making good, excavation, bedding backfilling as required complete in all respect.				
i.	Dia. OD 25 mm **(also for A.C Drainage)**	450	Rft		
ii.	Dia. OD 32 mm **(also for A.C Drainage)**	450	Rft		
iii.	Dia. OD 40 mm	50	Rft		
iv.	Dia. OD 50 mm	0	Rft		
v.	Dia. OD 63 mm	0	Rft		
2.2	Same as above item 2.1 but polypropylene Random PP-R (PN-25) reinforced with Aluminum foil for hot water.				
i.	Dia. OD 25 mm		Rft		
ii.	Dia. OD 32 mm		Rft		
iii.	Dia. OD 40 mm		Rft		
2.3	Expanded rubber foam insulation 1/2" thick for following pipes sizes complete with PVC tape wrapping protection				
i.	Dia. OD 25 mm		Rft		
ii.	Dia. OD 32 mm		Rft		
iii.	Dia. OD 40 mm		Rft		
2.4	Providing & fixing joining testing G.I. pipe lines for water supply as per BS 1387 medium quality IIL. Including specials sockets tee, elbow, bedn, reducer plug and union etc) supported on walls suspended from roof slab, including protective coating as per drawing and specification including color coding complete in all respect.				
i.	Dia. 1-1/2"		Rft		
ii.	Dia. 1-1/4"		Rft		
iii.	Dia. 2" (also for Locker room air vent Z-design)	0	Rft		
iv.	Dia.3"		Rft		
2.5	Brass body gate valves / ball valves with unions.				

i.	Size 3/4"	4	Nos.		
ii.	Size 1"	4	Nos.		
iii.	Size 1-1/4"	1	Nos.		
iv.	Size 1-1/2"	1	Nos.		
v.	Size 2"		Nos.		
vi.	Size 3" (CI body)		Nos.		
2.6	Brass body check valve				
i.	Size 3"		Nos.		
2.7	C.I. Cover with frame for under ground tank & over head tank.				
i.	Round Dia 21" (weight 27 kg)	0	Nos.		
2.8	Goose neck for O/H tank				
i.	Dia 4"		Nos.		
2.9	Supply and Installation of hot water storage heater (Electric) suitable for 60 psi working pressure including thermostate, inlet/outlet connection . Pressure relief valve.				
i.	HWE-10 (10 Gal. storage Capacity)	4	Nos.		
ii.	HWE-20 (20 Gal. storage Capacity)	0	Nos.		
2.10	Water transer pum with electric motor including C.C foundation, inlet outlet connections , valve, unions , flexible rubber connector, pressure gauge, electrical connection with all fixing accessories, water proof electrical connection with all fixing accessories, water proof electrical panel with pump starter automatic filling control system for (U/G and O/H) tanks low and high level , auto stop with overflow, complete in all respects ready to opereate.				
i.	WP-01 42 gpm 50 feet head	0	Nos.		
ii	P/F 3 ply Water tank having minimum 500 gallons capacity approved company with all accossries including transporation, fixing at site, connection with pipes all things complete etc. as directed by Engineer.	0	Nos.		
	SECTION-03 SOIL, WASTEVENT AND RAIN WATER DRAINAGE SYSTEM				

	Supply, fixing, testing and commissioning of equipment, pipe work required to complete the soil, waste, vent and rain water systems in all respects with accessories ready to operate as per specifications, drawings instructions of Consultant.				
3.1	UPVC pipes of approved make along with specials, fittings bends wye, tees sockets , sleeves, masking plates, chiseling , making hole excavation, backfilling making good where as required jointing with rubber ring seal.				
i.	Dia 1-1/2"	0	Rft		
ii.	Dia 2"	100	Rft		
iii.	Dia 3"	500	Rft		
iv.	Dia 4"	500	Rft		
3.2	Floor trap including S.S grating floor trap, inlet outlet connection complete in all respects.				
i.	FT- with 4" P - trap	5	Nos		
3.3	Cleanout for soil, waste pipes of approved make				
i.	For 2" di. Pipe. With SS floor cover plate	0	Nos		
ii.	For 4" di. Pipe. With SS floor cover plate	12	Nos.		
3.5	UPVC rain water grating of approved design with dome type grating including requisite number of holes in wall plinth or floor for pipe connection and making good the same as necessary to the structure complete including gasket and clamp complete.				
i.	RWG - 4" size	0	Nos.		
3.6	UPVC cowl for vent pipe of the following dia including all accessories complete.				
i.	size 3"	5	Nos.		
ii.	size 4"	5	Nos.		
	SECTION-04 EXTERNAL SEWER & MANHOLES				
	Supply, fixing, testing and commissioning of equipment, pipe work required to complete the sewerage disposal services in all respects with accessories ready to operate as per specifications, drawings instructions of Consultant.				

4.1	UPVC pipe class "D" for Sewer drainage with push fit rubber joints including excavation in any type of soi, dewatering if required bedding, back filling with selected material, removing of extra materials..				
i.	Dia 6" size		Rft		
ii.	Dia 8" size	0	Rft		
4.2	Construction of Gully Trap with material including, excavation , 4" size UPVC P-trap CC base CI cover with frame, CC benching water proof internal plaster inlet/outlet connections etc.				
i.	Type GT, size 10" x 10 "	4	Nos		
4.3	Construciton of manholes with material including, excavation, base top RCC slab CI cover with frame, CC benching water proof internal plaster inlet/outlet connections etc.				
i.	size 18" x 18 "	0	Nos		
ii.	size 24" x 24 "	0	Nos.		
4.4	Construction of RCC septic tank (15' x 10' x 6' water depth) with material including, excavation, base top slab bedding, GI steps, CI double covers, internal CC water proof plasters, uPVC tees, CC benching, inlet/outlet connection etc, complete in all respects.	0	Nos.		
	SECTION-05 SUNDRIES				
	Contractor will priced the sundries items for all plumbing & Sanitary (P&S) services as per specifications, drawings and instruction of consultant.				
5.1	Submittals, samples, shop drawings, inspection, As built drawings operation and maintenance manuals and the like as required by specification. Leakage &Testing report attached and commissioning entire P&S installation as per Engineer's approval.	1	Nos		
COST OF PLUMBING WORKS Rs.					

ELECTRICAL WORKS

Item No.	Description	Unit	Quantity	Unit Rate	Amount
PART A					
A-1	ELECTRICAL WIRING				
	Supply, laying, connection and testing of following wiring types; in heavy duty PVC Conduit recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling or in Dura duct if exposed on walls, with all necessary fixing accessories, conduit/duct accessories, pull boxes, steel pull wires complete in all respects, required as per site conditions. with make/brand of material being specified in Annexure A. (PVC insulated Copper - 300/500 Volt Grade Wires to be used)				
A-1-1	(a) Circuit Wiring (For Switchboard/Light Plug etc.)				

		From DB to Switch Board or 2/3 pin Light Plug (5/10/13A) to be wired with 2x2.5 sq.mm S/C wires and 1 X 2.5 sq.mm S/C wire of Green/Yellow Colour as Circuit Protective Conductor (CPC) in 25 mm dia. heavy duty PVC conduit Each circuit shall have independent CPC. Maximum wiring of 2 light circuits can be pulled through 25 mm dia. PVC conduit.	Nos.	32		
	(b)	**Switch Board to Switch Board OR Switch Board to Light plug etc. Circuit Wiring**				
		Same as item No. A-1-1 (a) but from point to point i.e. Switchboard to Switchboard/Light Plug or Light Plug to Light Plug. (Side by Side or Back to Back Wiring points will not be payable and will be considered to be included in item No. A-1-1 (a)	Nos.	68		
A-1-2	**(a)**	**Point Wiring (Light/Fan etc.)**				
		From Switchboard to 1st Point (Light/Fan) with 1 x 1.5 sq.mm S/C wire from Piano Switch and 1 x 2.5 sq.mm wire common neutral including i/c P/F 10A Piano Switch in 20 mm dia. heavy duty PVC conduit, recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling with all necessary fixing accessories, conduit accessories, 75 mm high PVC junction boxes, pull boxes, steel pull wires, connectors, M.S. sheet steel switch box 16 SWG with earth terminal with 2 coats of powder coating of orange colour, M.S. box shall be of the same size as that of 1, 2 or 3 upto 6 gangs flush type plate switches complete in all respects, required as per site conditions. (In case of point wiring at Ceiling, 2 X 1.5 sq.mm wires in Flexible Conduit from junction box equipped with PVC gland to light/fan fixture, will also have to be provided). Maximum wiring of 6	Nos.	75		

		points (light/fan) can be pulled through 20 mm dia. PVC conduit.				
	(b)	**Point to Point Wiring (Light/Fan etc.)**				
		Same as item No. A-1-2 (a) but from Point to Point and without including cost of Switch and M.S. sheet steel switch box 16 SW. (Maximum of 05 points can be connected with 1st Point)	Nos.	205		
A-1-3	**(a)**	**Wiring Circuit for 1 x 13/15/16 A Simplex/Duplex - Switch Socket Outlet (SSO) installed at Wall/Workstation/Floor Box etc. or any other purpose.**				
	(i)	From DB to SSO with 2 x 2.5 sq.mm S/C wire + 1 x 2.5 sq.mm S/C wire of Green/Yellow Colour as Circuit Protective Conductor (CPC) in 25 mm dia. heavy duty PVC conduit, recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling with all necessary fixing accessories, conduit accessories, pull boxes, steel pull wires complete in all respects, required as per site conditions. Each circuit shall have independent CPC. (Maximum wiring of 3 circuits can be pulled through 25 mm dia. PVC conduit).	Nos.	76		

	(ii)	Same as item No. A-1-3 (a) (i), but from Point to Point I.e. 1st SSO to 2nd SSO and onwards. (Side by Side or Back to Back Wiring points will not be payable and will be considered to be included in item No. A-1-3 (a) (i) (Maximum of 03 SSO can be connected with 1st SSO).	Nos.	38		
	(b)	**Wiring Circuit for 1 x 20 A Switch Socket Outlet (SSO) for AC connection or any other purpose**				
		From DB to SSO with 2 x 4.0 sq.mm S/C wire + 1 x 2.5 sq.mm S/C wire of Green/Yellow Colour as Circuit Protective Conductor (CPC) in 25 mm dia. heavy duty PVC conduit, recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling with all necessary fixing accessories, conduit accessories, pull boxes, steel pull wires complete in all respects, required as per site conditions. Each circuit shall have independent CPC. (Maximum wiring of 2 circuits can be pulled through 25 mm dia. PVC conduit).	Nos.	55		
	(c)	**Wiring Circuit for 1 x 30/32 A Switch Socket Outlet (SSO) for AC connection or any other purpose**				
	(i)	From DB to SSO with 2 x 6.0 sq.mm S/C wire + 1 x 2.5 sq.mm S/C wire of Green/Yellow Colour as Circuit Protective Conductor (CPC) in 25 mm dia. heavy duty PVC conduit, recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling with all necessary fixing accessories, conduit accessories, pull boxes, steel pull wires complete in all respects, required as per site conditions. Each circuit shall have independent CPC. (Maximum	Nos.	22		

		wiring of 1 circuit can be pulled through 25 mm dia. PVC conduit).				
	(ii)	Same as item No. A-1-3 (b), but from Point to Point I.e. 1st SSO to 2nd SSO. (Side by Side or Back to Back Wiring points will not be payable and will be considered to be included in item No. A-1-3 (b) (Maximum of 01 SSO can be connected with 1st SSO). This can be used for Heater connection as well.	Nos.			
A-1-5	**(a)**	**Wiring for Industrial Sockets for UPS Connections**				
	(i)	From UPS DB to Branch UPS I/O Connections (two connections) with 1 x 6.0 sq.mm 3 Core wire in 25 mm dia. heavy duty PVC conduit or PVC Dura duct (appropriate size), with all necessary fixing accessories, complete in all respects, required as per site conditions.	Rft.	120		
	(b)	**Wiring from Main DB to UPS DB or any other purpose.**				
		Wiring with 1 x 10 sq.mm 4 Core PVC/PVC insulated wire in 50 mm dia. heavy duty PVC conduit or PVC Dura duct (appropriate size), with all necessary fixing accessories, complete in all respects, required as per site conditions.	Rft.	100		
A-2	**DATA / VOICE / TV WIRING**					
	Supply, laying, connection and testing of following wiring types; with make/brand of material being specified in Annexure A.					
A-2-1	**(a)**	**Data points/outlets**				

		Wiring for each Data point from Communication Rack (Patch Panel) to each Data point on wall or in M.S floor outlet box with 4 pair Cat. 6E 23 AWG cable in 20 mm dia. heavy duty PVC conduit recessed in walls, columns, slabs, floors or above false ceiling with all necessary fixing accessories as required as per site condition, complete in all respects.	Nos.	40		
	(b)	**Voice points/outlets**				
		Wiring for each Voice point from Telephone Junction Box to each telephone point on wall or in M.S floor outlet box or in Data Cabinet/Communication (Wall mounted or Floor Standing) with 4 pair Cat. 6E 23 AWG cable in 20 mm dia. heavy duty PVC conduit recessed in walls, columns, slabs, floors or above false ceiling with all necessary fixing accessories as required as per site condition, complete in all respects.	Nos.	40		
A-2-2		**Main Telephone Cable**				
	a	Supply, installation and connection of 10 pair telephone cable to be connected from Utility MDF to Telephone Junction Box (TJB) in 25 mm dia PVC conduit including cost of identification tags, all necessary material / accessories complete in all respects.Actual length of cables to be installed shall be practically measured at site by the Contractor, duly checked by Engineer Incharge.	Rft.	150		
	b	Supply, installation and connection of 10 pair for security system	Rft.			
A-2-3		**TV Point Wiring**				

		Wiring for wall mounted TV outlets wired with RG-6 / RG-7 cable or as directed by the Engineer from TV Cable Splitter/distribution to each TV point, including 20 mm dia. heavy duty PVC conduit, recessed in walls, floors, column or as required as per site conditions, all PVC conduit accessories, pull boxes, steel wires etc. complete in all respects.	Nos.	4		
PART B	**MAIN / SUB MAIN CABLES**					
B-1	**ELECTRICAL LT CABLING**					
	P/L, connection, testing and commissioning of PVC insulated PVC sheathed non armoured Pure copper conductor power cable 600 / 1000 Volt grade manufactured by any one of the manufacturers as mentioned in Annexure A. The cable would be recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling with all necessary fixing accessories either in already laid PVC Conduit/Dura duct or otherwise openely laid complete in all respects, required as per site conditions. and approval of Engineer Incharge including cost of all necessary materials, connections of cables and identification tags at both ends, cables lugs properly crimped at both ends for the following sizes. Actual length of cables to be laid shall be practically measured at site by the Contractor, duly authenticated by the Electrical Engineer / Engineer Incharge / Supervisor before placing the order with the manufacturer, however, approximate length of cables are shown herewith. Payments shall be made as per actual length laid.					
	(d)	4 Core 95 sq.mm (Meter to Main DB 2nd Floor)	Rft.	280		

	(e)	1 Core 6 sq.mm Green/Yellow Colour as CPC	Rft.			
	(f)	1 Core 10 sq.mm Green/Yellow Colour as CPC	Rft.			
PART C	**FITTINGS, FIXTURES & ACCESSORIES**					
	Supply, Installation, testing and commissioning of following fittings/fixtures as per specified brand/make given in Annexure "A" recessed in or on wall / ceiling / column etc. complete in all respects, duly approved by Engineer Incharge prior to installaion.					
C-1	**LIGHTS**					
	(The temperature / Colour Index to be got confirmed from Site Engineer before installation)					
	(a)	Ceiling mounted LED Panel Light - 48W - 610 x 610 mm (Warm White/Warm/DayLight) recessed in False Ceiling	Nos.	18		
	(b)	Ceiling mounted LED Down Light - 18/20W - 20 mm dia (Warm White/Warm/DayLight) recessed in False Ceiling	Nos.	200		
	(c)	Same as C-1 (c) but Surface mounted	Nos.			
	(d)	Ceiling mounted LED Down Light - 10/12W - 15 mm dia (Warm White/Warm/DayLight) recessed in false Ceiling	Nos.			
	(e)	Same as C-1 (e) but Surface mounted	Nos.			
	(f)	P/F LED tube rod 36/40 W mirror light (osaka, Philips or equivalent) etc Complete in all aspects	Nos.	3		
	(g)	Ceiling mounted LED Spot Light - 7/8W - 7-8 mm dia (Warm White/Warm/DayLight) recessed in False Ceiling	Nos.	20		
C-2	**FANS**					
	(a)	False Ceiling Fan 14/16 " sweep, Size(2'X2')	Nos.	12		

	(b)	Ceiling Fan 56" sweep, complete with capacitor, hanging rod, canopy, blades, ceiling hook, dimmers nuts and bolts etc.	Nos.			
	(c)	Wall Bracket Fan 18" sweep - Plastic body louvre type	Nos.			
	(e)	Exhaust Fan 10" sweep, Plastic body, louvre type.	Nos.	4		
	(f)	Exhaust Fan 15 - 18" sweep, Plastic body, louvre type.	Nos.	2		
		Same as C-2 (e) but 12" sweep.	Nos.			
C-3	**POWER SOCKETS**					
C-3-1		**Switch Socket Outlet**				
		Following SSO complete with back box i.e. M.S. box, made of 16 SWG sheet steel with earth terminal having 2 coats of powder coating of orange colour, M.S. box shall be of the same size as that of SSO.				
	(b)	10/13 - 3 Pin round type SSO (for General Use)	Nos.	112		
	(c)	13A Duplex SSO - 3 Pin Flat type / Universal type (for UPS Power)	Nos.	55		
	(d)	Same as item No. C-3-1 (b) but Simplex SSO (for Normal Power)	Nos.			
	(e)	15/16A Simplex SSO - Round Pin or Multi type (for AC or General Purpose)	Nos.	22		
	(f)	Same as item No. C-3-1 (e) but 20 A Rating	Nos.			
C-3-2		**Industrial Sockets**				
		Following Industrial Socket Unit (Male & Female Complete Set) complete with back box i.e. M.S. box, made of 16 SWG sheet steel with earth terminal having 2 coats of powder coating of orange colour.				
	(a)	32 A, 3 Pin	Nos.	1		
C-4	**CABLE CONTAINMENT**					
C-4-1		**P.V.C. Conduit / Dura Duct**				

		Supply and installation of following sizes of heavy duty PVC conduits recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling or in Dura duct if exposed on walls, with all necessary fixing accessories, conduit/duct accessories, such as junction box, bend, socket, saddle, screws etc. complete in all respects as per site requirement and as per brand/make of material specified in Annexure "A" (These PVC Conduits & Duraducts will be used if missed or not included in any of the item's description of this BOQ)				
	(a)	20 mm dia PVC Conduit	Rft.	2000		
	(c)	35 mm dia PVC Conduit.	Rft.	2000		
C-4-2		**Floor Box**				
		Fabrication, supply and installation of Floor Box i.e. M.S Box made of mild steel 16 SWG duly painted initially with Red Oxide and finally with approved Colour of appropriate size but not less than 10" x 10" x 4-1/2" deep with openable hinged cover 2.5mm thick, all necessary materials / arrangements for fixation of sockets, holes for passage of outgoing cables, rubber, groumet, earthing terminal, and partition made of backlite. Boxes shall be installed flush with floor and should be suitable for installation of following number of Simplex SSOs or Face Plates. (The cost of SSOs or Face Plates not be included)				
	(a)	Four Nos. Simplex SSOs or Face Plates.		32		

	(c)	Same as item No. C-4-2 (a) but for Six - SSOs/Face Plates		4		
C-4-3		**TECHNOLOGICAL BOX**				
		Fabrication, supply and installation of Technological Box i.e. M.S Box made of M.S 16 SWG duly painted initially with Red Oxide and finally with approved Colour of appropriate size suitable for fixation of following number of Switch Socket Outlets / Face Plates etc. having holes for passage of outgoing cables, rubber, groumet, earthing terminal, and partition made of backlite. (The cost of SSOs or Face Plates not be included)				
	(a)	Four Nos. Simplex SSOs or Face Plates.	Nos.			
C-5	**DATA / VOICE FIXTURES**					
C-5-1		**Face Plates with I/Os**				
		Following Face Plates white/off white finish, complete with shuttered Click-ins, labels and all accessories including back box i.e. M.S. box, made of 16 SWG sheet steel having 2 coats of powder coating of orange colour. M.S. box shall be of the same size as that of Face Plate.				
	(a)	Dual Face Plate with I/Os (1 x RJ45 and 1 x RJ11)	Nos.	40		
	(b)	Same as item No. C-5-1 (a) but with I/Os (2 x RJ45)	Nos.			
	(c)	Same as item No. C-5-1 (a) but with I/Os (2 x RJ11)	Nos.			
	(d)	Same as item No. C-5-1 (a) but with I/Os (1x RJ11)	Nos.			
	(f)	Simplex Face Plate with RG-6 / RG-7 Connector for TV Cable	Nos.	4		
C-5-2		**Supply of Patch / Drop Cords**				
		Factory tested (imported) Cords of Cat6 - 23 AWG Cable of following sizes				
	(a)	01 meter Patch Cord	Nos.	40		

	(b)	03 meter Drop Cord	Nos.	40		
C-5-3		**Racks and Panels**				
	(a)	**19" Rack for Data Communication**				
		Supply and Installation of 19" - Communication Rack made of M.S Frame, Glass Door, Pull Handle, supported by perforated sides / M.S Cover of following size:				
	(i)	27 U floor Standing	Nos.	1		
	(b)	**Thermostatic type Exhaust/Cooling Fans**				
		Supply and Installation of Thermostatic type Exhaust/Cooling Fans in Communication Rack, with proper connections, complete in all respects	Nos.	2		
	(c)	**PDU**				
		Supply of PDU with 04 x 13 A Flat Pin or International Type Switch Sockets for Communication Rack	Nos.	1		
	(d)	**Front Cable Manager**				
		Supply and Installation of Front Cable Manager in Communication Rack with proper labelling / tagging / harnessing.	Nos.	1		
	(e)	**Patch Panel**				
		Supply and Installation of 24 Port - Patch Panel - in Communication Rack with proper labelling / tagging / harnessing.	Nos.			
	(ii)	Loaded (With 24 I/Os)	Nos.	2		
	(f)	**RJ-45 I/Os for Patch Panel**	Nos.			
C-5-3	**(g)**	**Telephone Junction Box (TJB)**				
		Supply, installation and commissioning of Telephone Junction Box vermin and dust proof, made of M.S 18 SWG sheet with door, handle, anti-rust paint and 2 coats of enamelled paint, locking arrangement, all fixing accessories for following pairs telephone terminal strips (KRONE Strip) with tagging/marking arrangements including cost of all				

		necessary material to connect incoming and outgoing telephone cables, complete in all respect				
		1 x 10 Pair	Nos.	2		
PART D	**DISTRIBUTION BOARDS AND INTERNAL COMPONENTS**					
D-1	**DISTRIBUTION BOARDS (DBs)**					
	Fabrication, Supply and installation of powder coated DBs from the Manufacturer's Names specified in Annexure "A" at designated walls concealed or opened, made up of M.S Sheet of 16 SWG, with flexible earthing straps in approved colour, with hinged door, lockable handle, all auxilliaries, internal wiring, combs, designation labels on breakers, earthing bar, numbering beads on the control wires, suitable for System Voltage of 415 V, 50 Hz, 3/1 Phase and earthing with 01 or 02 neutral bus bars of pure electrolytic Copper, including appropriate size Cable termination lugs for incoming and outgoing cables, wiring from breakers, indication lamps (Voltmeter type with voltage reading) , complete in all respects as per Site requirement and approval of Bank's Engineer Incharge.					
	(a)	**Size 18"x 24" (Meter Room)**	Nos.	1		
	(b)	**Size 24" x 36" (UPS) with two separate sets of bus bars**	Nos.	1		
	(c)	**Size 42" x 48" (Main DB Second Floor)**	Nos.	1		
D-2	**INTERNAL COMPONENTS OF DBs**					
	Providing, installation, testing and commissioning of following Components as per brands/makes specified in Annexure "A" in already installed or to be installed DBs with					

	proper connections and tagging, complete in all respects, as per Site requirements and prior approval of Bank's Engineer Incharge.					
D-2-1		**Miniature Circuit Breakers (MCBs) Rail Type, C Type**				
	(a)	**Single Pole (SP)**				
	(i)	6/10 A	Nos.	60		
	(ii)	16/20/32 A	Nos.	42		
D-2-2	**Moulded Case Circuit Breakers (Schneider/ ABB/ Terasaki) (MCCBs)TP, C Type, RC - 10 to 18 KA**					
	(a)	50/60 A (UPS DB)	Nos.	2		
	(b)	100 A (Main DB)	Nos.	1		
D-2-3		**Four Pole MCCBs RC - 36k (Schneider/ ABB/ Terasaki)**				
	(c)	250 A	Nos.	2		
PART G	**MISCELLANEOUS ITEMS**					
G-1	**FIRE EXTINUISHERS**					
	Providing & placement / fixing of under noted Fire Extinguishers at selected/identified locations by the Engineer Incharge.					
	a	Dry Chemical Powder (DCP) portable type 06Kg	Each	6		
	b	Dry Chemical Powder (DCP) Ball type 03Kg along with wall mounted bracket.	Each	10		
G-2	**AS BUILT DRAWINGS**					
	Preparation and submission of As-built drawing of complete electrical and allied works duly approved by Client's Engineer until their level of satisfaction. (2 Sets)		Job	1		
COST OF ELECTRICAL WORKS Rs.						

FURNITURE WORKS

S.NO	DESCRIPTION/SPECIFICATION	QTY	UNIT	RATE (Rs)	AMOUNT (Rs)
	EXECUTIVE TABLE FOR R . HEAD				
1	Supply of Executive Table at site, made of chipboard with approved oak veneer pressed under 100-150 kg/cm^2 of air pressure and 60 C^o of temperature and backing veneer underneath, Having solid and seasoned oak wood edging with NC lacquer polish finish. Top fixed with side cabinet with stainless steel spacers. Including stainless steel base Complete in all respects as per specifications. **Table Size (mm):** (L) 2175 x (D) 838 x (H) 762 **Return Table Size (mm):** (L) 1830 x (D) 457 x (H) 660	1.00	No.		
2	Supply of **Credenza** for Executive made of chipboard with approved oak veneer pressed under 100 - 150 kg/cm^2 of air pressure and 60 C^0 of temperature and backing veneer on other side with Oak wood toothing. Finish with clear NC lacquer polish. Having storage and drawers with imported roller runner, hinges. Complete in all respects as per specifications. **Size (mm):** (L) 1830 x (D) 457 x (H) 762	1.00	No		
	WORKSTATION (4 in 1 Set)				
3	Work Station for Table for four person table top made of chipboard with formica # 7419 (Formite) press under 100-150 kg / cm2 of air pressure and 60 degree of tempreture and backing formica under neath with solid oak wood edging, Including Drawer Pedestal, CPU Rack etc. complete in all respect as per specification & drawing (4 in 1 set).	2.00	No.		

4	**OFFICER TABLE (T-30)** Size: L 4'-6" X D 6'-0" X H 2'-6" Supply of Office Wooden Table. Table top made of Chipboard with farmica #7419 (Farmite) pressed under 100-150 Kg/Cm2 of air pressure and 60 degree of temprature on front side and backing formica underneath witk solid Oak wood edging in N.C lacquer polish finish. Including non-megnetic stainless steel vanity panel with supported S.S brackets and 'H' shape pillar both sides with silver sparkle deco paint. Completed in all respect	8.00	Each		
5	**CREDENZA FOR OFFICERS** Size (5'-0" X 1'-6" X 2'-6") Supply of Credenza made of Chipboard with formica # 7419 (Formite) with approved Oak Veneer pressed under 100-150 Kg/ Cm2 of air pressure and 60 C of tempressure and backing veneer on other side with Oak wood toothing. Finish with clear NC lacquer polish, Having storage and drawers with imported roller runner,hinges, complete in all respect as per specification and drawing.	3.00	Each		
6	**DRAWER PEDESTAL (DP-1)** Size (1'-8" X 1'-6" X 2'-2") Suppy of Drawer Pedestal made of Chipboard with formica # 7419 (Formite) pressed under 100-150 Kg/Cm2 air pressur and 60 C of temperature and backing formica underneath. Drawer pedestal having three drawer on imported roller runners including lokcs, pull and footing / glide. Complete in all respect as per specification and drawings.	8.00	Each		
7	**CPU TROLLEY (CPU-1)** Size (Standard Size) Supply of CPU Trolley made of mild steel sheet with deco black paint finish. Complete in all respect and drawing	22.00	Each		

8	**OFFICER REVOLVING CHAIR (LOW BACK) C-1** Supply of Officer Revolving Chair with polish Oak wood arms made in 4 pieces joinery (all joints made in epoxy and two sided screws), seat and back in one piece 12 mm thick Malaysian imported commercial ply pasted over different size of foam (denisty 1.52 pound per cft), covered with approved Fabric,seat and back reclining, having five spoke nylon base with twin caster wheel, adjustable height with hydralic base, complete in all respect as per specification & drawings.	28.00	Each		
9	**REVOLVING CHAIR (HIGH Back) C-2** Supply of Officer Revolving Chair with polish Oak wood arms made in 4 pieces joinery (all joints made in epoxy and two sided screws), seat and back in one piece 12 mm thick Malaysian imported commercial ply pasted over different size of foam (denisty 1.52 pound per cft), covered with approved Fabric,seat and back reclining, having five spoke nylon base with twin caster wheel, adjustable height with hydralic base, complete in all respect as per specification & drawings.	6.00	Each		
10	**OFFICER VISITOR'S CHAIR (VC- 9)** Supply of officer Visitor's Chair, structure made of solid & seasoned Oak wood all joints made in epoxy and two sided screw, seat and back upholstered with foam and approved leatherite. Wood parts finished with NC lacquer polish. Complete in all respect as per specification and drawings.	26.00	Each		
11	**WAITING BENCH TWO SEAT (VS-2)** Supply of 2 Seater Waiting Bench, structure amd armrest made of Stainless steel pipe, seat & Back upholstered with good quality of foam and approved Fabric / Leatherite. Complete in all respect as per specification and drawings.	-	Each		
	Regional Executive Table				

12	Supply of Regional Executive Table at site, made of chipboard with approved oak veneer pressed under 100-150 kg/cm^2 of air pressure and 60 C^o of temperature and backing veneer underneath. Table having solid and seasoned Oak wood toothing joint between top & sides with NC lacquer polish finish. Top fixed with return table with SS spacers. Including return table with two drawers. Drawers run on imported roller. Complete in all respects as per specifications. **Table Size (mm):** (L) 1525 x (D) 838 x (H) 762 **Return Table Size (mm):** (L)1830 x(D)457x(H)660	5.00	No.		
	Credenza For Regional Executive				
13	Supply of **Credenza** for Regional Executive made of chipboard with approved oak veneer pressed under 100 - 150 kg/cm^2 of air pressure and 60 C^0 of temperature and backing veneer on other side with Oak wood toothing. Finish with clear NC lacquer polish. Having storage and drawers with imported roller runner, hinges. Complete in all respects as per specifications. **Size (mm):** (L) 1500 x (D) 457 x (H) 762	5.00	No		
14	**THREE SEAT SOFA (S-10)** Supply of Three seat sofa, base made of solid & seasoned Oak Wood with NC lacquer finish, internal structure made of Acacia wood. Seat and back uphoistered with good qulaity foam and approved Fabric. Complete in all respect as per drawing and Specification.	11.00	Each		
15	**TWO SEAT SOFA (S-10)** Supply of Two seat sofa, base made of solid & seasoned Oak Wood with NC lacquer finish, internal structure made of Acacia wood. Seat and back uphoistered with good qulaity foam and approved Fabric. Complete in all respect as per drawing and Specification.	9.00	Each		
	Trash Bin				
16	Supply of **Trash Bin** made of mild steel sheet with deco black paint finish. Complete in all respects as per specifications and drawings.	15.00	No		
	Planter				

17	Supply of **Planter** (400mm Ø), made with 16 swg mild steel perforated sheet finish with silver sparkle deco paint with 25mm wide chrome plated strips, 9mm mild steel chrome plated spacers. Complete in all respect as per specifications.	25.00	No		
18	**CENTER TABLE (CT-5A-A8)** Size: W 3'-6" X D2'-0" X H 1'-6" Supply of Side Table, sides made with 50 mm thick Chipboard with Oak veneer pressed on both sides under 100-150 Kg/Cm2 of air pressure and 60 C of temperature, with approved colour leather on top & solid and seasoned Oak wood toothing joint between top & sides. Finish with NC lacquer polish. COmplete in all respect as per specification and drawings.	10.00	Each		
19	**SIDE TABLE (CT-5A-A9)** Size: W 1'-6" X D1'-6" X H 1'-6" Supply of Side Table, sides made with 50 mm thick Chipboard with Oak veneer pressed on both sides under 100-150 Kg/Cm2 of air pressure and 60 C of temperature, with approved colour leather on top & solid and seasoned Oak wood toothing joint between top & sides. Finish with NC lacquer polish. COmplete in all respect as per specification and drawings.	5.00	Each		
	DRESSING/ CONSOLE FOR EXECUTIVE ROOM				
20	Size: W 5'-6" X D 1'-6" X H 2'-6" Supply of Table for room ,made with 50 mm thick Chipboard with Oak veneer pressed on both sides under 100-150 Kg/Cm2 of air pressure and 60 C of temperature, with approved colour leather on top & solid and seasoned Oak wood toothing joint between top & sides. Finish with NC lacquer polish. COmplete in all respect as per specification and drawings.	1.00	No		
	FOLDING WHEELCHAIR FOR PWD's				

21	Size (Total Width : 64cm, Seat Width : 46cm, Seat Height: 49cm,Total W.C Height:87cm, Seat Depth : 40cm, Max.Load 100 Kg, Gross Weight of chair 19.20kg). Supply of Folding wheelchair of approved brand for disable person's having single cross bar, chromed frame, fixed armrest,PVC Pad, footrest with flip-up plate with leg straight, front wheel diameter 20cm, rear wheel diameter 61cm, with locking brakes on rear wheels, leatherite material for Seat having large pocket on the back seat of approved black color etc complete in all respect .	-	No		
	Conference Table For 14 Persons				
22	Supply of **Conference Table 14-Seator**, tweleve legs and top frame made of solid and seasoned Oak wood with NC lacquer polish finish and stainless steel fitting. Top made of 12mm thick clear tempered glass with sand blasted and polished edges. Including vacum rubber spacer. Complete in all respects as per specifications. **Size :** 10'-00 x 5'-00	1.00	Nos.		
	CONFERENCE ROOM CHAIRS				
23	Supply of officer revolving chair with polishes oak wood arms made in 4 piece joinery (all joints are made in opoxy and two sided screws),seat and back in one piece 12mm thick malaysian imported commercial ply pasted over different size of foam (density 1.52)pound per cft) covered with approved leatherite ,seat and back recieling ,having five spoke nylon base with twin caster wheel ,adjustable height with hydraulic base . Complete in all respects as per specification. **(Leatherite/fabric)**	23.00	Nos.		
	Round Table for Hurddle room.				
24	Supply of **Mini Conference Table 4-Seator**, four legs and top frame made of solid and seasoned Oak wood with NC lacquer polish finish and stainless steel fitting. Top made of 12mm thick clear tempered glass with sand blasted and polished edges. Including vacum rubber spacer. Complete in all respects as per specifications. **Size (mm):** Dia 1372 x 762	3.00	No		
	REVOLING HIGH BACK CHAIR FOR CONFERENCE ROOM				

25	Supply of revolving high back chair for GM with polished oak wood arms made in 4 piece joinery (all joints made in opoxy and and two sided screws),seat and back in one piece 12 mm thick Malaysian imported commercial ply pasted over differrent size of foam (density 1.52 pound per cft),covered with approved fabric/ leatherite, seat and back recieling having , five spoke nylon base with twin caster wheel ,adjustable height with hydraulic base complete in all respect as per specification L**eatherite /fabric**	1.00	No		
	Reception Chair				
26	Supply of **Reception Chair**, with adjustable PU arms, seat and back made of 12mm thick imported Malaysian commercial ply, upholstered with approved **Fabric**, adjustable height with gas lift, spring loaded back, nylon base with twin caster wheels. Complete in all respects as per specification.	2.00	Nos.		
	Note: All furniture items as per approved sample/design available at NBP G-5/1 building Islamabad.			**TOTAL**	

AIR CONDITIONING WORKS

Sr. No	Description	Unit	Qty.	Rate	Amount
AC UNITS					
1	Supply and installation of single phase 220/240 V, 50C/S **Unit Inverter (Heat & Cool) AC unit capacity 18000BTU**, comprises of evaporating & condensing units with rotary/ reciprocating compressor along with 22 gauge 10 Rft. Copper pipe and insulation, hole sealing with white cement & L-type power quoted angle iron frame size 1-1/2" x 1-1/2" x 1/8" thick, handling charges, (loading, unloading, transportation etc.)i/c evacuation, nitrogen pressure, testing gas charging with standard suction and discharge pressure and amperes, control wiring, rawal bolts, drain piping, testing commissioning complete in all respect. (Compressor rating T3) 03 years warranty. The specifications of quoted AC must be filled in criteria-2	Each	10		
2	Supply and installation of single phase 220/240 V, 50C/S **Unit Inverter (Heat & Cool) AC unit capacity 24000BTU wall mounted**, comprises of evaporating & condensing units with rotary/ reciprocating compressor along with 22 gauge 10 Rft. Copper pipe and insulation, hole sealing with white cement & L-type power quoted angle iron frame size 1-1/2" x 1-1/2" x 1/8" thick, handling charges, (loading, unloading, transportation etc.)i/c evacuation, nitrogen pressure, testing gas charging with standard suction and discharge pressure and amperes, control wiring, rawal bolts, drain piping, testing commissioning complete in all respect. (Compressor rating T3) 03 years warranty. The specifications of quoted AC must be filled in criteria-4	Each	3		

3	Supply and installation of single phase 220/240 V, 50C/S **Unit Inverter (Heat & Cool) AC unit capacity 24000BTU Floor Standing**, comprises of evaporating & condensing units with rotary/ reciprocating compressor along with 22 gauge 10 Rft. Copper pipe and insulation, hole sealing with white cement & L-type power quoted angle iron frame size 1-1/2" x 1-1/2" x 1/8" thick, handling charges, (loading, unloading, transportation etc.)i/c evacuation, nitrogen pressure, testing gas charging with standard suction and discharge pressure and amperes, control wiring, rawal bolts, drain piping, testing commissioning complete in all respect. (Compressor rating T3) 03 years warranty. The specifications of quoted AC must be filled in criteria-4	Each	7		
4	Supply, Laying and connecting drain & Copper Piping of 22 Gauge (Muller Brand or Equivalent) with Aero flex Insulation and Three Core – 110/.076 Control Wire (Pakistan/Pioneer Cable or Equivalent); including Circuit breaker 3 pin shoe, connection with testing of already installed pipes and all necessary fittings and accessories; as per site requirement.	Rft.	250.00		
COST OF AIR CONDITIONING WORKS Rs.					

(ANNEXURE "A")

(List of approved Brands/ Manufacturers)

S. #	DESCRIPTION	MAKE
1	Cement	Lucky
		Falcon
		DG Cement
2	Steel	Amreli
		Aghas
3	12mm Glass Partition / Doors	Ghani/Tariq
4	Aluminum Sanctions for Doors / Partition / Windows	Pakistan cables
		Chawala
		Prime
5	Paint	ICI
		Burger
		Gobbies
		Nelson
6	False Ceiling Sheet 2x2 / 4x8	Elephant
		United
7	PVC / PPRA pipe / UPVC	Alpha pine
		Galco
		Steelex
		Jaddha
		Pak Arab
		AGM
8	Roof Screeding	Sika
9	Termite Proofing	Agenda
10	ORISA / European WC	Porta
		Marachi
11	Hand Wash Basin / Vanity	Porta
		Marachi
12	Sanitary Fittings	Master
		Faisal
		Sonex
13	12mm Glass Doors Floor Machine	New Star
		Khas

14	Hydraulic Door Closer	New Star Khas
15	Strong Room Door	MEK Hussain safe

Note: Material if installed other than manufacturers listed above will not be entertained/paid.

(ANNEXURE "B")

(List of approved Brands/ Manufacturers)

S. #	DESCRIPTION	MAKE
1	PVC Pipes & Accessories	Galco Jeddah
2	PVC Channel Patti / Dura Duct	Adamjee Jeddah
3	MS Back Box/Pull Box/ Technological Box etc.	Local Made
4	Floor Box	Clopal Schneider Local made
5	Switch Socket Outlets (SSOs) / Switches	Clipsal Orange Bosch
6	Industrial Sockets	Clipsal
7	DATA/ Voice Face Plates, RJ45/RJ11 I/Os / Connectors	3M Schneider
8	Factory tested Patch / Drop Cords	3M Schneider
9	Data Cabinet / Communication Rack	Local Made
10	Patch Panel	3M Schneider
11	Front Cable Manager	Local Made
12	Telephone Junction Box	Local made
13	Telephone Tag Block	Krone
14	Telephone Cable 10 Pair	Pony
15	Cat 6E, 23 AWG Cable	3M Schneider
16	Electrical Wires / Cables	Pakistan Cables Newage Cables Fast Cables Pioneer Cables AGE Cables
17	Burglar Alarm Cables	Million cables Pakistan Cables

18	Lights (all types)	Philips
		E-Delux
		Osaka
		Opple
19	Fans (all types)	Pak
		GFC
		Voldam
		Royal
20	Distribution Board	Universal
		Engineers & Engineers
		Prem Engineering
21	Circuit Breakers	ABB
		MG
		Terasaki
22	Change Over Switch	OPAS
		Kraus & Naimer
		Gave
23	Phase Selector Switch	OPAS
		Kraus & Naimer
		Gave
24	Control Fuse	DF
		ETI
25	Earth Copper Plate / Rod	Local made

Note: Material if installed other than manufacturers listed above will not be entertained/paid.

Daywork Schedule **Note: N/A**

[Note to the Procuring agency/Employer:

(i) A "Daywork Schedule" is commonly found in contracts where the likely incidence of unforeseen work cannot be covered by definitive descriptions and approximate quantities in the Bill of Quantities. The preferred alternative is to value the additional work in accordance with the Conditions of Contract. A Daywork Schedule normally has the disadvantage of not being competitive among bidders, who may therefore load the rates assigned to some or all the items. If a Daywork Schedule is to be included at all in the bidding documents, it is preferable to include nominal quantities against the items most likely to be used, and to carry the sum of the extended amounts forward into the Bid Summary in order to make the basic Schedule of Daywork Rates competitive.

(ii) The total amount assigned to such competitive daywork is normally 3–5 percent of the estimated base Contract Price and is regarded as a Provisional Sum for contingencies to be expended under the direction and at the discretion of the Engineer.

General

1. Reference should be made to Sub-Clause 13.5 of the General Conditions. Work shall not be executed on a daywork basis except by written order of the Engineer. Bidders shall enter basic rates for daywork items in the Schedules, which rates shall apply to any quantity of daywork ordered by the Engineer. Nominal quantities have been indicated against each item of daywork, and the extended total for Daywork shall be carried forward as a Provisional Sum to the Summary Total Bid Amount. Unless otherwise adjusted, payments for daywork shall be subject to price adjustment in accordance with the provisions in the Conditions of Contract.

Daywork Labour

2. In calculating payments due to the Contractor for the execution of daywork, the hours for labour will be reckoned from the time of arrival of the labour at the job site to execute the particular item of daywork to the time of return to the original place of departure, but excluding meal breaks and rest periods. Only the time of classes of labour directly doing work ordered by the Engineer and for which they are competent to perform will be measured. The time of gangers (charge hands) actually doing work with the gangs will also be measured but not the time of foremen or other supervisory personnel.

3. The Contractor shall be entitled to payment in respect of the total time that labour is employed on daywork, calculated at the basic rates entered by the Contractor in the **Schedule of Daywork Rates: 1. Labour,** together with an additional percentage payment on basic rates representing the Contractor's profit, overheads, etc., as described below:

(a) The basic rates for labour shall cover all direct costs to the Contractor, including (but not limited to) the amount of wages paid to such labour, transportation time, overtime, subsistence allowances, and any sums paid to or on behalf of such labour for social benefits in accordance with law of the land. The basic rates will be payable in PKR only.

(b) The additional percentage payment to be quoted by the bidder and applied to costs incurred under (a) above shall be deemed to cover the Contractor's profit, overheads, superintendence, liabilities, and insurances and allowances to labour, timekeeping, and clerical and office work, the use of consumable stores, water, lighting, and power; the use and repair of stagings, scaffolding, workshops, and stores, portable power tools, manual plant, and tools; supervision by the Contractor's staff, foremen, and other supervisory personnel; and charges incidental to the foregoing. Payments under this item shall be made in the Pakistani Rupee:

[***Note to the Procuring agency/Employer**:*

This method of indicating profit and overheads separately facilitates the addition of further items of daywork, if needed, the basic costs of which can then be checked more easily. An alternative is to make Daywork rates all-inclusive of the Contractor's overhead and profit, etc., in which case this paragraph and the relevant Daywork Schedule should be modified accordingly.

Daywork Materials

4. The Contractor shall be entitled to payment in respect of materials used for daywork (except for materials for which the cost is included in the percentage addition to labour costs as detailed heretofore), at the basic rates entered by the Contractor in the **Schedule of Daywork Rates: 2. Materials,** together with an additional percentage payment on the basic rates to cover overhead charges and profit, as follows:

   (a) the basic rates for materials shall be calculated on the basis of the invoiced price, freight, insurance, handling expenses, damage, losses, etc., and shall provide for delivery to store for stockpiling at the Site. The basic rates shall be quoted in the currency specified in the BDS.

   (b) the additional percentage payment shall also be made in the currency specified in BDS:

   (c) the cost of hauling materials for use on work ordered to be carried out as daywork from the store or stockpile on the Site to the place where it is to be used will be paid in accordance with the terms for Labour and Construction in this schedule.

Daywork Contractor's Equipment

5. The Contractor shall be entitled to payments in respect of Contractor's Equipment already on Site and employed on daywork at the basic rental rates entered by the Contractor in the **Schedule of Daywork Rates, Contractor's Equipment.** Said rates shall be deemed to include due and complete

allowance for depreciation, interest, indemnity, and insurance, repairs, maintenance, supplies, fuel, lubricants, and other consumables, and all overhead, profit, and administrative costs related to the use of such equipment.

[***Note to the Procuring agency/Employer****: This is an example of wording to include overhead and profit, etc., in the daywork rates. A separate percentage addition could be used as for labour and materials*.] The cost of drivers, operators, and assistants will be paid for separately as described under the section on Daywork Labour. *An alternative, sometimes adopted for administrative convenience, is to include the cost of drivers, operators, and assistants in the basic rates for Contractor's Equipment. The last sentence of this paragraph 5 should then be modified accordingly.]*

6. In calculating the payment due to the Contractor for Contractor's Equipment employed on daywork, only the actual number of working hours will be eligible for payment, except that where applicable and agreed with the Engineer, the travelling time from the part of the Site where the Contractor's Equipment was located when ordered by the Engineer to be employed on daywork and the time for return journey thereto shall be included for payment.

   (a) The basic rental rates for Contractor's Equipment employed on daywork shall be stated in the currency specified in the BDS and the payment to the Contractor will be made in the currency specified in BDS.

Schedule of Daywork Rates: 1. Labour

Item no.	*Description*	*Unit*	*Nominal quantity*	*Rate*	*Extended amount*
	Subtotal				
D122	Allow ____ percent of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 3 (b) above.				
	Total for Daywork: Labour (carried forward to Daywork Summary, p. ___)				_____

Schedule of Daywork Rates: 2. Materials

Item no.	*Description*	*Unit*	*Nominal quantity*	*Rate*	*Extended amount*
	Subtotal				
	Allow ____ percent of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 4 (b) above.				
	Total for Daywork: Materials (carried forward to Daywork Summary, p. ___)				_____

Schedule of Daywork Rates: 3. Contractor's Equipment

Item no.	*Description*	*Nominal quantity (hours)*	*Basic hourly rental rate*	*Extended amount*
	Allow _ percent[1] of Subtotal for Contractor's overhead, profit, etc., in accordance with BDS.			
Total for Daywork: Contractor's Equipment (carried forward to Daywork Summary, p. _)				

[1] To be entered by the bidder.

Daywork Summary

	Amount ( )
1. Total for Daywork: Labour	
2. Total for Daywork: Materials	
3. Total for Daywork: Contractor's Equipment	
Total for Daywork (Provisional Sum) (carried forward to Bid Summary, p. ___)	_____

Summary of Specified Provisional Sums

Bill no.	*Item no.*	*Description*	*Amount*
1			
2			
3			
4			
		[*To be entered by the Procuring agency/Employer; Delete if not applicable:]* provisional sums for additional ES outcomes.	
etc.			
Total for Specified Provisional Sums (carried forward to Grand Summary (B), p. _____)			

Grand Summary

Contract Name: _____

Contract No.: _____

1	Cost of Civil Work	Rs.	
2	Cost of Plumbing Work	Rs	
3	Cost of Electrical Work	Rs.	
4	Cost of Furniture Work	Rs.	
5	Cost of Air Conditioning Work	Rs.	
	TOTAL COST	**Rs.**	

Amount in Words

_____

_____

THE QUOTED RATES / AMOUNT SHALL BE INCLUSIVE OF ALL APPLICABLE FEDERAL/PROVINCIAL GOVT. TAXES/DUTIES AND CHARGES FOR INLAND TRANSPORTATION AND OTHER RELATED SERVICES ETC.

Contractor's
Signature

_____

(Seal & Signature)

SPECIFICATION OF MATERIALS

1. SAMPLES & TESTS

i. Samples:-

In addition to the special provision made hereafter as to sampling and testing of material by particular methods; the Chief Engineer may call for samples of all materials together with details of their sources and workmanship proposed to be employed in the execution of the work, and such samples shall be furnished by the contractor without delay and without charges. Approved samples will be kept by the Chief Engineer who may reject at any time all materials or workmanship not corresponding in quality and character with the approved samples. The contractor shall provide without extra charges, suitable labeled containers for the storage of samples.

ii. Test:-

The Chief Engineer may send inspectors to the manufacturer's premises to test materials or supervise their manufacture, should the Chief Engineer decide not to send an inspector to the manufacturers, certificates of test, proof sheets, etc. showing that the materials have been tested in accordance with the requirements of this specification relating thereto. Notwithstanding any tests that may have been carried out before materials leave the manufacturer's premises, not the production of manufacturer's certificates of tests, proof sheets etc. materials may also be tested after delivery to site, and the Chief Engineer shall be at liberty to reject after delivery or after incorporation in the permanent works, only material found to be unsuitable or not in accordance with the specifications.

iii. Additional Tests:-

In addition to the tests required under either clauses hereof, the Chief Engineer shall have power to order independent test of materials to be carried out by some agency appointed by him at such place as he may determine, and the result to tests shall be binding upon all parties no claim by the contractor being admissible in respect of or as a consequence thereof.

iv. Standard Specifications:-

Except where otherwise specified or authorized by the Chief Engineer, all materials shall conform to the latest addition of the appropriate British standard specifications (hereinafter abbreviated to BSS) published by the British standard institute, or to any other standard specification of whatever origin, that may be approved by the Chief Engineer.

v. Work Test Rules:-

All test of concrete work shall be conducted in advance with British Standard Code of practice No. CP 110 (1972) or other equivalent approved by the Chief Engineer.

2. CEMENT:

i. General:-

Normal Portland cement complying with BS No. 12(1948) shall be arranged by the Bank for the entire works, from an approved manufacturer, contractors shall satisfy themselves regarding the quality and condition of the cement prior to accepting delivery, after which they shall be held completely responsible for the same.

ii. Protection & Storage at site:-

All cement kept on the site shall be stored in an approved manner to prevent deterioration and contamination. It shall be stored at the contractor's cost in a rain proof shed on a if dry floor which shall be raised above the general ground level so as to protect the cement against moisture from air on from any other source. Any precautions which may be necessary for effecting delivery during rainy weather shall be taken. Different brands of cement shall be stores separately and different brands shall not be mixed for any single pour.

iii. Consumption:-

No cement shall be kept stored for more the two months and care takes to see that cement bags are consumed in sequence with the batches delivered on site.

3. AGGREGATE:-

i. Prior Approval of Aggregate:-

The type and source of all aggregate shall be approved by the Chief Engineer before the materials are delivered to the site.

ii. Aggregate General:-

Aggregate for all concrete work shall unless otherwise specified or directed by the Chief Engineer. They will consist of natural sands and gravel, crusted stone or other approved sound materials and shall be hard, strong and durable, free from clay films, and other adhering coatings, and conform to the dimensions and grading's specified for the several parts of the works. Aggregate shall be stored at the work in such a manner as to avoid contamination and shall if ordered by the Chief Engineer, be washed before use. Clean fresh water shall be used for this purpose, and no extra charges paid for the same.

iii. Coarse Aggregate:-

Coarse aggregate shall be graded crushed stone from an approved quarry. The aggregate shall be screened and graded down to sizes as recommended in the various mixes. The pieces of aggregate shall be roughly cubical. Flat, this pie9es shall not be permitted to be used. Aggregate shall be dense and as far as practically possible of uniform specific gravity. Where ever so specified shingle shall be crushed or uncrushed gravel or crushed stone. The pieces shall be angular, roughly cubical, and shall have granular or crystalline (not glassy) non-powdery surface. Fire-cable, flaky and laminated pieces shall not be permitted to be used.

4. REINFORCEMENT:-

i. All finished steel bars shall be well and cleanly rolled, reinforcement shall be free from cracks, surface flows, laminations, rough, judged and imperfect edge and all other defects and shall be finished in a workmanlike manner.

ii. Steel reinforcement shall .be plain round hot rolled milled steel bars or high yield bonds bars complying with BS 785, Cold worked bars shall be square or round bars which have been twisted when cold and shall comply with BS 1144.

	Tensile Strength Lbs/ per Sq Inch	Yield Stress Lbs/ Per Sq. Inch
Plain round Mild steel Bars BS 788 part 1 1967	63,000	36,000

Hard drawn Mild steel Deformed Bars for the Reinforcement of Concrete conforming to ASTM A 615-76A 1977 or equivalent.	90,000	60,000

iii. Reinforcement shall be of Rolled Mild, steel bars. The contractor shall arrange for weighment of steel at his cost to satisfy himself. Prior to use, the Contractor shall be responsible to see that reinforcement is free from pitting, loose rust, mill scale, paint, oil, grease, adhering earth or any other material that may impair the bond between the concrete and reinforcement or that may cause corrosion of the reinforcement or disintegration of the concrete.

iv. Restless annealed tying wire 18 SWG shall be obtained from approved manufacturers and shall as regards strength, comply with the requirements specified. Binding wire to specifications shall be provided by the contractors at their own cost.

v. Supply and storage. All stacking and storing of bars is the contractor's liability and a contingent to the quotations.

vi. Weight of all the bars shall be taken off from the standard weight tables irrespective of re-rolling margins, and other such factors. Contractor's bill shall be paid on the basis of these weight is direct proportion to the steel as measured used in the works. No claims will be entertained on account of such re-rolling margins, wastage etc.

5. FILLING MATERIALS:

Materials for filling shall be uniform in character throughout and free from substances that by decay or otherwise may cause the formation of bellow or cavities or otherwise affect the stability of the filling.

Earth filling shall be of selected materials obtained from the excavation or other approved sources. NO soft chalk or clay or earth with a predominating clay contact shall be used. Hard Caro shall be of selected hard clean gravel, broken brick, broken concrete, broken or crushed stone, quarry was or similarly approved material, concrete for filling shall be to the proportions described.

6. LIME:

i. Lime shall be of good quality high calcium lime containing from 95% upwards of calcium oxide. The impurities insoluble in acids should not exceed 3% for the quicklime or 1% for the kiln, kept thoroughly dry and prepared within 24 hours of its removal from the kiln.

ii. Storage of lime

Generally all approved lime shall be stored as specified for cement in Clause B2 hereof, care being taken that where lime is not stored in paper bags it shall be stored so that as small an area as possible, is exposed to the air, and all lime storage arrangements shall be to the approval of the Chief Engineer.

7. TIMBER:

i. **Timber general:-**

All timber for temporary or permanent work shall be of the best quality, sound, straight, well-seasoned, free from sap; clefts, radial cracks, cup shakes, large, loose or deed knots, or other imperfections and shall show a clean surface when cut.

Contractor shall be liable to bring to site the total quantity of timber cut to sizes with tolerances required for incorporation in the work on acceptance of the contract. Timber shall be stacked in such a manner as, to allow natural seasoning to take place for as long a period as possible.

ii. **Inspection:**

All timber shall be subjected to inspection on the site, piece by piece, and shall be to the approval of the Chief Engineer who may reject such timber as is considered by him to be below specification and in the case of timber specified to be creosoted or termite proofed, may reject such timber either before or after creosoting treatment. The contractor shall provide all necessary labour for handling the timber during inspection free of charge.

iii. **Wrought faces and allowance on joiner' work:**

All joiners' work shall be wrought and finished with a clean, even smooth face, the thickness given to include 3/ 32" for each wrought face in soft wood and 1/6" in hard wood.

8. GLASS:

i. **General:**

All glasses shall be obtained from an approved manufacturer and shall be free from blemishes of all kinds and descriptions, whether surface or internal, Claims shall not be entertained regarding poor quality of locally manufactured glass. The contractor shall have to select good pieces or make alternate arrangement for supply of the same.

ii. **Plate glass**

Plate glass shall be provided where Specified or directed in the following grades.

3 mm flat drawn or clear frosted sheet glass.

5 mm clear sheet glass.

¼" thick `Georgian' rough cast wired glass.

¼" thick polished plate glass.

Tinted / solar glass as specified in bill of quantities and in confirmation with latest B.S specification will be used with prior approval of Chief Engineer.

9. WIRE GAUGE:

Gauge for fly-proofing shall be of the quality uniformly woven webbing of 144 meshes per square inch. The wire for the gauge shall be best quality 22 SWG aluminum wire.

10. PAINTS AND. PROTECTIVE MATERIALS

i. **Knotting:-**

Knotting shall be uniform dispersion of lac or suitable resin (natural or synthetic) in a suitable solvent.

ii. **White lead paint:-**

White lead' paint shall be made from pure white lead in accordance with BS 239, mixed with fine boiled linseed oil, turpentine, driers and pigments, and stained free from skins and all extraneous matter before being pigmented and if so used, the quantity shall not exceed 8% (eight percent) of the paint mixed ready for the brush. No other ingredient' except the colouring matter will be allowed, and the colour shall be produced by using the latest possible. amount of colouring matter. The proportion of the ingredients for the various coats shall be subject to the approval

of the Chief Engineer.

iii. **Red lead paint:**

Read lead paint shall be made from non-setting red lead in accordance with BS 217 thoroughly ground and well and freely mixed with approximately 15% of boiled linseed oil of give a paint with good covering power and adhesion shall be determined by tests to be made by the contractor to the satisfaction of the Chief Engineer. The Chief Engineer may select samples of the paint for analysis after a sufficient quantity for the work about to be painted has been mixed only red lead paint as manufactured by Messrs. Burger Paints has been deemed to satisfy the above standard.

iv. **Linseed oil putty:**

Putty for stopping and glazing shall consist of whiting thoroughly ground with linseed oil mixed with 5% of red lead of form a smooth paste, and shall comply with BS 544.

v. **Varnishes:**

The materials is required to be cleared and transparent and when applied shall on drying give a glossy coating free from runs and specks. The composition of the varnish shall conform to the requirements of BS .274.

vi. **a. White wash:**

White wash shall be made from pure fat lime: brought to the work in an un-shakes condition. Water shall be added to this lime in a tub until the mixtures is of the consistency of cream, and shall be allowed to rest for a period of 48 hours. The mixture shall then be stained through an approved cloth strainer and to each cubic feet of the mixture obtained shall be added 4 ounces of gum boiled with 12 ounces of rice and a suitable quantity of "Blue".

b. Colour wash:

Colour wash where not an approved proprietary branch shall be made from pure selected fat lime as described above for white wash, to which shall be added and intimately mixed the necessary pigment to produce to tint specified. The pigments shall be to the approval of the Engineer Incharge.

vii. **Oil bound washable distemper:**

Oil bound washable distemper shall comply with BS 1053. Type 1, and shall be obtained from an approved manufacturer, prior approval from Chief Engineer to be obtained.

viii. **Emulsion paints:-**

Robbialac Emulsion / LC.I Dulex paints shall be used.

ix. **Proprietary brands:-**

Where the contractor proposes to use proprietary brands of materials in the works described as 'Paint work' except for emulsion paint, he shall state, when submitting his tender, the brand grade and manufacturer of the materials on which he has based his rates. All proprietary brands of materials shall be stored mixed, applied and treated strictly in accordance with the manufacturer's instructions.

x. **Creosote:-**

Creosote shall be pure tar distillate of the best quality as obtained and sold under the trade name of ' SOLIGNUM' that is creosote paint for the preservation of timber. The SOLIGNUM to be used

shall be clear SOLIGNUM so as to mar the timber.

SECTION-1

A. EXCAVATOR

Clause 1: GENERAL

It is presumed that the contractor has familiarized himself with the soil condition at site before tendering for the work.

The contractor shall take levels of all the areas and check layouts and alignments if already established at site. The approval of this check shall be obtained from the Engineer Incharge and after such check the contractor shall be responsible for all errors and discrepancies in the work.

All excavation of every description and or whatever substances encountered shall be performed to the dimensions and elevations indicated on the drawings for each building and structure and shall include trenching for utility and drawing system occurring within the enclosing fields or appurtenances of building an 1 structures, Suitable materials shall be rated from unsuitable materials during excavation operations, Excavated material conforming to the specifications for material to be used for embankments, fills backfilling, grading, top soiling, or rock slope protection, required for the project under the contract shall be considered as suitable. No materials shall be wasted or used for the convenience of the Contractor unless so authorized.

Clause 2: ANTIQUITIES. AND TREASURE- TROVES

An ancient carving, relics of antiquity coins or other curios which may be discovered or excavated during the progress of the work are to remain the property of the owner and are to be handed over to the owner.

Clause 3: SHORING

The contractor shall provide all necessary sheeting, timbering and shoring to excavations to insure the safety of the workmen, and freedom from damage to any adjacent paving, structures and utilities. The contractor shall be responsible for any injury to the permanent work any consequent damage caused by the removal for shoring or other supports from excavations. Where support is ordered by the Engineer Incharge to be left in, it will be measured and paid for, unless in the opinion of the Engineer Incharge, it is required to be lift in by reason of the Contractor's negligence or lack of foresight.

Clause 4: DISPOSAL OF EXCAVATED MATERIAL

1. Suitable excavated material shall be placed in the proper section of the permanent work required under these specifications, suitable excavated material in excess of that required for he work under this specification shall be used in other portion of the permanent site work required for the project under contract. Suitable material that can not be placed readily in the permanent work shall be separately stockpiled. Material in excess of that required for the permanent work under the contract, as decided by the Engineer Incharge and any unsuitable material shall be disposed of by the contractor to the satisfaction of local and municipal authorities, Excess suitable material may be ordered to be stockpiled within site for future use by owner.
2. Stockpiles shall be kept in a neat, well drained, workable condition at all times.

Suitable excavated materials shall be separately stock- piled at approved location in the immediate vicinity of the work, so selected as not to interfere with the work being performed under the contract.

3. Waste material shall be disposed of in the spoil areas approved by the Engineer incharge and local or municipal authorities. The material shall be spread and graded to drain so as to avoid the forming of pounding areas. No compaction will be required other than the controlled movement of hauling and spreading equipment.

Clause 5: DRAINAGE & DEWATERING DURING EXCAVATION

Excavation shall be performed in the dry. The excavation and the area and immediately surrounding each excavation for a distance of 25 feet, including slopes and ditches, shall be continually and effectively drained away from the excavation. The excavation for inlet, outlet and diversion ditches and the furnishing and operating of dewatering equipment, as necessary, shall be performed under this specification. Water from the excavation shall not enter the new drains or other construction work. The responsibility for removing water shall rest with the contractor and no claims for expenses incurred will be entertained. Suitable precautions shall be taken to prevent erosion from under-cutting previously concreted footings and slabs. Excavation shall be kept free from ponding until the permanent work in the excavation has been completed and accepted and the excavation have been completely backfilled.

Clause 6: EXCAVATION FOR BUILDING

The foundations, footings, etc. shall be taken out to the exact width and depth shown in the drawing or as directed by the Engineer Incharge. The bottom of the trench shall be in perfect level both longitudinally and transversely. The sides shall be left plumb, where the nature of the soil does not permit the sides being left plumb, they may be sloped down in accordance with the instructions of the Engineer Incharge. The foundations after being excavated shall be inspected and passed by excavated shall inspected and passed by the Engineer Incharge before any work is commenced or the contractor will be liable to have this work removed for inspection. Unless otherwise specified, the contractor shall at his cost do all shoring, pumping, bailing out dredging and keeping the excavation free from water while the exaction or any other item or work is in progress in such a manner as directed by the Engineer Incharge. Excavated material shall be kept at a sufficient distance from the trench to prevent the excavated material from falling back into the trench and for placing and removing shorting and form. Where unsuitable material underlies the floor areas below the specified stripped depth or building foundations same shall be immediately reported to the Engineer Incharge, and instructions obtained from the correction treatment to be performed. The same shall be instruction obtained from the corrective treatment to be performed. The same shall be inspected and passed by the Engineer Incharge before any further work is commenced, or the contractor will be liable to have this work removed for inspection at his own cost. Care shall be taken not to disturb the bottom of the excavation, and excavation, to final grade shall not be made until just before concrete is to be placed. Unauthorized width of excavation for footings for foundations shall be filled with concrete of the strength specified for foundations and footing at no expense to the owner. The bottom of

foundation trenches should be slightly watered well rammed.

Clause 7: BACKFILLING OF FOUNDATIONS, TRENCHES, DUCTS, SUB-FLOOR ETC.

Backfilling shall be performed after the permanent work in the excavation has been inspected and approved. Shoring etc shall be removed in a manner to avoid damage or disturbance to the work and the excavation shall be free of forms and cleaned of trash. Backfill material shall consist of the excavation or borrow of sand, gravel or other material approved by the Engineer Incharge and shall be free of trash, lumber or other debris. Backfill shall be placed in layers not more than 6 inches thick and each layer shall be rammed or rolled to an approved degree of compaction. Backfill shall not be placed on surfaces that are muddy. Backfill shall be brought to final grade unless otherwise shown or specified and shall be brought up evently on each side of each wall. Care shall be exercised to avoid any wedging action or eccentric action upon or against the structure and to avoid any disturbance or damage to the work. Each layer shall be uniformly spread, moistened or dried when required to the proper moisture content for the required degree of compaction, and uniformly compacted by hand or machine tempers or by other suitable equipment. Filling in the plinth shall be in excess of the depth required actually to be filled. This excess earth shall be removed to make room for the flooring.

Clause 8: MODE OF MEASUREMENTS

The measurements of excavation shall be taken as the area of the bottom of foundation trench multiplied by the depth of the foundation to the exact dimensions shown on the drawing. The area of the bottom of the foundation trench shall be the area of the wall, column duct or trench footing and shall not include the extra excavation required for formwork shoring etc. where required no payment will be made for unauthorized width and depth. The rate for excavation shall cover.

1. Excavation of foundation trenches to the exact dimensions shown on the drawing including formwork shoring strutting where required in all type of strata seen by the contractor before submitting tender. No claims regarding the variations in the strata from place to place on the same site will be entertained. Unless otherwise specified in the schedule of quantities the tendered rate will be for all type of soil including mud, silt etc.
2. Lifting and placing excavated material to any lift and distance.
3. Backfilling the sides of foundation trenches, filling under plinth if required, laid in courses, watered and rammed as specified.
4. Disposal of surplus earth as specified.
5. Provision of drainage as specified.

The cost of material, labor, shorting, supply of all appliances at sites and all operations to be performed in accordance with the instructions of the Engineer Incharge. Schedule of quantities and as specified above.

B. CONCRETOR

Clause 1: SCOPE:

The section of the specification covers requirements for material and work man-ship for cement concrete for the following items:-

1. In situ reinforced cement concrete:
    - 1.1 Quality controlled cement concrete of specified strength.
    - 1.2 1:2:4 cement concrete specified by proportion.
2. Mass Concrete
    - 2.1 1:4:8 binding concrete under floor and foundations.

Clause 2: APPLICABLE PUBLICATIONS:

The following British publications of the issues current at the date of the contract from a part of this specifications of the extent indicated by the reference thereto:

British Standards:

B.S.882	Concrete aggregates from natural sources.
B.S.12	Portland cement (Ordinary and rapid hardening)
B.S.15	Mild steel for General structural purposes.
B.S.785	Rolled steel bars an hard draw wire for concrete reinforcement.
B.S.1221	Steel fabric for concrete reinforcement.
B.S.1144	Cold twisted steel bars for concrete reinforcement.
B.S.1881	Methods of testing concrete.
B.S.C.P. 114	The structural use of reinforced concrete in buildings.

Clause 3: GENERAL

Full cooperation shall be given to other specialist contractors install embedded items. Suitable templates or instructions, or both, will be provided for setting items not items not placed on the forms. Embedded items shall have been inspected and tests for concrete or other materials or for mechanical operations shall have be in completed and approved before concrete is placed.

Clause 4: MATERIALS:

a. Coarse Aggregates:

Aggregate shall be crusted stone aggregate from an approved quarry ranging in size from ¾” down to 3/16" and shall comply with the requirements of B.S 882. Aggregate which in the opinion of the Engineer Incharge are not clean, or have become mixed due to defective storage shall be removed from the site immediately.

Sample of graded coarse aggregate weighing 14 lbs; Which it is proposed to be used, shall be submitted to Engineer Incharge for approval immediately after the contract has commenced, and at least five weeks before concreting is to start. The contractor shall

perform sieve analysis for each consignment to the satisfaction of the Engineer Incharge and the percentage passing each individual sieve shall not very by more than 5% either way from that found for the approved sample, unless otherwise approved by the Engineer Incharge and subject to such changes in concrete proportions may be necessary. For “Quality Controlled Concrete" so as to prevent mixing and contamination of fine and coarse, graded aggregates shall be stored separately on site on a concrete slab 3 inches thick properly subdivided the approval of the Engineer Incharge and which must be removed completion of the contract.

b. Fine Aggregates:

Sand or fine aggregate shall be clean, coarse, sharp and obtained from approved source and shall conform to B.S. 882. It shall be free from all dirt, earth organic and other injurious matter, The contractor will be required to screen and / or wash the sand to remove any foreign matter in it. The sand should be graded down from Tyler Sieve No. 4(3/16 inch) to Tyler Sieve NO. 100 in an approved manner. The sand shall be of such cleanness that when a handful of it is shaken in a glass tumbler with clean water and allowed the stand for one hour the precipitate of mud in the sand shall not exceed 2% by volume, and if more than 2% the sand shall be washed.

c. Cement:

The cement to be used for making reinforced concrete and mortars shall be ordinary Portland cement, white Portland cement or rapid hardening Portland cement, as specified herein, and as shown on the drawings or as directed. These cements shall not be used in combination. Only one brand of any type of cement shall be used for exposed concrete surfaces of any structure. Cement reclaimed from cleaning bags or leaking containers shall not be used. All Portland cements shall comply with the requirements of B.S. 12. Cement shall be stored in a damp\proof shed and shall be used in the order of its delivery. Any cement, which has deteriorated or become contaminated shall not be used and shall be removed immediately from the site by the contractor at his own expense.

Samples weighing in pounds shall be dispatched carriage paid in sealed tins to testing laboratories designated by the Engineer Incharge for testing as and when directed. The contractor shall bear the cost of all tests.

Reinforcement:

1. All finished steel bars shall be well and cleanly rolled. Reinforcement shall be free from cracks, surface flaws, Emanations, rough, jagged and imperfect edge and all other defects and shall be finished in a workmanlike manner.
2. Steel reinforcement shall be plain round hot rolled mild-steel bars or high yield bond bars complying with BS 785. Cold worked bars shall be square or round bars which have been twisted when cold and shall comply with BS 1144.

	Tensile Strength Lbs/ Sq. Inch.	Yield Stress Lbs/ Per Sq. Inch
Plain round Mild steel Bars BS 788 part 11967	63,000/-	36,00

Hard drawn Mild steel deformed bars for the reinforcement of concrete conforming to ASTM A 615-76a (1977) or equivalent.	90,000	60,000

3. Reinforcement shall be of rolled mild steel bars. The contractor shall arrange for weighment of steel at his cost to satisfy himself. Prior to use, the contractor shall be responsible to see that reinforcement is free from pitting Loose, rust, mill scale, paint, oil, grease, adhering earth or any other material that may impair the bond between the concrete and the reinforcement or that may cause corrosion of the reinforcement or disintegration of the concrete.
4. Rust less annealed tying wire 18 SWG shall be obtained from approved manufacturers and shall as regard strength, comply with the requirements specified. Binding wire to specifications shall be provided by the Contractor at their own cost.
5. Supply and storage: All stacking and storing of bars is the Contractor's liability and a contingent to the quotations.
6. Weight of all the bars shall be taken off from the standard weight tables irrespective of re-rolling margin and other such factors. Contractor's bills shall be paid on the basis of these weights in direct proportion to the steel a measured used in the works. No claims will be entertained on account of such re-rolling margins, wastage etc.

d. Forms:

Form shall be of wood, metal, structural hardboard or other approved material that will not adversely affect the surface of the concrete and that will produce or facilitate obtaining the specified surface finish of the concrete.

Wooden form work should be free from loose, knots and should be well seasoned. Unsound or very soft timber should not be used as distortion at bolted connections may occur. Lining for shuttering to produce smooth surfaces may of water proofed building paper, grain less wood, plywood, sheet metal or similar materials.

Metal forms, if used, shall be of an approved type that will produce surfaces equal to those specified for wood forms.

e. Forms Ties:

Forms ties shall be factory fabricated, removable or snap\off metal ties of approved design, fixed or adjustable in length and shall be free of devices that will leave a hole larger than 1 inch in diameter in the surface of the concrete. The portion of the tie remaining in the concrete after the removal of the exterior parts shall not project beyond the surface of the concrete and shall be at least inch back from any surface that will be exposed to view of painted in the finished work:

Clause 5. 1:4:8 BLINDING CONCIRETE UNDER FOUNDATIONS & SUBFLOOR

a. General:

Concrete layer shall be laid under all foundations, and floors on grade to a thickness

shown on the drawings or as directed by the Engineer Incharge, but no layer of blinding concrete shall be laid wherever suitable in this clause shall conform with requirements of Clause 2-4 as and where applicable. The mix shall be 1-part cement to 4 parts fine aggregate and 8 parts coarse aggregate by volume. Coarse aggregate for this clause of Concrete shall be 1 ½" maximum size brick aggregate of stone aggregate as specified in bill of quantities.

Brick ballast shall be broken to the gauge specified, from will burnt bricks or their bats, or from dense over-burnt bricks. No under-burnt bricks or bats, not Jhama that has become spongy or porous in the process of burning, shall be broken up for ballast. The ballast shall be free from dirt, leaves, straw, earth sand or other foreign matter, and it shall be stacked in the manner and place designated by the Engineer Incharge. 1 ½ " gauge ballast shall be such as to all pass through a ring of 1 ½" internal diameter and not more than 20% shall be more than 2" in greatest length. If Engineer Incharge consider that an in duly large proportion of fine stuff has been supplied it shall be screened through ¾" x ¾" square mesh and if more than 15% pass through the screen, the Contractor shall screen the ballast so that not more than 15% pass through this screen.

The stone aggregate shall consist of good hard tough broken stone, gravel or shingle of gauge specified and from an approved. It shall be free from dirt, clay, leaves or any organic matter or admixture of soft or decayed stone. 1 ½" size aggregate shall be screened to pass wholly through a screen of 1 ½" x 1 ½" and to be all retained on one of 3/16" square mesh, and shall be uniformly graded in between so that not more than 60% and not less than 30% shall be retained on a screen of ¾" x ¾" square mesh.

The stone aggregate shall consist to good hard tough broken stone, gravel or shingle or gauge specified and from an approved. It shall be free from dirt, clay, leaves or any organic matter or admixture of soft or decayed stone. 1 ½" size aggregate shall be screened to pass wholly through a screen of 1 ½ " x 1 ½ " and to be all retained on one of 3/16" square mesh and shall be uniformly graded in between so that not more than 30% shall be retained on a screen of ¾" x ¾" square mesh.

b. Proportions:

The units of measures shall be one bag of bag of cement and when bag of 1.2 cubic feet is used the standard proportioning shall be:

Cement	One part (1.2 Cft.)
Sand	Four parts (4.8 Cft)
Coarse Aggregate	Eight parts (9.6 Cft)

When a bag of 1 Cft. Is used the standard proportioning shall be:

Cement	One part, (1 Cft.)
Sand	Four parts (4 Cft)
Coarse Aggregate	Eight parts (8 Cft)

c. Mixing

The mixing shall be done in mechanical mixers. Hand mixing will not be permitted under any circumstances. The proportion of the ingredients having been specified as above, boxed or internal dimensions mentioned below shall be fabricated:

1. For fine aggregate two boxed of size feet 4-4/5 inches by 1 foot by one-foot high.
2. Four boxes of the size specified for fine aggregate.

For a bag of 1 CFT. The dimensions of boxes will be as under:

1. For fine aggregate 2 boxes of size 2 feet by 1 foot by 1 foot by 1-foot high.
2. For coarse aggregate four boxes of the size specified for fine aggregate,

The cement content of each mix shall be by bags, and fine aggregate will be into a heap and a cement bag emptied on top. The cement and fine aggregate will be thoroughly incorporated with each other in a dry state by being turned over and over backwards and forward several times until the mixture is of uniform colour.

The mixture of cement and fine aggregate will be placed on the coarse aggregate and thoroughly incorporated with it by being turned over and over backwards and forwards several times until every part of the ballast is surrounded with dry mortar.

The minimum quantity of water as directed by Engineer Incharge will be added slowly and mixture turned over and over again until it is` uniformly mixed. The mass will be of the required consistency and mortar should show no inclination to separate from coarse aggregate. Machine mixing will be done as specified under quality controlled concrete. The contractor will be required to mark a can of 4 Gallons in 8 parts showing half gallon each. The Engineer Incharge will specify the amount of water to be strictly adhered to till any change is specified by the Engineer Incharge.

d. Laying

The concrete must always be used when quite fresh. It shall be laid gently and uniformly in layers not exceeding 6 inches in thickness. The concrete shall not be heaped in the position and allowed to floor by gravity. Each layer shall be thoroughly rammed and the concrete of the succeeding layer shall be immediately deposited over it. All the layer forming the required depth of concrete shall be deposited and consolidated within half an hour of the mixing of concrete so as not to disturb it after the initial set has commenced. The concrete will be consolidated with iron rammers until a listel of the mortar creams upto the surface. It is necessary to ensure that too much mortar does not come to the surface, only such quantity of mortar shall be allowed to work up as will just cover the surface.

e. Curing:

The concrete shall be kept wet for at least 10 days. The finished concrete must be cured by sprinkling water for at least two days after laying before commencing work over it. Even after commencement of masonry wok curing of raw masonry shall be thorough

enough to provide curing to the concrete as well. The back filling of the foundation shall be done immediately after the masonry wok has started and the earth filled back shall be kept damp to provide curing for the concrete. When reinforcement work is to be laid on this, curing shall not be stopped, but it shall continue at least for 10 days during the laying of reinforcement.

Clause 6: QUALITY CONTROLLED CONCRETE:

Production and testing of concrete under this clause shall be under charge of a fully qualified and competent quality control Engineer. If at any time, the Engineer Incharge is not satisfied with the supervision of work till satisfactory arrangement is made. The concrete under this clause shall conform with the requirements of clause 2-4 of this section. The mix of the concrete to be used in the work shall be determined on the basis of Quality Controlled Concrete as laid down in this section of the specification and shall be designed by the required minimum crushing strength at the age of 28 days. Vibrated concrete shall be compared by the vibration in a manner complying with the requirements of this specification, to ensure a dense and homogeneous nature for every part of the work and, when cured, shall have the required strength and resistance to weathering.

1. The crushing strength of the 6 in, test cubes shall be taken as a measure of the quality of the work as placed, and the cubes shall be cast and supplied in the manner indicated in this specifications.
2. Frequent test shall be made of the water content and bulking of the aggregate, and an appropriate allowance shall be made in the gauging or the weighing machine.
3. The quantity of water introduce into the mixes shall be regulated and arranged, to the approval of the Engineer Incharge so as to ensure a constant water, cement ratio. This shall be the minimum required to produce concrete in formity with the specification requirements.
4. All material shall be measured separately by weight. The weight of cement per unit weight of aggregate shall be the minimum necessary to achieve the specified strength consistent with workability, but in no case shall the ratio of the weight of dry aggregate to weight of cement exceed the ratio indicated in (vii) this clause.
5. Where the density of the aggregate varies from 100 lb/cu ft.., the proportion indicated in (vii) may be adjusted accordingly.
6. The determination of the mix to be used between the limits indicated, and also the control of the work, shall conform to the preliminary and work Test procedures asset out in this specification.
7. Notwithstanding anything otherwise specified, the contractor will not use aggregate cement ration / higher than as specified below for various mix designations and for all coarse aggregate.

a. Test Cubes:

The contractor shall, at his own expense, supply test cubes from 6-inch iron moulds, as

required by the preliminary and works Test procedure.

The test cubes, generally shall be made in accordance with B.s 1881 except that where the concreting work is being vibrated, the cubes shall also be vibrated in an agreed manner which most nearly reflects the quality of the concrete as placed. The cubes shall be removed from the moulds 24 hours after casting marked and dated, and immediately stored in water at the controlled temperature of 58-66 F or with special permission, in damp and as directed until required for testing.

The cubes shall be tested on prescribed days under the direction of Engineer Incharge. If a Government Laboratory is available conveniently, the Contractor can send the cubes for testing to such Laboratory on approval of the Engineer Incharge, in lieu of providing a cube crushing machine. If the cubes are to be sent away to a Laboratory from site of work then the cubes shall be packed in damp sand, in stout wooden boxes and dispatched for testing as directed so as to reach the Laboratory in time for testing at the age of concrete specified. Three cubes of each set of six shall be dispatched in time for testing at 7 days and remaining three for testing at 28 days. For cubes at 7 days the equivalent crushing strength at 28 days shall be assessed at 50% above the 7 days' value.

The cost of testing all test cubes required for the preliminary Test and work test procedure will be met by the Contractor but shall the results of the works Test Cubes, as specified, be unsatisfactory, the concrete work shall be stopped and not proceeded with until instructed. The executed work involved shall be liable to rejection and if so directed, shall be liable to rejection and if so directed, shall be cut out and re=executed or otherwise rectified, at the Contractor's expense.

A record of all tests on the aggregate, cement and test cubes shall be kept at the site identifying the tests with the parts of the work to which they relate and a copy of such test reports shall be supplied to the Engineer Incharge within two days of performing the test.

b. Preliminary Test Procedure:

At least 5 weeks prior to the commencement of the concreting work, the contractor shall carry out preliminary tests to determine the concrete mix which satisfied the requirements of their specification. Sufficient time shall be allowed for experimenting with a number of alternative mixes, and for the results of the crushing tests of the proposed mix to be available, prior to the commencement of the work.

1. Preliminary test cubes shall be taken from the proposed mix at the following times and conditions: On each of three consecutive days, six cubes, from identical concrete batches, three of which from each set of six shall be tested at age 7 days and three at age 28 days.
2. The minimum crushing strength of all eighteen preliminary test cubes shall not be less than 33-1/3% above the required minimum strength at age 28 days of the concrete in production, or the equivalent value in the case of cubes crushed at age-7 days. The cubes strength is tabulated as under

Quantity of Concrete Poured per day	Total work cubes Per mix of concrete			Minimum Crushing at	
500 Cft. Of concrete of less		7 days		28 days	
		1:2:4	1:1 ½ :3	1:2:4	1:1: ½ :3
	4	2000 Ls/ PSI	2500 Lbs / PSI	3000 Lbs/ PSI	3750 Lbs/ PSI
For every 500 Cft. of concrete or portion thereof over and above first 500 Cft.					

i. Prior to the commencement of the work the Contractor shall submit a statement of the mix he proposes to use, which must be based of the satisfactory results of these preliminary tests.

3. Whenever the source or quality of cement of cement and aggregate are changed or whenever it is proposed to change the mix this Preliminary Test Procedure shall be repeated.

c. Workability

The amount of water added to the mix shall be the minimum necessary to produce a workable concrete. The concrete shall be of such consistency that it can be readily worked into the corner and angles of the forms and around the reinforcement, without permitting the materials to segregate, or free water to collect at the surface. On striking the forms it shall present a fair face free from honeycombing, surface crazing or excessive dusting. In a slump test the maximum slump shall not exceed 2". Test shall also be made to conform to the satisfaction of Engineer Incharge workability of the proposed mix, consistent with the requirements of this specification. The contractor shall supply at his own expense, a suitable mould of approximately 8 Cft. capacity and representative of the proportions of the work. It shall be filled with concrete of the same mix and batch from which the preliminary test cubes are made, and shall be compacted in the same manner as is proposed for the constructional work, the mould being struck as soon as possible. The appearance of the concrete shall be carefully observed and used as a guide during the actual construction.

d. Work Test Procedure:-

The minimum crushing strength of the works test cubes shall be not less than the required minimum crushing strength of the concrete in production at age 28 days or the equivalent value in the case of cubes crushed at age 7 days. They shall be taken from the concrete work in progress at the time and conditions specified in the next paragraph.

On each of the first four days of concreting, six cubes shall be taken and cast, three of

which shall be tested at age 7 days and three at age 28 days. Where the crushing strength of these works test cubes is less than the required minimum, the mix Proportions shall be modified to bring the concrete upto the required strength.

After the first four days, at least two sets of six cubes shall be cast for testing each week, them of each set to be tested at age 7 days and three at age 28 days.

e. Control Equipment: -

The contractor shall provide the following test equipment's and a suitable separate hut in which to have them.

1. A cube testing machine.
2. Two sets of 4 cast iron 6 inch cube moulds with two 4 lbs. 15 inches long tamping bar with ramming face one inch square.
3. Suitable graduated measuring tubes for measuring the moisture content of fine aggregates.
4. A set of British Standard Graded sieves.
5. Maximum and minimum thermometers.
6. Suitable weighing scales
7. A water tank with thermostatically controlled heating suitable for curing test cubes.
8. One standard cone for slump test.

Clause 7: 1:2:4 CEMENT CONCRETE BY PROPORTION:

a. General:

The concrete specified in this clause shall conform with the requirements of clause 2-4 as and when applicable. The mix shall be 1-part cement to 2 parts fine aggregate and 4 parts coarse aggregate by volume. Coarse aggregate for this class of concrete shall be crushed stone or natural gravel from approved quarries as specified in bill of quantities, ranging in size from ¾ inch down to 3/16-inch gauge well graded. The aggregate shall be free from injurious Amounts of soft friable or elongated or laminated pieces and shall also be free from clay or loamy admixture or any vegetable after being screened shall be graded in the following manner.

S.S. Sieve No.	Tyloro Sieve No.	Percentage Passing on Sieve	By weight Retained Sieve	Total Retained Sieve	Fineness Modulus -----
¾"	¾"	90-100	10-0	10-0	6-9 to 6.35
3/8"	3/8"	30.56	70.45	80.45	
3/16"	¼"	0.10	20.45	100.90	

b. Proportioning:

The unit of measure shall be one bag of cement and when a bag of 1:2 cubes feet (1 Cwt)

is used the standard proportioning shall be:

Cement	One part (1.2 Cft)
Sand	Two parts (2.4 Cft)
Coarse Aggregate	Four parts .14.8 Cft)

When a bag of 1 Cft (94 lbs) is used the standard proportioning shall be:

Cement	One part (1.0 Cft)
Sand	Two parts (2.0 Cft)
Coarse Aggregate	Four parts (4.0 Cft)

For volumetric batching of sand and coarse aggregate, boxes of following internal dimensions shall be fabricated for a cement bag of 1.2 Cft (1. Cwt)

1. For sand 2 feet 4-4/5 inches by one foot by one-foot high.
2. For coarse aggregate 2 feet 4-4/5 inches by 2 feet by one-foot high.

For a cement bag of 1 Cft. the dimensions of boxes will be as under:

1. For sand 2 feet by one foot by one-foot high.
2. For coarse aggregate 2 feet by two feet by one-foot high.

c. Mixing

The mixing shall be done in mechanical mixers as specified in clause "Mixing and placing" of this Section of specifications. Mixing shall be done in single bag batches of cement, unless otherwise specified by Engineer Incharge.

d. Slump Test:

The Engineer Incharge shall test the consistency of the mixture in the following manner:

Frustum of a metal cone 12 inches in height with a bottom diameter of 8 inches and a top diameter of 4 inches shall be completely filled with concrete and shall be tamped with a ½" diameter rod in the following manner:-

1. Cone filled to 1/4th depth and then tamped 25 times with a 5/8"dia rod. Tamping shall be done with strokes of medium strength.
2. Cone filled to ½ depth and then tapped 25 times with a ½"dia rod.
3. Cone filled to ¾ depth and then tapped 25 times with a ½"dia rod.
4. Cone filled in full depth and the tapped 25 times with a ½"dia rod.

The frustum of the cone shall then be immediately removed and the settlement or slump measured.

The slump is not to exceed 2 to 4 inches. The Engineer Incharge, however may at their discretion direct a particular slump to be maintained throughout the execution of the work which would be guided by site conditions such as degree of contractor's control over production of concrete and type of labour and supervisory staff employed by them

for placing of concrete and vibrations thereof.

Clause 8: CONCRETE PREPARATION

a. Mixing and Placing

The equipment shall be capable of combining the aggregates, cement and water, with in the specified time, and unless otherwise authorize by the Engineer Incharge, the concrete shall be mixed in a batch mixer of approved type, which will ensure a uniform distribution of the material throughout, the mass, as well as being capable of discharging the mixture without segregation. The equipment at the mixing plant shall be so constructed that all the materials, including the water, entering the drum can be accurate proportioned and controlled. The entire batch shall be discharged before recharging. The volume of the mixed material per batch shall not exceed the manufacturer's rated capacity of the mixer.

1. Each batch shall remain in the mixer for a mixing period of not less than 2 minutes which shall be measured from the time when all the solid material is in the mixing drum. All the mixing water must have been introduced before one fourth of the mixing period elapses.
2. In case of power failure, hand mixing shall be allowed to carry the work upto a suitable stage of concreting to be approved by the Engineer Incharge. When hand mixing is authorized it shall be done a water tight platform with edging boards, and in such a manner as to ensure uniform distribution of the materials throughout the mass. It shall be turned 3 timed dry, and 3 times wet, and mixing shall continue until a homogeneous mixture is obtained.
3. The remixing of concrete which has partially hardened, with or without additional cement, aggregate or water will not be permitted. Mixture machine and platforms shall be cleaned on every cessation of work

b. Work in Cold weather:

If it is necessary to continue concreting in sold weather the precautions specified in the following paragraphs must be taken.

When the air temperature is 36 degree F. and falling or when night frost may reasonably be expected, the mixing water, sand and aggregate shall be heated by an approved means so as to ensure the concrete having a temperature of not less than 40 degree F. at the time of deposition.

1. In addition, the newly deposited concrete shall be thoroughly protected and kept at a temperature of not less than 40 F until it has thoroughly hardened. This shall be done by using tarpaulins or other suitable means, to the satisfaction of the
2. Engineer Incharge. Where such protective covering can not be used, where it is considered such protection is not sufficient, suitable heating facilities shall be provided. Subject to the approval of the Engineer Incharge admixture of calcium chloride may be introduced, in the proportion of 1 ½% by weight of the cement,

provided that it is added in the form of a solution in the mixing water, or alternatively, special cold weather cement may be used. No frozen materials or material containing ice shall be used, and concrete which has become damaged by frost shall be cut out and replaced with new concrete, properly bonded as described in "Construction Joints".

c. Transporting, Depositing, placing and compacting:

1. Transporting and placing of concrete shall be arranged so that segregation is limited, and contamination and lose of cement prevented, Barrow used shall be cleaned on every cessation of work. Cutting of concrete will be permitted only be approved methods, and subject to the consent of the Engineer Incharge. Concrete shall not generally be dropped of thrown into place from a height greater than 4 ft. Pumping of concrete will not be permitted without the prior approval of Engineer Incharge.
2. Depositing of concrete, immediately after mixing and being run to the work shall be in a position as nearly as possible to its final before setting so as to reduce flowing and redistribution to a minimum and it shall not be disturbed subsequently, care should be taken to prevent displacing the reinforcement and embedded fixtures. Where depositing on hard core or other absorbent material, such surfaces shall be suitably and sufficient wetted before hand.
3. In placing, the concrete shall be efficiently tamped, sworded and compacted during the operation of placing. It shall be thoroughly worked around reinforcement, steel work, and embedded fixtures and into the corners of the forms so that no voids or honeycombing occur, and no reinforcement or embedded fixtures are displaced. Excessive taming shall be avoided to prevent segregation. Forms or walls and thin section of considerable height shall be provided with openings and other device that will permit the concrete to be placed in a manner that will prevent segregation, and accumulations of hardened concrete on the forms or metal reinforcement above the level of the concrete. A record shall be kept by the contractor of the time and date of placing concrete in each part of the work.
4. Compacting, whether by hand or by mechanical vibration, shall continue until a dense homogeneous mass, free from voids is obtained which on stricking the forms, presents a fair face which is free from honeycombing, crack or excessive dusting. Any concrete which is honeycombed or otherwise unsatisfactory shall be cut out and re-executed, or otherwise rectified, to the satisfaction of the Engineer Incharge accumulations of water on the surface of the concrete, due to water gain, segregation, or other causes, during placing and compacting will not be permitted and presentations shall be obtained by adjustments in the mix if necessary.
5. Rock foundation placement:
6. Rock surfaces upon which concrete is to be placed shall be approximately level, clean, free from oil and other objectionable coating, water, mud, debris, damaged rock, and loose semidetached or unsound fragments, and shall be sufficiently rough to assure satisfactory bond with the concrete. Faults or seems shall be cleaned to firm rock on the sides, and to a depth satisfactory to the Engineer Incharge. Immediately before

concrete is placed, rock surfaces shall be cleaned by high velocity air water jets, and blasting or other means satisfactory to the Engineer Incharge.

d. Vibrations of Concrete:

Columns, beams, walls and suspended slabs s all cases be compacted by means of Internal vibrators, but surface and external vibrators may be used, either in conjunction with them or alone, as approved. Before commencing work the contractor shall indicate to the Engineer Incharge for approval, the number and type of vibrators and the manner in which he proposes to employ them. He shall state the characteristics of the machines and undertake such trails, at his own expense, as the Engineer Incharge may direct and shall employ an adequate number of vibrators, of suitable characteristics, so spaced that their effective ranges overlap, and with properly trained personnel to operate them. Compaction shall not be attempted of a thicker layer than that for which a machine is designed and wherever possible the process of placing shutters and raising vibrators shall be continuous. Vibrations shall be continued until the concrete reaches a state of optimum compaction, when air bubbles cease to break the surface and all loose stone are absorbed into the mass and the surface is free from pockets and is moist and glistening.

1. Internal vibrators shall not touch the shutters and shall not be used to push the concrete along the forms. An ample supply of concrete shall always be available in front of the needless. Where layer are thick, as with concrete columns, the needless when vibrating each lift shall also penetrate the previous layer to a depth of 4 to 6 in.
2. External vibrators shall be securely clamped to the shutter frames or stiffeners (as in columns) or against the shutter face with chain and vice.
3. Surface vibrators shall only be used where the reinforcement can be laid progressively in horizontal layers or where the disposition and density will permit proper compaction. Vibration shall be continued until the mortar can be clearly seen appearing at the edge of the plate. The Vibrator must not be allowed to remain stationary, and the rate of travel must be adjusted to ensure adequate compaction of the concrete. Immediately following vibration the surfaces of slab shall be leveled and smoothed with wooden floats or screens, but this final surface working must be kept to a minimum. Surface vibrators are permitted for road, floor and roof slabs.

e. Construction joints:

The type and location of construction joints shall as shown of the drawing or as separately agreed with the contractor. Concreting shall be carried continuously upto joints, and the sequence of pouring shall be carried out as directed or agreed with the Engineer Incharge concrete shall be deposited continuously or in layer of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams and planes of seams and planes of weakness within the section. All construction joints in watertight structures shall be provided with P.V.C. water stops.

1. Stop ends at construction joints shall be vertical with grooved faces and must be stripped within 24 hours of the concrete being placed. The surfaces must immediately be wire brushed or jetted with water at high pressure to remove all laitance and to

expose the aggregated all to the Engineer Incharge. Failure to do this will involve the contractor in chipping the surfaces to a depth of ½ inch. All over and washing clean, at his own expense, to the satisfaction of the Engineer Incharge.

2. Horizontal surface shall be kept reasonably level and shall be similar treated within 24 hours of the concrete being placed. Failure to do will again involved the contractor on chipping to a depth of ½ inch over. Keys shall be formed in the surface as shown on drawing or as agreed with the Engineer Incharge.
3. Immediately prior to placing concrete on top of a completed horizontal surface this surfaces shall be well wetted and brushed with cement slut well worked in and then coated with ½ inch thickness of sand and cements mortar; the proportions being the same as the sand and cement in the concrete mixtures. Immediately after the application of mortar the new concrete shall be deposited and well rammed in position.

f. Expansion and contraction joints:

Expansion and contraction joints shall be formed in the positions and to dimensions and details shown on the drawings and as directed.

g. Connection and openings:

Bolts for holding pipes and fittings shall be concreted in or boxed out for the work proceeds. Opening shall be left as indicated of the drawings directed.

Clause 9: FORMWORK AND TEMPORARY SUPPORTS:

a. Formwork:

The contractor shall be required to submit drawings of the proposed method of formwork, details of scaffolding and positions of hoists, within four being given the order for the work. The formwork shall overlap the previous lift to minimize lipping which must not exceed 1/8 in, at any point and must in any case beddreassed off smoothly. Tolerances on dimensions and vertically shall be as shown on the drawings or as directed by the Engineer Incharge,

1. Formwork shall be so constructed as to safely support the fluid concrete and all construction load, without appreciable movement or deflection. It shall be sufficiently tight to prevent loss of liquids cement from the concrete and so constructed that it can be removed without under vibration or shock.
2. Where formwork is supported from existing parts of the structure, it shall be so arranged as to produce no overstress in the structure and shall, where necessary, be built up from a solid bed.
3. Formwork for the sides of beams, etc. may be so arranged that it can be struck first leaving the soffits and the supports in position.
4. The soffits of suspended beams of more than 16 ft. span shall be laid to an upward camber of ¼ in per 12 ft. of span.
5. Provision shall be made in the formwork for any perforation, sinking's, of the

inclusion of building in parts as required. Approval must be obtained from the Engineer Incharge for metal formwork, millboard or other linings to forms before use.

6. Unless specified otherwise, e.g for plastering, the surface finish of all concrete cast in wrought formwork shall be "fair faced". On removal of the formwork all pin holes and honeycombing shall be made good with cement mortar immediately after striking the forms and all irregularities and excrescences shall be rubbed smooth to the satisfaction of Engineer Incharge.
7. Bolts and rods, shall preferably be used for internal ties, they shall be so arranged that when the forms are removed no metal shall be within 1 in of the surface.
8. External corners of columns, girders, beams, foundation walls projecting beyond overlaying masonry and other exposed external corners shall be leveled, rounded, or chamfered by mouldings placed in the forms unless the drawings specifically state chamfering is to omitted.

b. Cleaning and Treatment of Forms:

Immediately before the concrete is placed, the formwork be the thoroughly cleaned. All rubbish particularly chippings, shavings and saw-dust shall be removed from the interior of the forms.

1. The surface of the form work which will be in contact with the concrete shall be well wetted of treated with a composition approved by the Engineer Incharge care should be taken that such approved composition shall be kept out of contact with the reinforcement.
2. Where concrete surfaces are to be treated later with chlorinated rubber or epoxy resin based paints or compounds, the mould oil for the shutters shall be high grade, emulsifiable and contain no mineral oil.
3. Retarding fluid shall be used only where specifically approved.

c. Stripping Formwork:

All formwork shall be removed without undue vibration or shock and without damage to the concrete. Proper precautions shall be taken to allow for the decrease in the rate of hardening that occurs with all cements in cold weather.

1. The minimum times for stripping formwork shall be these given in the following table:-

Stripping of formwork to	Normal Portland cement concrete	Rapid Hardening Portland Cement concrete
	Days	Days
Walls, sides of beams, columns	2	1
Slabs	14	10
R.C. Beam Soffits	21	10

2. Notwithstanding the previous paragraph the forms may be removed when trial shows

that the concrete is sufficiently strong for corners and edges not to be damaged during stripping.

3. The soffits of beams and slabs will still need shoring and the shores may be removed subject to the following conditions.
4. At the time of casting, four test cubes a day shall be made from the concrete deposited in the location under consideration. They shall be duly marked and dated by the Engineer Incharge or his representative. These specimens will then be kept on the same site in conditions approximating as closely as possible to the work as cast. When one of the test cubes attains a strength of twice the stress to be sustained during construction, the shoring may be removed
5. The Engineer Incharge shall specify to what loads the member will be liable. Should it prove necessary to carry greater loads temporary shoring must be reinstated to the satisfaction of the Engineer Incharge.

Clause 10. REINFORCING STEEL

Reinforcement shall be fabricated to shapes and dimensions shown and shall be placed where indicated on drawing or where required to carry out the intent of the drawings and specifications. Before being placed, reinforcing steel shall be thoroughly cleaned of loose or flaky rust, mill scale, or coating, and of any other substance that would reduce or destroy the bond. Reinforcing steel reduced in sections shall not be used. After any substantial delay in the work, previously placed reinforcing steel left for future bending shall be inspected and cleaned. Reinforcing steel shall not be bent or straightened in a manner injurious to the steel. Bars with kinks or bends not shown on drawings shall not be placed. The use of heat to bend or straighten reinforcing steel will be permitted only if the entire operation is approved. In slabs, beams and girders, reinforcing steel shall be of adequate length to transmit stresses and splices in adjacent bars shall be staggered. Splices in columns piers and struts shall be lapped sufficiently to transfer the full stress by bond.

a. Design and Details:

Unless otherwise indicated, the bending of reinforcing steel shall conform to the British standard code of Practice, C.P 114. Unless otherwise indicated, construction shall conform to the following requirements:

1. Concrete covering over steel reinforcement:

   The thickness of the covering coving over steel reinforcement shall be not less than the diameter of round bars, or less than 1 ½ times the side, dimensions of square bars, and in the following specific instances not less than specified instances below in less specified otherwise on the drawings. Footing and other principal structural 3 inches between steel & members in which concrete is deposited Ground against the ground.

   Where concrete surfaces, after removal of forms, are exposed to weather or grounds:

   For bars more than 5/8 inch in diameter 2 inches

For bars 5/8 inch or less in diameter	1 ½ inches
Where surfaces are not directly exposed to weather or ground	
For slabs and walls	¾ inch
For beams, girder and tied columns	1 ½ inches
For spiral columns (covering) to be	1 ½ inches or 1 ½ times max
cast monolithically with core	size of coarse aggregate.

Exposed reinforcement bars intended for bending with future extensions shall be protected from corrosion by adequate covering.

2. Spiral reinforcement shall consist to evenly spaced continuous spirals held firmly in place and true to line by vertical spacers, using at least two for spirals 20 inches or less in diameter, three for spirals 20 to 30 inches in diameter, and four for spirals more than 30 inches in diameter or composed of spiral rods 5/8 inch or large in size. The spirals shall be of such size and so assembles as to permit handling and placing without being distorted from the designed dimensions. Anchorage of spiral reinforcement shall be provided, by 1 ½ extra turns of spiral rod or wire at each end of the spiral unit splices, when necessary shall be made in spiral rod by a lap of 1 ½ turns. The reinforcing a spiral shall extend from the floor level in any story or from the top of the footing in the basement, to the lowest horizontal reinforcement in the overhead slab, drop panel, beam, or girder, in a column with a capital the opiral shall extend to a plane at which the diameter or width of the capital is twice that of the column.
    1. Stirrup spacer bars:
    2. All stirrups, except ties, shall be held in place by two 3/8.inch spacer bars extending the full length of the portion of the beam or girder occupied by stirrups.
    3. Outside bars of slab reinforcement, both main and temperature, parallet to beams, girders, or walls, shall be placed not over one-half bar spacing from the adjacent face of each member
    4. wire-mesh reinforcement, between expansion joints in slabs shall be continuous and shall have joints lapped at least one full mesh. Lapping of sheets shall be staggered to avoid continuous lap in either direction. Reinforcement shall be supported by standard accessories for slabs above grade and by properly sized precast concrete blocks for slabs one earth.
    5. Shop drawings:

    Shop detail and placing where necessary for reinforcing steel shall be furnished for approval. This shall be produced from details as shown on drawings.

b. Supports:

With the exception of temperature reinforcement, which shall be tied to main steel approximately 9-24 inches on centers, reinforcement shall be accurately placed and securely tied at all intersections and splice with 18 gauge black annealed wire, and shall

be securely held in position during the placing of concrete by spacers, chairs, or other approved supports, Wire tie ends shall point away from the form. Unless otherwise indicated, the number, type, and spacing of supports shall be as approved by the Engineer Incharge.

For Slabs on grade (over earth drawings fill) and for footing reinforcement bars of mesh shall be supported on precast concrete blocks, spaced at intervals required by size of reinforcement the minimum height specified above the under side of slab or footing.

Clause 11. CURING:

Curing shall be accompanied by preventing lost of moisture, rapid temperature change, and mechanical injury or injury from rain or flowing water for a period of 7 days when normal portland cement has been used or 3 days when rapid hardening Portland cement has been used. Curing shall be started as soon as free water disappeared from the surface of the concrete after placing and finishing. Curing of formed under surface of beams, girders, floor slab and other similarly undersurface, shall be accomplished by moist curing with forms in place for the full curing period or if form are removed prior to the end of the curing period by other approved means. Curing may be accomplished by any of the following methods or combination thereof as approved.

a. Moist Curing:

Unformed surfaces shall be covered with burlap cotton, or other approved fabric mats, kept in intimate contract with the surface, or with stand and shall be kept continually wet. Where formed surfaces are cured in the forms, the forms shall be kept continually wet. If the forms are removed before the end of the curing period, curing shall be continued as one the unformed surfaces using suitable materials. Burlap shall be used only of surfaces that will be unexposed in the finished work and shall be in two layers.

b. Water proof paper curing:

Surfaces shall be covered with waterproof paper lapped 4 inches at edges and ends, and sealed with mastic or pressure-sensitive taps not less than 1 ½" wide, paper shall be weighed to prevent displacement, and tears or holes appearing during the curing period shall be immediately repaired by patching.

c. Polyethylene Sheeting:

Surface shall be completely covered. Where single sheet does not cover entire surface the ends and edges shall be laped not less than 4 inches and sealed with adhesive tape.

Clause 12. CONCRETE LIFTS:

a. General:

Except where limited by construction joints, by requirements noted on the drawings, or by other specification requirements, the vertical depth or height of concrete placed in one continuous operation in walls of the structure need not be limited except as follows:

1. Within a vertical depth or height of concrete placed in one continuous, operation, concrete shall be deposited in horizontal layer of uniform thickness not to exceed 12 inches in depth.

2. The rate of rise of concrete in the wall forms shall be such that deformations of the forms at any point will not exceed 1/16 inch in 10 feet in each wall face.
3. The rate of rise of concrete in the wall forms shall be such that adequate vibration during placement of the concrete can be ensured to avoid honeycomb or other non-uniform surface finish and such that no concrete surface shall have reached its initial set before additional concrete is placed upon it.
4. The concrete in high walls shall be placed through 'window' construction opening in the form or by other 'Engineer Incharge' approved means which will insure placement of the concrete at its final location and which will limit the drop of concrete in accordance with the provision of this specification.

Clause 13. HARKING CONCRETE SURFACES:

Where surface are specified or required to be plastered, they shall be hacked, until approximately 40 percent of the surface is roughened to approval. Retarding liquid, applied to the surface of the formwork, so that the surface can be roughened and keyed for plastering must not be used unless specially approved.

Clause 14. ALTERNATE BAY CONSTRUCTION:

Large areas of non-suspended flooring shall be of alternate bay construction. The areas of each bay shall not exceed 300 Sft. for reinforced floor, unless otherwise directed. No other method of laying shall be adopted unless approved by the Engineer Incharge. Edges of slabs shall be a square but unless otherwise directed and shall be thickly coated with tar before the adjoining slabs are laid.

Reinforcement shall stop 2 inch from the edges of the slabs, Long wall in general shall be cast with 1 feet closure gaps and shall be provide with water stops when below grade.

Clause 15. FALLS THICKENING AND SINKING:

Floors shall be level or to falls, and increased, in thickness to form foundations for walling and under channels, trenches etc as shown on drawings or as directed. Sinking's for mat walls, pipes of trenches, and holes for buildings in posts stanchions, fixing bolts, etc. shall be formed as shown on drawings or as directed.

Clause 16. MASS CONCRETE RETAINING WALLS:

Walls more than 30 ft. log shall have gaps not less than 11 ft, not more than 3 ft. wide well vertical rebate joints on both sides, in approximately every 30 ft. These Gaps shall not be filled in until at least 14 days after concreting the adjoining sections.

Clause 17. LOADING TEST:

If the Engineer Incharge is dissatisfied with any portion of the work, the following tests shall be carried out by the contractor as per decision of the Chief Engineer whose decision will be final and binding on the contractor. The cost of testing and any reconstruction shall be borne by the contractor.

1. The test shall not be performed before the expiry of 56 days after effective hardening of concrete and procedure followed shall be as laid down as under:

1.1 Core Test, as per method & procedure being carried out by C.D.A

1.2 PANDIT Test, as being carried out by University of Engineering & Technology, Lahore.

2. The test load shall be as directed and shall exceed 125% of the total load for which the word was designed. The total load shall include dead loads, supper-imposed load and such dead loads which are not already applied at the time of test such as floor finishes partition loads etc.

3. The test loading shall be maintained for a minimum period of 24 hours and the structure should show a recovery of at least 75% of maximum deflection within 24 hours of removal of load. If the structure does not show the recovery in the firms test, it shall be subject to a second test as specified in the above mentioned clause of CP. 114. The decision of the Engineer Incharge as to the acceptance or rejection of the work under consideration, shall be final.

Clause 18. MEASUREMENTS AND RATES:

1. All in situ concrete items shall be measured in cubic contents of finished concrete as shown on the drawings:

2. Items for reinforcing bars shall be paid by weight ascertained from their diameter and length according to the shop drawings approved by the Engineer Incharge, Bends, hooks, cranks, cranks, shall included in the quantity. No payment shall where indicated or approved by Chief Engineer shall be paid. No payment shall be made for steel or concrete chairs, spacer bars and binding bars. The rate for all items of concrete under this sub-section shall cover the cost of furnishing all materials, labour, scaffolding formwork, curing and appliances at site and performing all operations at any height in accordance with drawings finish schedule and as specified above. This rates does not include providing, bending and placing in position of reinforcing bars, but include cost of all inserts and anchorage item specified for completion this contract, cost of which has already not been covered by other sections of these specifications cost of installation and supply of inserts and anchorage items required by other specialist contractors is not included in the above rate. If this contractor is required to supply and install such items it shall be paid separately. The rate for reinforcing bars shall include the cost of providing, bending and placing in position of bars for all bar diameters at any height including cost of chairs, binding wire, furnishing all labour, material scaffolding, appliances at site and performing all operations in accordance with drawings and as specified in this section.

SUB-SECTION 2-A
PRECAST CONCRETE

Clause 1: GENERAL:

1. Precast concrete structural members shall conform to the special provisions of this subsection in addition to all applicable clause of section 2 ‘concreter'
2. Should an applicable clause in Section 2 overlap with an applicable clause of this sub-section, the more stringent clause shall prevail. The stringency of the contesting clause shall be determined by the discretion of the Engineer Incharge.

Clause 2. CONFORMITY TO BRITISH STANDARD:

The work and materials shall conform to all British standards and code of practices as specified earlier in this section under the head ‘CONCRETOR' and shall also conform to B.S. 1217 ‘Cast stone' as applicable to the work and specified.

Clause 3. MATERIALS:

1. **Aggregates:** Coarse and fine aggregates shall be of uniform colour and shall conform to the requirements of section 2, coarse aggregate shall be of size as mentioned on the drawings and approved by the Engineer Incharge.
2. **Cement:** Cement shall be grey Portland cement conforming to the requirements of section2.
3. **Reinforcement:** shall conform to the requirement of section 2.
4. Anchor, supporting angles, dowels etc. shall be heavily dipped galvanized steel?
5. **Mortar:** For setting precast concrete units shall be mixed in proportions by volume of one part Grey cement, one part hydrated lime putty and five parts of fine aggregate. Mortal for pointing shall be mixed in the proportions by volume of one part Grey cement, one part hydrated lime putty and four parts sand made up into stiff plastic batches. Setting mortar shall have the minimum amount of water added to make it flow.

Clause 4: SHOPS DRAWINGS:

Shop drawings and description of the proposed formwork shall be submitted by the contractor the Engineer Incharge for approval within two month of award of contract. The form drawings shall show complete detail of each unit to be case and eye bolts for handling shall be as directed on the drawings, the description shall cover the method of removal from the forms and the methods of handling and erecting of the units. Work shall be executed and erected in conformity with the approved shop drawings and description of work.

Clause 5: WORKMANSHIP:

1. Concrete for precast wall panels in Toilets window sills roof, planks etc. shall be 3000 PSI quality control concrete and specified in section 2.
2. Proportioning of mixes shall be determined by weight batching and the amount of water added to the mix shall be the minimum necessary to obtain sufficient

workability and produce a dense concrete without segregation of the aggregate. Coarse aggregate shall be of maximum size shown on the drawings, graded crushed aggregate.

3. Each unit shall be reinforced as indicated on the drawings and shall have additional reinforcement if required for handling or erection.
4. All anchorage items as shown of the drawings or as directed for fixing precast units shall be cast integrally with the panels at the exact locations. Care shall be exercised so that anchorage items are not dislodged during the casting and compacting operations. The precast units in which door or windows are to be installed shall have built in Anchors for fastening doors and windows to the frame.
5. Each unit shall be equipped with eye bolts, welded with, reinforcement and located so as to be concealed when the unit is erected for handling hoisting and erecting the units in a vertical position. Additional embedded and welded eye bolts shall be provided if required by the proposed method of handling and hoisting the units.
6. Casting shall be done in accurate moulds designed to withstand vibration. The surface of moulds which will form exposed surfaces of the precast units shall be coated with an approved plastic or resin to ensure smoothness of the precast concrete. The vibration shall be continuous during the process of casting. Compaction shall be thoroughly carried out by mechanical vibration such that a solid mass without a solid mass without voids is produced entirely filling the mould and surrounding all reinforcement.
7. Exposed faces of precast concrete shall be smooth and free from cavities, lines or other defects detrimental to the appearance, and shall be even in colour, Units varying in colour within the units or varying from other units will not be acceptable.
8. All precast items shall be carefully handed during precasting, handling and erection. Any units that become damaged will be liable to rejection. Units shall be well wetted and then placed in position with cement mortar. Where any additional in-situ Structural filling between units is required, the units shall be well wetted before the concrete is placed.

Clause 6: MATURING:

Precast concrete units shall be matured and cured before being handled or erected.

Clause 7: PATCHING:

In general, no patching, will be allowed, and damaged units shall be replaced at no additional cost. Mirror patching, defined as such by the Engineer Incharge will be permitted when authorized by the Engineer Incharge.

Clause 8: CLEANING:

All mortar daubs and droppings shall be removed as the work is erected. On completion of work, all exposed surfaces shall be cleaned.

Clause 9: MEASUREMENTS AND RATES:

All precast units shall be measured in cubic feet, superficial area of running feet of finished work as specified in schedule of quantities.

The rate for all items of precast concrete under this sub-section shall cover the cost of furnishing all materials, labour, scaffoldings, formwork, curing erecting, anchors, fasteners etc. and appliances at site and performing all operations at any height in accordance with drawings, schedule of quantities and as specified above.

This rates does not include providing bending binding, and placing in position of reinforcement bars but include cost of all inserts and anchorage items specified for completion of this contract, cost of which has already not been covered by other section of these specifications.

The rate for reinforcing bars shall be as specified under Section 2 'Concreter'.

SECTION-3 BRICK & STONE MASONRY

Clause 1: CONFORMITY TO BRITISH STANDARD CODE OF PRACTICE:

C.P. 121101

Except as otherwise specified, all brickwork shall be erected in conformity with C.P.121 101 "Brickwork", as applicable to the work shown on the drawing and as specified.

Clause 2: MATERIAL:

a. Brick shall be sound, well burned clay, uniform in shape, colour and shall measure 9" x 1 ½" x 2 ¼'' so that every four courses laid shall measure 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 should not absorb more than 1/6th of its weight, when soaked in water for an hour. 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. The minimum compressive strength of the gross area of the brick flat wise shall be 1250 pound with an average for five bricks not, less than 1500 pounds. Brick shall be tested for compressive strength in accordance with B.S 1257 "Method of testing clay Building Bricks"

b. Cast stores or cc jali shall be made from 1:2:4 cement concrete as specified in section "concreter" colour additive if specified shall be inert chemically and shall give shade as shown on drawings or as instructed at site.

c. Grey stone: shall be lime stone. Sound free from cracks, cavities and should be of uniform grey colour and fixture, and shall measure 3" to 4" thick, 2" long 1" wide. The sides cut truly in plumb and corners at right angles. The exposed face should be fine chiseled.

d. Mortar: shall be mixed in the proportions by volume as specified in bill of quantities.

    1. Portland cement shall conform to B.S 12.
    2. Sand and other fine aggregate shall conform to B.S. 1200, "Sands" and crushed' Natural stone for Brickwork (plain and reinforced) and for Masonry"
    3. Water shall be clean, free from any organic impurities, acids, alkalis greasy or oily substances either in solution or in suspension.

e. Wall ties: Metal wall ties shall conformed to the requirements of B.S. 243 "Metal wall Ties", where applicable. Other ties shall have stiffness. Strength and durability at least equal to the weakest ties specified in this standard. All meta1 wall ties shall be galvanized,

Clause 3. SAMPLES:

The samples of all the material used for brickwork shall be approved by Engineer Incharge & same type of material shall be used during the work in progress. If the Engineer Incharge desires to get the material tested, this will be got done by the contractor from a laboratory approved by them at his own expenses.

Clause 4: WORKMANSHIP FOR BRICKWORK:

a. Brick laying: Brick laying shall conform to the applicable requirements of C.P.121.101 notably clause 501,508 and 512. The brick work shall be done from approved bricks and shall be strictly in accordance with the drawings. The bricks shall be laid in mortar specified in schedule of quantities. Before the brick are used, they shall be soaked in water tanks (to be constructed by the contractor at his own cost), for at least four hours. The brick shall be placed in the water tanks in a manner that they do not get damaged. Bricks shall always be laid in English. bond (unless otherwise specified) with frogs upwards. Bricks shall be laid with bed and vertical joints properly filled with specified mortar. Bricks work must be truly plumb and must be checked by plumb bobs and straight edges 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 drawings to have curved or champhered surface shall be cut and chiseled finely such that when placed in position they do not present ugly look or require leveling up with extra mortar. Where work has to be left, the wall shall be left in slope and in no case the difference of height between different walls shall be more than 5' at any section of the building.

All brick work shall be bonded where it abuts other bricks work, concrete walls and concrete columns. Where bricks walls or partitions interest or abut, it is absolutely necessary to interlock the masonry of the two walls in such a way as not to leave a straight vertical joint between the two walls. In such cases the bond shall be obtained by placing a closer 41/2 inches 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 dove tail slots shall be provided at every fourth course. 3" long dove-tail slots cast in concrete members at every fourth brick course height shall be considered sufficient under these specification, unless contractor considers continues length of slots convenient for his working. 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.

Built in anchor bolts, inserts, pipe supports, hangers pipe sleeves, dowels, ties and all items shown on the drawings, or specified are required to be build 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 by the masonry. The spaces around all built in items shall be filled with masonry. Where required for latter building in, leave opening in masonry for heating and plumbing pipes, electric conduits etc. and after piping or conduits have been installed, fill around same brick work.

Do all cutting and patching of masonry required for installation of built in work supported by masonry.

The masonry shall be kept properly cured for at least 10 days where cement mortar is used. Where according to plans and sections, the masonry would require cut bricks to be

used, the same shall be done by the contractor free of cost to obtain correct thickness according to drawings.

b. Jointing Vertical joints in alternate courses must be directly one over the other, horizontal joints shall truly level. The thickness of joints shall be between 3/8" to ½" 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.

Clause 5: WORKMANSHIP FOR CAST STONE AND JALI WORK:

Stones and jali shall be precast in 1:2:4 cement concrete, to sized and shapes shown on the drawings. An approved colour additive if specified shall be added to the concrete mix to give the desired colour. The exposed to view faces of precast stone or jali shall be well rubbed and grounded to present uniform finish. The contractor shall manufacture sample pieces and obtain the approval of the Engineer Incharge and such approved samples shall be used as standard for the whole job for colour and finish. The mortar used for jointing shall be 1:3 cement sand mortar. Where mild steel reinforcement is shown in drawings or specified in bill of quantities, the same shall be provided and anchored properly.

Clause 6: WORKMANSHIP FOR STONE MASONRY:

The stone shall be sound, free from decay flaws, cracks, veins or cavities and shall be as far as possible of uniform grey colour and texture and best obtained from specified quarry.

Porous stones such as coarse, grained sand stone should not be used which being previously dry absorbs more than 5% of its weight of water after 24 hours immersion.

The facing of stone shall be of live stone grey in colour and texture 3" to 4" thick, 2' long and 1' wide cut truly to dimensions with sharp edges and corners and would be set in cement mortar 1:2. The exposed face should be fine chiseled and sides, truly cut in plumb, rubbed and smoothened so that the vertical joints when fixed side by side may become practically invisible. The horizontal joints should have V shaped groove 3/8" thick and ½ " deep at intervals as shown in drawing

Clause 7: MEASUREMENT & RATES:

Brick work will be paid in cubical contents i.e. multiplying the length and breadth of wall with height of the wall. All the openings in the masonry wall will be deducted. Cast stone and Grey stone veneering of jail work will be paid for in square ft. of the superficial area covered. All mild steel reinforcement shall be measured as specified in section "Contractor". The rate of this item shall cover:

1. The cost of material, labour, curing, scaffolding racking out joint and appliance at site and all operations in connection with the installation of masonry in accordance with the drawing, finish schedules and as specified above.
2. Cutting and patching work required for installation of built in work:
3. All assistance to other trades for built in items to the satisfaction of the Engineer

Incharge.

4. Providing and fixing wall ties for joining or stone masonry with cement concrete members and cast stone veneering or a jali with brick masonry where specified in bill of quantities, these specification, or shown on drawing.
5. All mild steel reinforcement shall be specified in section concreter.

Clause 8: MASONARY:

1. Masonry: Definition:

   All mason's work in brick work / block work shall be referred to here in as masonry.

2. **Mason General:**

   All masonry shall be constructed in bonds and dimensions shown on the drawing or as directed by the Engineer Incharge.

3. **Work to proceed uniformly:**

   Where practicable the whole masonry in any structure shall be carried out at a uniform level and where break are unavoidable the joints shall be made in 'toothed' stops. Gross walls and all junctions of walls shall be formed at the time the wall are being built.

4. **Soaking and protection**

   All materials for masonry (other than cement mortar) or cement blocks shall be thoroughly soaked in clean water in tanks or pits for not less than 15 minutes before incorporation in the work.

   All work shall be kept wet whilst it is in progress, care being exercised to avoid washing mortar out of joints. Masonry shall be protected during construction from adverse climatic effects and shall be kept moist for a period of not less than ten days after completion.

5. **Mortar:**

   Unless otherwise specified or directed, all masonry shall be constructed in 1:5 cement and sand mortar.

6. **Joints:**

   Nor four courses of masonry shall rise more than five percent above the same laid dry.

   All, masonry work shall be laid true to line and level with horizontal courses and vertical prepared. Where painting is not specified the joints in each day's work shall be struct to depth of ½" whilst the mortar is green ad such striking of joints shall be contingency of contact.

7. **Fixtures:**

Holdfasts and similar fixtures shall be built in with the surrounding masonry in their correct position in 1:3 cement and sand mortar and 1:2:4 concrete depending on the type and amount of fixing required.

8. **Quoins and jambs:**

   Quoins and jambs shall be dressed at true right angle, and corner being straight and vertical. Unless otherwise specified or directed, quoins shall be laid alternate head and stretcher wherever possible.

BOND:

The bond used shall be English or such other as may be specified, and shall be carried throughout the work. At the corners alternate courses of brick work / block work shall be laid header and stretcher wise so as to bend the two walls together.

No bats shall be permitted except where absolutely required-for-obtaining the dimensions of the different courses of four obtaining the specified bend.

CLEARING WORKS:

No mortar shall be smeared over the face on completion of the work all exposed surface shall be washed down all stains removed.

FACING WORK IN POINTED BLOCKWORKS:

All the best shaped blocks and those most uniform in colour shall be reserved for face work

All face work must be finished with a neat drawn joint and pointed to specification. All block work must be washed down on completion and all stained removed from the face. ON completion of a work, all rubbish to be removed unsightly holes or pits leveled up, and the whole surroundings of the work left clean and neat before the final bills are prepared:

SECTION-4 PAVIOR

Clause 1: CONFORMITY WITH BRITISH STANDARD CODEOF PRACTICE:

Except as otherwise specified, flooring work shall be in conformity to British standard C.P.2004. In situ flooring, as applicable to the work shown on the drawings and as specified.

Clause 2: MATERIAL

a. Cement:

Shall be standard grey Portland cement conforming to the requirements of B.S. 12 "Portland cement".

b. Sand shall conform to B.S. 1199 "BUILDING SANDS FROM NATURAL SOURCES".

c. Aggregate:

Shall be in accordance with the requirements of B.S. 1201. "Aggregate for Granolithic concrete floor finishes."

d. Reinforcement

For R.C.C sub floor shall as specified under concrete.

e. Water shall be clean, free from any organic impurities, acids, alkalies, greasy or oily substances, either in solution or in suspension.

Clause 3: SAMPLES:

All the material used under this section shall be approved by Engineer Incharge and same type of material will be used throughout the work in progress. If Engineer Incharge desired to get the material tested, this will be got done by the contractor at his own cost from a Laboratory approved by the Engineer Incharge.

Clause 4: WORKMANSHIP:

A. Cement Concrete, Topping.

Material method of mixing and laying of cement concrete floors shall be in the manner as specified for mixing of cement concrete under section "CONCRETOR". The laying shall be in accordance with British Standard Code of practice 2004. In situ flooring part 2 concrete flooring and in manner as specified under section "CONCRETOR": Surface shall be truly leveled or shall be pitched to drain where required. The concrete after laying shall be finished by tamping the concrete with special tools to force the coarse aggregate away from the surface, then screening the floating with straight edges to bring the surface to the required finish level. While the concrete is still green, but sufficiently harended to bear a man's weight without deep imprint, it shall be wood floated to a true even plane with no coarse aggregate visible, sufficient pressure shall be used on the wood floats to bring moisture to the surface. After the surface moisture has disappeared, surface shall be steel toweled to a smooth even, impervious finish, free from trowel marks. After the cement has sent enough to ring the trowel, the surface shall be given a second steel troweling to a furnished finish. The use of addition al mortar or neat cement for giving a smooth finish is definitely prohibited. The surface over which the topping to

be laid shall be divided into square or rectangular panels not exceeding 50 sq.ft or as shown on the drawings the exact size will be decided by the Engineer Incharge. The symmetrical panels shall be formed by wooden or iron screeds of 1 ½" width and of a depth equal to the thickness of the floor concrete. The top of these screeds should be at the exact level of the finished floor. Alternate panels shall be laid on alternate days. The surface shall be tested with a straight edge to detect high and low spots which shall be eliminate. The contractor must keep a straight edge not less than 8' with parallel sides as well as a 10' spirit level, for the purpose of testing the trueness of the floor being laid throughout the time the work is in progress. In no case will hammering of any type be allowed on a finished surface.

Concrete shall be left undisturbed for 24 hours after laying. During the process of laying as well as for a period of 14 days after, the concrete shall be protected by suitable covering from the weather and the extreme of temperatures and kept wet for that period. During laying the covering will be damp gunny bags, and after laying damp sand or saw dust.

b. R.C.C. Sub-Floor

Materials, method of mixing and finishing R.C.C sub floor be as specified under section concreter'. Reinforcing bars shall be placed in the slab in both directions as shown in drawings. "Expansion joints" if shown on drawings or specified in schedule of quantities shall be ½" thick filled in with approved bitumen tic filler. Alternate bay construction of section 'Concreter' shall be strictly adhered to.

Clause 5: MEASUREMENT AND RATES:

The work under this section shall be measured as product of length and breadth of the area over which floor is laid.

Rates for all items under this section shall cover the cost of furnishing all the materials, labour, scaffolding and appliances at site and performing all operations in connection with laying all the items in accordance with drawings schedule of Quantities and as specified above. The rate shall include all assistance to other trades for built in items to the satisfaction of the Engineer Incharge. Reinforcement in R.C.C floors shall be measured and paid for as under "Concreter'.

SECTION-5 PORCELAIN TILES FLOOR

Providing and laying floors of Porcelain Tiles 600mm X 600mm (Lapata) / 1200mm x 600mm (Grit White) of UAE/ Malaysia/ Qua Granite Turkey make imported tiles including average 2-1/2" thick C.C base and mortar and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Consultant/Engineer.

SECTION-6 JOINER: CARPENTEURE & GLAZIER

Clause 1: CONFORMITY TO BRITISH STANDARDS:

Except as otherwise specified carpentry and joinery shall be in accordance with B.S 1186"Quality of Timber and workmanship in joinery" as applicable to work shown on the

drawings and specified.

Clause 2: MATERIAL:

1. Timber: Timber shall conform to the applicable requirements of B.S 11886 “Quality of Timber and workmanship in joinery” Part 1 Quality of Timber: Where teak wood is mentioned in the specifications schedule of items and drawings, it shall be best quality Burmah teak wood. Wood core for flush doors shall be of best quality block board. Timber shall be well seasoned felled for not less than two years before use, uniform in substances and colour, free from large or dead knots, cross grains, wind shakes, cracks or blemishes of any kind. The sap should be entirely removed. The fibers shall be straight and smooth and shall not give a dull appearance. When the timber is struck it shall not give a dull sound. Any timber rejected by the Engineer Incharge shall be removed from the site of the work immediately.
2. Bolts, Nuts & Studs etc. Bolts, "nuts and studs shall conform to the requirements of the applicable sections of B.Ş. 325 “Black Gup and Counter sunk Nuts and Washers.

   BS 916 “Bolts, screws and Nuts":

   BS 1494 "Fixing Accessories for building purposes”
3. Nails: Nails shall conform to the requirements of B.S 1202 “wire Nails and cut: Nails for building purposes"
4. Screw: Screws shall conform to the requirements of B.S. 1210 “Wood Screws”.
5. Wood preservative: Wood preservative shall be creosote or pentachlorophenol and shall conform to the applicable requirement of B.S. 1286 “Classification of wood preservatives and their method of application.
6. Glue: Glue shall conform to the applicable requirements of B.S 745” Animal Gule for wood or B.S: 1204 “Synthetic Resin (Phenolic and Amino Plastic Adhesives for construction work in wood.”
7. Plywood: Plywood shall conform to the applicable requirements of B.S 1455 “British made plywood” for workmanship and quality. Unless otherwise specified or shown or the drawings the thickness of the plywood shall be 3/4” and shall be teak veneered for all exposed faces.
8. Formica:. It shall be of approved shade or pattern.
9. Flush door: Flush doors shall conform to B.S. 459.'"Flush.door” & B.S.C.P. 151 part-I. “Flush wood door” It shall have 5 ply 6mm thick plywood face veneered on all exposed face, conforming to the applicable requirements of B.B.459.
10. Class:-
    i. General: Unless otherwise indicated glass shall be of the following weight per square foot for various sized mentioned below
       i.i Not exceeding 12" x 14" - 16 óż.

i.ii Exceeding 12” x 14” but not exceeding 24” x 21 oz.

i.iii Exceeding 24" x 24" but not exceeding 30" x 30" -26 oz.

i.iv Exceeding 3.0x 30" but not exceeding 36" x 36"-32oz.

i.v Exceeding 36”x 36" plate glass (1/2 thick).

For other sized smaller dimensions will determine the weight. Glass shall be free specks, bubbles, distortion and flaws of every kind.

ii. Obscure glass obscure glass shall not be less tan 7/32 inches thick with one side, smooth and the other side with pattern to be selected by the Engineer Incharge.

iii. Plate glass: Plate glass shall be first quality polished transparent glass conforming to the applicable requirements of B.S.952 “Glass for Glazing”. Unless otherwise indicated, plate glass shall be ¼” thick with the two surface ground smooth and polished as to give clear undistorted vision and reflection

iv. Wire glass: Wired glass shall be Georgian wire ¼” polished plate conforming to the applicable requirement of B.S. 962 "Glass for glazing”.

v. Putty: Putty shall be an elastic glazing compound suitable for interior and exterior glazing shall conform to the requirements of the B.S. 544:"Linseed Oil Futty for use wooden frames”. The putty for metal frames shall be of a type specially prepared for use with metal frames conforming to the applicable requirements of the British standard or of a make approved by the Engineer Incharge.

vi. Hardware: Hardware shall be of best quality and make of approved manufacture. Their size, material and number shall be as detailed in the tender documents.

vii. Paint: Paint shall be as specified under section "Painter and Decorator". Wood preservative shall conform to B.S 1202.

Clause 3: SAMPLES:

All samples of the material used for the work under this section shall be approved by the Engineer Incharge and same type of material shall be used throughout the work. If the Engineer Incharge desires to get the material tested, this will be got done by the contractor at his own cost. from a laboratory approved by the Engineer Incharge.

Clause 4: WORKMANSHIP:

1. General: Wood work shall be neatly and truly finished to exact dimensions and details as shown of the drawing. The plans and scantling shall be sawn slightly in excess of the actual measurements required to allow for planning. All joints shall be simple tenon and mortise joints unless otherwise specified or directed by the Engineer Incharge. All mortise and tenon joints shall fit truly and fully Holes of correct size shall be drilled before inserting screw. Driving in or starting in screws with a hammer shall not be allowed. All screws shall be dipped in oil before being inserted in the wood. If

after the wood work has been erected, any undue shrinkage or bad workmanship is discovered, the contractor shall forthwith amend the same without any extra charge. All portions of timber, built into or against or close to masonry or concrete or used as sub frame for ceiling or paneling shall be treated with wood preservative as application which is included in the rate.

2. Door and window Frame: Door and window frames shall conform to the applicable requirements of B.S. 1567 “Wood door frames and linings”. The door frame shall be of best quality Burmah Teak or of the timber specified and shall be fabricated of the exact sizes and dimensions as provided in the drawings stops shall be of best quality timber of same specifications as that for frames. Where the door frames are not to have any sills the vertical length shall be embedded in the floor at least 2" deep. No extra payment will be made for this extra length. Frames shall have a rebate to receive the leave, the rebate shall be ½” deep and of width equal to the thickness of the leaf. All the frames shall be ready before the work reaches sill level so that they can be built in as the work proceeds. The frames shall be secured to be brick work or concrete by holdfasts or expanded bolts as shown on the drawings or as approved by the Engineer Incharge. The number and sized of Hold fasts or Expanded Blots to each frame shall be 6' x 3/16” or as indicated on the drawings on in table elsewhere in these specifications.

3. Paneled Doors & Windows: Paneled doors and windows shall conform to the applicable requirements of B:S.459 “Paneled and glazed wood doors” part 1 and B.S Code of Practice 151 Part 1

   Doors shall be of well-seasoned Burmah Teak wood or of the timber specified. Panel shall be of teak veneer plywood or glass as indicated in the drawings. Stile, rails and beads shall be of well-seasoned best quality burmah teak wood. Glazing beads shall be removable on the exterior.

4. Flush Doors: Flush doors shall conform to the applicable requirements of B.S. 459 “Flush Wood Door" and B.S code of practice 151 “Door Windows” Part-I.

   Door leaf shall be of well seasoned solid core of block board, cross grained and face veneered with 5 ply 6mm thick plywood of teak on each side. Frame shall be of teak or other wood as indicated on drawings and schedule of quantities. Door leaf shall have well-seasoned hard wood edge strips of quality and design shown of drawings on all four edges of leaf. Overall thickness of door leaf shall be as shown on the drawings.

   Face veneers shall be free of saps and mineral streaks, Knots and irregularities and shall be suitable for paint and polish finish. Veneer construction shall provide for equal stress on both side to ensure absence of warp: Flush doors shall be screwed to the frames by means of hinges which shall be counter sunk in the wooden frames.

5. Toilet doors: Toilet doors shall be veneered flush type doors as specified in 'd’ above fixed as shown on the drawings & schedule of quantities. <u>These doors shall be supplied and fixed with bolt hinges, occupancy & slide bar latches, coat hook, rubber tipped bumper and paper holder in toilet compartment. Cost of the hardware shall</u>

be included in the rate for doors.

6. Glazing: The sized of glass indicates on the drawings are approximate only, and the actual sized required shall be determined by measuring the frames to receive the glass. All glass shall be factory labeled on each pane and the lable shall not be removed until finally approved by the Engineer Incharge. One field coat of paint shall be applied to windows before glazing. Glazing will fixed with best quality gold size putty, teak wood or steel moulding as directed at as shown of drawings or give in · schedule of quantities. Glass if specified to be fixed with putty shall be bedded in

   putty and face puttied. Saches shall be fixed so that they can not move until putty or glazing compound has set:

   Glass shall be protected against damage. After inspection, any label and paint sports shall be removed from the glass and glass shall be washed clean. Damaged or broken glass shall be removed and replaced before acceptance at no expense to the owner.

7. Glass handrail: It shall consist of flowered or patterned plate glass attached to aluminum mullions fixed to floor as shown on drawings.

8. Teak wood Paneling: "Teak shall be of well seasoned best quality wood. Unless otherwise indicated the planks shall be ¾" thick. Deodar wood battens shall be screwed to hard wood plugs fixed in slab or wall creosoted before fixing as specified above. Teak wood panels shall be screwed to the deodar wood under frame as shown on the drawings. Teak wood beading shall be provided wherever indicated on the drawings.

9. Wood Handrails: It shall be of well-seasoned wood. Handrail shall be accurately shaped to detail and made in as long sections as possible. Joints shall be fastened from the underside with concealed hand rail bolts. All changes in direction shall be have smooth even curve cut out of one solid piece. Handrails shall be secured to metal railing with ¼"x 2" screws at 12" centers. It shall be French polished or wax polished as under section " Painter Decorator".

   Hardware shall be chromium plated brass of local manufacture as detailed in table elsewhere in these specifications. It shall be carefully fitted and securely attached. Upon completion of the work all locks and hinges shall be oiled and all hardware shall be demonstrated to work freely in the presence of owner's representative. Keys shall be fitted into their locks and upon acceptance of the work, Key shall be tagged and delivered to the Owner.

   i. Sub-Frames for coiling, wall paneling wooden floors and cat-walks:-

   They shall be of best quality deodar wood of the size and fixed as shown in drawings. Enough of nails, screws etc. shall be used and shall be specified under materials. The timber members shall be given two coats of wood preventative before they are installed in position.

Clause 6: PAINTING:

All wooden doors, windows, paneling's etc. shall be painted, polished as specified in schedule of quantities. The specification for painting, polishing etc, shall be as given

under "Painter and Decorator”

Clause 7: MEASUREMENT AND RATE:

The measurement of wood work will be the net area, after fixing, no allowance being made for waste, overlaps, rebates or the like. All doors except toilet doors shall be paid by measuring the area of clear opening in brick work or concrete. Toilet doors will be measured for the net area of door including frame without gap at bottom. The rate for all the items under this section shall cover the cost of furnishing all materials hardware, Labour, scaffolding creosoting Paintings or polishing as specified under "Painter & decorator" and appliances at site and performing all operations in connection with the installation of carpentry, joinery, glazing, hardware in accordance with drawings, finish schedule and as specified above.

SECTION-7 STEEL ERECTOR AND METAL WORKER

Clause 1: MATERIAL:

i. Steel Channels: shall conform to the applicable requirements of B.S. 15 'Structural steel'.

ii. Steel Plates: shall conform the requirements of B.S. 14449 "Steel Plates sheet and Strips".

iii. Steel Sections" shall conform to B.S 15 "Structural Steel".

iv. Glazing: shall be as specified under " Joiner Carpenter and Glazier".

v. Wrought Iron: shall conform to, B.S 51 "Wrought iron for General Engineering puroses" and B.S. 858 Best Yorkshire wrought iron" as suited for the purpose.

vi. Metal Casement Windows and Casement Doors shall conform to B.S. 990 metal Casement windows and casement doors for domestic building or as shown of the drawings and specified in the schedule of Quantities in case of locally rolled window sections.

Clause 2:- SAMPLES:

All samples of the material used for the work under this section shall be approved by the Engineer Incharge and same type of material shall be used throughout the work in progress. If the Engineer Incharge desires to get the material tested, this will be got done by the contractor at his own cost from a Laboratory approved by the Engineer Incharge.

Clause 3:- WORKMANSHIP FOR DOORS- WINDOWS AND SHUTTERS:

a. Steel Casement Windows: ventilators and doors.

Shall be medium universal sections. Vent and frame section shall have a depth front in back of 1-5/16" and steel thickness of 3/16" conforming to requirements of B.S.990 "Metal Casement windows and Casement Doors". All sections shall be hot rolled low carbon steel shapes and shall be solid one piece sections with flanges rolled integral. Flanges forming the weathering contracts shall provide not less than ¼" contact at both inside and outside points of closures. If some sections are shown on drawings as composite section made by welding steel channels, angles and plates, these would only be accepted in lieu of one piece section under these specifications. In case it is specifically mentioned in the schedule of Quantities, that locally rolled section are to be used in manufacture of steel casement windows and doors, then the 'E' section used shall be 1" deep and 1/8" thick unless shown other wise on the drawings.

Corners of frames and vents shall be mitered, solid welded and shall be finished flush and smooth on surface that will be exposed after installations

Where composition steel sections are shown on drawings, weld shall be continuous but shall be staggered in welding in wider to avoid warping and twisting of members. Completed members shall be in one length without splices and shall be straightener so that they shall not be more than 1/16 inch from a straight plane in either direction for the full length of member. The standard of workmanship acceptable under the specification shall be equal to "Crittal Standard". Care shall be taken in handling doors,

windows etc. During transportation and at job site. These plumb, shall be stored under cover. These shall be installed only by skilled mechanics, set plumb, level, in alignment and properly braced to prevent distortion. These shall be erected in position as the building progress using proper holdfasts as shown on drawing or counter sunk bolts and screws as dictated by site requirements. Hinges for windows shall be of steel or malleable iron with non ferrous bushings or washers. Two hinges per ventilator shall be furnished, except that for ventilator exceeding 5'-6' in height three hinges shall be furnished. Ten inch long solid Bronze or moulded heavy gauge galvanized iron peg slays, one for each ventilator shall be provided. These shall be of manufacturer's standard design and shall be secured to windows with corrosion resisting bolts. All single locking handle in accordance with manufacturers, standard or as approved by the Engineer Incharge shall be furnished point locking device with steel connecting rode shall be furnished. Locking handles shall be smooth finished solid bronze. They shall be attached securely to the windows with brass or other corrosion resisting screws. Metal glazing bead if shown on the drawings shall be galvanized of minimum 18 SWG and in the size details shown on the drawings or shall be of a standard detail of manufacturer approved by the Engineer Incharge.

Three hinges of steel or malleable iron with non-ferrous bushings or washers shall be provided for each leaf of the doors. Approved type locks and other fittings shall be installed as shown on the drawings, bill of quantities and as specified elsewhere in these specifications. After installation, doors, windows and ventilators shall be protected from construction hazards that will interfere with their operation or damage their appearance or finish. They shall be cleaned on inside and outside of all mortar, plaster, paint or other foreign matter to present a neat appearance. Hardware and moving parts shall be lubricated.

b. Glazing:

Shall be as specified under section "joiner Carpenter and Glazier".

All doors, windows and ventilators shall be painted with three coats of approved paint.

c. Rolling Shutters:

Shall be of solid front made of 22 gauge G.I. sheet strips G.I. sheet strips shall be 22/1" wide and shall be machine moulded so that covers and silts represent neat appearance. The rolling rails and frames shall be of approved make and secured firmly to concrete by means of bolts and nuts. The rolled top portion shall be encased in 1/8" thick sheet casting. When installed the shutters shall be capable of easy operation and provided with approved type of handles, eyes from padlock etc. They will be painted two coats of anti-rut and three coats of approved paint.

Clause 4:- RAILING

a. Ornamental Wrought Iron/S.S Railing:

Wrought iron shall be well formed to the shape and size shown, with sharp lines, curves, angles and smooth surfaces. Balustrades shall be formed with all turns and casing and shall be secured to the top rail at intervals of 12 inches on centers or as directed. Balustrades shall be set parallel to each other to horizontal lines and to the rake of the

stairs. The balusters and posts shall be set into concrete stairs, curbs and slabs etc. As directed. The space between the balusters or posts and the opening shall be solidly filled with molten lead, trimmed flush with the finished floor, stair or curb. Wall handrails shall be supported on rail brackets, securely fastened to back plates. All ferrous surfaces, except surfaces embedded in and / or in contact with concrete or terrazzo, shall be shop primed.

b. Wooden handrails:

It shall be of Burmah teak wood and as specified under Section " Joiner' Carpenter and Glazier"

c. Aluminum Doors and Windows:

Aluminum doors- windows, ventilators, fixed frames etc. shall be provided by the manufacturer. Any breakage or damage and other defects of any sort should be rectified before erection. All the metal frames as said hereinabove are to be erected after the masonry or concrete work is complete with the hold fast etc. bending for its full depth and grounding etc, complete. Contractor should ensure direction of these metal frames to be in plumb line, level and at their required position as shown on the drawings. It will involve all cutting, painting and other operations complete.

Clause 5- STRUCTURAL STEEL WORK:

All finished steel shall be well and clearly rolled to the dimension's sections and weight as specified or required.

All members shall be sound and free from cracks, scales, blisters, surface flaws, laminations cracked edges and defects of every sort. If any structural member is later discovered to be having any such defects, the Contractor shall at his own cost replace such components to conform to the Specifications. The structure shall be shop fabricated in convenient number or pieces and these pieces shall be reunited, welded, riveted or field bolted to the architectural details and structural drawings at site prior to their being lifted in position. In no case will be Assembly be allowed on the false work.

All points will be out truly square as to butt properly together and will be made only in such positions as shown on drawings or as directed by the Engineer Incharge. All field work of fabrication riveting, bolting and welding would be in the best workmanlike manner. During erection, bending, straining or pounding with sledges shall not be allowed.

The structure will be given two coats of suitable lead primer. All connections meeting surface of structural steel work shall be covered with sufficient red lead to ensure that it squeezes out all round in riveting or bolting up. The structure will be fixed as shown on drawings by bolts and bed plates embedded in masonry or concrete. The shoe plates shall be fabricated along with and the slotted sides shall be correctly, aligned and fixed according to the position shown on the drawings. Finally it shall be coated with two coats of approved rust proof paint as pacified under 'Painter'.

Clause 6- MEASUREMENTS & RATES:

Payment for doors, windows and ventilators will be made by measuring clear opening

area in brickwork or concrete. Railing with balustrades and with brackets shall be measured by the length of handrail. Structural steel work will be measured and paid for by weight.

Rates for all the items under this section shall cover the cost of furnishing all the materials, labour, scaffolding and appliances, at site and performing all operations in connection with their installation in accordance with instructions of the Engineer-in-Charge. It is particularly mentioned that the rate for doors and windows etc. shall include supplying, fixing, including glazing, fittings such as locks, peg stays, handles etc. as specified and indicated on drawings and Bills of quantities, and painting etc as described above Bills of quantities, and painting as described above complete. It shall also include painting and polishing of balustrades and railings as described.

The rate for structural steel shall include supply, fabrication, fixing the same in position as desired and painting 2 coats of primer and 2 coats of rust proof paint as specified under "Painter & Decorator".

SECTION-8 ALUMINUM DOORS AND WINDOWS

1. **Scope:-**

The work covered under this section comprises the following:-

i. Fixing in position of aluminum doors, windows and ventilators complete with metal ware, fixtures as shown in the drawings, and specified in these specifications and the Bill of quantities. Aluminum doors and windows must be heavy section deluxe type of approved manufacturer,

ii. Fixing plate glass of specified quality to doors, windows and ventilators.

2. **Materials:-**

i. The aluminum sections for windows shall be extruded from aluminum alloy of composition H-9 (99% AI.0.5% Si) of approved equivalent. The aluminum plates and sheets shall be of the same composition. For door it shall be alloys He-9 WD (Box-section) or approved equivalent.

Mongery, fittings and locks shall be of bronze, staircase steel and aluminum as shown on the drawings or as approved by the Engineer-in-Charge,

ii. **Glazing:-**

The clear plate glass shall conform to latest revised BS 952, special type of glazing such as toughened glaze, armors plate glass, tinted glass, wired glass and colored glass shall be of approved make and of sizes specified on the drawings and specifications.

The supplier shall indicate to the Manufacturers that latest and approved method of jointing employed in the manufacture of high class work viz. Mechanical jointing, reinforced with concealed welding shall be used in the manufacture of doors and windows. The workmanship of Metal doors and windows shall conform to applicable provision of B.S.990: 1970

iii. **Fixing:-**

The fixing of doors and windows to concrete openings shall be carried out in approved method as indicated in the drawings or as directed by the Engineer-in-charge, Provision of necessary groove or rebate and holdfasts in the concrete shall be made in the formwork and no holding or drilling shall be allowed in the exposed concrete finishes. These shall be executed in position after the building structure is completed and by using proper holdfasts as shown on drawing or counter sunk bolts and screws as per site requirements.

3. **Glazing:-**

The word of fixing glazing to doors, windows, ventilators shall carried out with the type and special quality of glass specified for each door and windows and as indicated in the drawings or as directed by the Engineer-in-charge.

Plate glass shall be best quality transparent / polished glass conforming to applicable requirements of latest revised B.S.952, “Glass for Glazing” and as specified herein under:

Clear plate glass 5mm thick or as specified. The sizes of glass indicated on the drawings are approximate only, and the actual sizes required shall be determined by measuring the frames to receive the glass. All glass shall be factory labeled on each pave and the same shall not be

removed until finally approved by the Engineer-in-charge: Glass will be fixed with best quality mastic compound of approved make suitable for thick glass, tinted glass or wired glass or with special bead or molding as directed or as shown on the drawings or specified in the Bill of Quantities. Special rubber lining and weather proof brush joints for sliding surfaces shall be provided where indicated. Glass shall be protected against damage. After inspection, labels and paint spots shall be removed from the glass and glass shall be washed clear. Damaged or broken glass shall be removed and replaced before acceptance.

4. **Measurements and Payments:-**

Payment for doors, windows and skylights partition walls will be made by measuring clear opening area in the brick or concrete in Sq.ft. Rates for all items under this section shall cover the cost of furnishing all the materials, labors, scaffoldings and appliances at site and performing all operations, in connection with their installation in accordance with instructions of the Engineer. It is particularly mentioned that the rates for fixing doors and windows etc. shall be included foreign of all iron mongory fittings such as locks, peg keys, handles, push plates, kicking plates, door closers etc as specified and indicated on the drawings, including fixing of glazing glasses.

SECTION-9 PLASTER WORK

Clause-1: CONFORMITY WITH BRITISH STANDARD CODE OF PRATICE:

Except as otherwise specified plaster work shall be in conformity with B.S.C.P. 211 "Internal Plastering" and C.P 221 "External rendered finishes" as applicable to work shown on drawings and specified.

Clause-2: MATERIALS:

i Cement shall be as specified under section "Concreter".

ii Sand shall be of medium coarse grain obtained from local approved quarries subject to the approval of the Engineer-in-charge. It shall conform with B.S 1198.

iii Water shall be as specified under section "Concreter".

iv Lime shall be as specified under section "painter & Decorator".

Clause-3: SAMPLES:

All the material used for plastering, shall be approved by the Engineer-in-charge and same type of material will be used throughout the work in progress. If the Engineer-in-charge desires to get the material tested, this will be got done by the contractor at his own cost from a Laboratory approved by the Engineer-in-charge.

Clause-4: WORKMANSHIP:

a. <u>Preparation of Surface:</u>

The surfaces on which plaster is to be applied should be in case of brick walls properly racked and wetted before application of plaster. In case of concrete face to receive plaster, all surfaces shall be properly roughened by dragging wire brushes while the concrete surface is still raw or by backing if the surface had hardened so that 40% of the surface is roughened to approval. This is included in the rate of plaster.

b. <u>Plastering:</u>

Plasterwork shall be done in conformity with B.S Code of Practice 211 "Internal plastering" & B.S. Code of Practice 221 "External rendered finishes". All tools should be cleaned by scrapping and washing at the end of each day's work, or before use. Metal tools should be cleaned after each operation. All tolls should be examined and thoroughly cleaned before plastering is begun. All corners and arises shall be rounded if required while plastering and the rate of plaster is inclusive of this proviso. The plaster shall be laid to a true and plumb surface and tested frequently with plumb bob and straight edge not less than 10 feet in length. All. horizontal lines and surface shall be tested with a level and all jambs and corners with a plumb bob as the work proceeds. All moldings shall be worked true to template and shall be neat, clean, level and parallel or truly plumb as the case may be.

Wherever a thickness of more than ¾" is specified it shall be applied in 2 coats' rendering coat and final coat. The rendering coat shall be carried to full length of walls or natural breaking points. No vertical or horizontal joints, which show themselves, shall be permissible. The rendering coat shall be roughened with waving lines drawn by wire brushes when wet to provide bond for final coat. The final coat shall be applied only after the rendering coat has been properly cured. Before final coat is applied the rendering

coat shall be properly wetted. The final coat shall then be applied and finished with wooden floats to present smooth and uniform surface. All putlog holes shall be filled up in advance of the plastering as the scaffolding is being taken down. The plaster is kept wet for 10 days after completion.

c. Patching:

Plaster containing cracks, blisters, pits, etc or discoloration will not be acceptable. Such plaster shall be removed and replaced with plaster conforming to this specification and approved by Engineer-in-charge. Patching of defective work will be permitted only when approved by the Engineer-in-charge and such patching shall match existing work in texture and color with expanded metal on brick or concrete junctions.

d. Floating Coat:-

Floating coat of neat cement if specified in schedule of quantities shall be carried out as follow:

Immediately after the surface has been plastered and while the plaster is still green a floating coat of neat cement shall be applied on it and the surface rubbed smooth with steel trowel. No trowel marks are to be left of on the surface. If trowel. 1 marks are visible after the surface has been finished it may required to be dismantled and redone. No payment for the work dismantled will be made.

Clause-5: MEASUREMENT AND RATES:

Plaster shall be measured as product of length and height of walls over which it is laid. One side deduction of opening will be made if plastered both faces of the wall and no deduction of opening will be made when plaster is one side of the wall. No addition for plaster of jambs and soffits of opening will be made and paid for. Plaster on ceiling etc. will be measured as total area covered. The rates will include:-

i. Plastering surfaces and corners with the mortars specified including cost of labor and materials.

ii. Preparing, cleaning and watering the surface to be plastered.

iii. Water and protecting the plaster after completion.

iv. Provision, erection and removal of scaffolding and tools and plants like special floats, levels and plumb bob.

SECTION-10 PAINTER & DECORATOR

Clause-1: CONFORMITY WITH BRITISH STANDARD CODE OF PRATICE:

Excepts as otherwise specified, all painting shall be applied in conformity with C.P 231 "painting" as applicable to the work.

Clause-2: COLOUR SCHEDULE:

The colour and surface finish required for various materials shall be as approved by the Engineer-in-charge.

Clause-3: MATERIALS:-

i. Paint shall be high grade enameled products of known manufacturers and when approved, shall be delivered on the work in original unbroken packages bearing the makers name and brands Materials shall conform to the applicable British Standard Specifications and shall be used in accordance with the manufacturer's printed directions.
ii. Colour pigments shall be pure, non-fading pigments finely ground; at least 99 percent passing a 325-mesh sieve.
iii. Emulsion paints Robialac Berger Plastic emulsion or I.C.I. Dulex emulsion paints will be used.
iv. Distemper shall I.C.I. Vinyl emulsion or Berger Nu emulsion. It shall consist of lime proof pigment. Distemper shall be delivered on the work in original unbroken packages bearing the maker's name and brands. :
v. Snowcem Durocem weather shield shall be obtained sealed tin. It shall be delivered on the work in original and sealed packages bearing the maker's name etc.
vi. Lime shall conform to B.S. 890: “Building Lime"
vii. Wax Polish shall be mansion/ wax polish or of equal brand approved by the Engineer-in charge.
viii. Spirit Polish shall have shellac of approved quality.

Clause-4: SAMPLES AND DETAILED APPLICATION SPECIFICATIONS:

Certified data, test samples and detailed application specifications shall be submitted for approval of the Engineer-in-charge. The detailed application specifications, when approved by the Engineer-in-charge will become the approved application specifications. Any subsequent changes in the approved application specifications shall be approved by the Engineer-in-charge. Samples of the paints used for the work shall be approved by the Engineer-in-charge, and same type of Paint shall be used throughout the work in progress. If the Engineer-in-charge desires to get the material tested this will got done by the Contractor at his own cost from a Laboratory approved by the Engineer-in-charge.

Clause-5: WORKMANSHIP:

1. Preparation of Surfaces:

i. All surfaces shall be clean, dry and free from dust at the time any coating is applied. Base coats applied shall be in good condition and surfaces well covered by touching up any base or abraded sports. Base coats shall be rubbed smooth.
ii. Woodwork shall be smooth and free from raised grain or other surface imperfections.

Knots and pitch streaks shall be shellacked before painting. Nail holes, cracks and similar blemished shall be neatly puttied and sanded smooth after priming and before body or finish coats are applied.

iii. Concrete surface shall be cleaned until free of all loose and foreign material and excess mortar, using metal scrappers and wire brush if necessary. Grease and Oil spots shall be removed by suitable cleaning compound and then rinsed with clean water to remove all traces of alkali. Efflorescence (alkali salts) shall be removed by washing with 5 to 10 percent solution of muriatic acid, allowed to stand until effervescing ceases, then rinsing with clean water to remove all traces of acid. Interior concrete surfaces shall be washed with zinc sulfate solution. Treated surfaces shall be allowed to dry thoroughly before any distemper or snowcem Durocem is applied.

iv. Plasterwork shall dry a minimum of 60 days prior to distempering or snowceming. Surfaces shall be clean and free from grit, loose plaster and surface irregularities before distemper or snowcem Durocem is applied.

v. Ferrous surfaces that have not been shop coated shall be cleaned and painted with protective paint conforming to British Standard Specifications B.S 2521/4 followed by finish coats. Shop coated metal shall be protected from corrosion before and after installation by treating corroded areas immediately upon detection.

Abraded spots on shop-coated surfaces shall be wire-brushed and touched up with the same material as the shop coat

2. Touching up:

At the completion of other branches of work all finished work shall be touched up and restored where damaged or defaced and the entire work left free from blemishes at no expense to Owner.

3. Painting of Timber & Metal Surfaces:

Paint and finishing materials shall be free from skins, lumps or any foreign matter when used. Pigments and fillers shall be kept well stirred while being applied. Work that is not to be finished under this section shall be protected against spatters; stains or soiling and each type of finish shall be protected against similar defacement by other finish and shall be left clean.

Each coat of paint shall be evenly worked out and allowed to become dry before any subsequent coat is applied or rubbing done and shall be of different tint from that of preceding coat.

Finish coats shall be of the exact shades selected. The finished work shall be free from rungs and sags, defective coverage and clogging of lines or angles. Edges of Paint adjoining other materials or other closures shall be full and clean cut without over lapping. Adjacent and uncoated areas, and installations shall be protected by the use of drop clothes or other approved precautionary measures. Spray painting shall not be employed for joinery work, which must be done by brush to obtain proper penetration into joints and cracks etc. When the painting is applied by brushes, the following instructions shall be followed:-

i. Brushes shall be in conformity to the applicable requirements of B.S 2992.
ii. All coats shall be spread as evenly and smoothly as possible means of crossing and laying off, the later in the direction of the grain in case of wood work. The priming coat must be mixed thinner than subsequent coats to assist penetration on adhesion. The final coat shall be very carefully crossed and laid off so that brush marks are not visible.
iii. Brush shall be reversed at frequent intervals so that wears down evenly. A free easy stroke shall be cultivated. Short and Jerky strokes results in uneven surface. Stretching the stroke too far shall not be allowed to avoid an uneven surface.

4. <u>Distempering Concrete Surfaces:</u>

Before work of distempering is commenced the plaster surface must be sized with a priming coat consisting of size to which a little distemper has been added and which should be applied hot. Distemper shall be applied quickly and boldly with large flat brushes of approved make. The brush is to be dipped and stroked cross-wise on the surface and then immediately stroked up and down, this process shall be considered to form one coat of distemper. The distemper shall be mixed in the manner specified by the makers and each coat shall be inspected and passed by the Engineer-in-charge, before the next coat is applied. The finished surface shall be carefully stippled to remove any brush marks. The contractor shall carry out as many coats as are specified in the schedule of quantities in accordance with the above specifications. The number of coats specified should be enough for producing a uniform smooth finish and if the finish, produced by the contractor is not upto the requirements, he will be required to apply as many more coats as maybe required to produce the required uniform finish, and no payment for the extra coats applied to produce the desired uniformity will be made.

5. <u>Snowcem Durocem Painting/ weather Shield to Plastered Surfaces:</u>

No further material shall be added to the snowcem Durocem obtained in sealed tins. Where different colors may have to be mixed together to provide the desired shade, the quantities of the various colors required to give the desired shade shall be intimated by the Engineer-in-charge and this shall be mixed together by weighing (not by measuring volumes of different colors). The weighed quantities of snowcem Duroçem should be mixed as well as possible by means of trowel on a clean mixing board after which it must be sieved through 202-mesh sieve. This preparation i.e, mixing with trowel and sieving may have to be repeated two or more time until when a trowel is passed over the surface of separate colour remains.

Snowcem Durocem must be mixed in two stages. First by adding a little quantity of water to form a paste and the further quantity of water being added to get a mix of liquid consistency. In the first stage one measure of water to two similar measures of snowcem durocem be thoroughly stirred and allowed to stand for 10 minutes. A further measure of water should then be added and thoroughly mixed. This mix must be applied within one hour of the mixing. The lid of the container must be tightly replaced immediately after the material has been taken out from it. Immediately before the first coat is applied the surface shall be thoroughly saturated with water.

The snowcem Durocem should be applied with brushes conforming to British Standard 2992. The first coat of snowcem durocem shall be well scrubbed and allowed to set for a period of 24 hours after which period the next coat shall be applied. The number of coats shall be as specified in Schedule of quantities but if the contractor has not produced finished surface to the satisfaction of the engineer-in-charge he shall do more coats till a uniform smooth surface is obtained at no expense to the Owner.

6. White Washing:-

The unslaked lime shall be placed in a large vessel full of water and shall be thoroughly mixed and stirred up with pole or rod until the mixture attains the consistency of thin cream. It will then be strained through a clean and coarse cloth and two chattacks of gum boiled with six chattack of rice added for each cubic foot of lime. The white wash then being applied in the same manner as distemper. When completed the wash shall not crack or come off on finger when rubbed.

7. Colour Wash:-

It is prepared and applied in the same manner as white wash except that sufficient coloring matter shall be added to give the desired tint on drying. When completed, the surface must have uniform colour free from blotches. If the finished surface is not to the expectation of the Engineer-in-charge, Contractor shall apply extra coat at his own cost till such finish is attained.

8. Wax Polishing:-

Before wax polishing is started, the surface shall be knotted, stopped and sand papered till a complete smooth and even surface is obtained. The wax polish must be applied strictly in accordance with the specifications and instructions issued by the manufactures. It shall contain the minimum of coloring material to keep the finished surface as light as possible. The polish should be rubbed into wood until all the pores have disappeared.

9. Spirit Polishing:-

It shall be prepared by dissolving 3 ounces of shellac-dissolved cold in a pint of spirit and shall be applied on the prepared surface as specified under Wax Polishing.

Clause-6: CLEANING:-

All cloths and cotton waste that might constitute a fire hazard shall be placed in closed metal containers or destroyed at the end of each day: Upon completion of the work, all staging, scaffolding and containers shall be removed from the site or destroyed in an approved manner. Paint spots, oil or stains upon adjacent surfaces shall be removed. The contractor shall be responsible for the protection arrangement of other work while painting or distempering work is in progress.

Clause-7: MEASUREMENT AND RATES:-

The work of painting wood and metal surfaces, and wax polishing shall not be measured separately but shall be paid with the item over which it is done.

Distempering, snowcem Durocem painting, white washing or colour washing on concrete and plastered surfaces shall be paid on the basis of area over which they are done and this area shall be obtained by multiplying length or breadth by height less the area of

openings for doors and windows in the surface. This reduction for area of openings shall be one time the area of the opening if the surface is treated on both sides and no deduction of opening if surface is treated on one side only. No addition shall be made for jambs, soffits, sills, etc. where two different type of finishes are specified for two sides of the surface half the opening area shall be deducted from each type of finish. The rate for all the items under this section or paid with items in other sections shall cover the cost of furnishing all materials labor, scaffoldings and appliances at site and performing all operations in accordance with instructions of the Engineer-in-charge, Schedule of Quantities and as specified above.

SECTION – 11
ROOFER AND WATER PROOFER

Clause-1: CONFORMITY TO BRITISH STANDARDS:-

Except when otherwise specified, the work of waterproofing shall be in accordance with B.S.C.P. 14.101 "Bitumen felt roof covering" and B.S.C.P 1.201. "Mastic Asphalt roofing" as applicable to the work specified.

Clause-2: MATERIALS:

Materials shall, where applicable, be delivered to the Site in manufacturers, original unopened containers with manufacturers label having grade and name clearly marked thereon. A copy of printed instructions of manufacturers shall be supplied to the Engineer-in-charge.

1. **Cement:-** Cement shall conform to specifications as described under section "Concreter"
2. **Additive for Foam Concrete:-** Additive for Foam Concrete shall be of manufacture approved by the Engineer-in-charge.
3. **Water:-** Water shall be as described under-section "Concreter".
4. **Bitumen:-** Bitumen shall conform to B.S. 1310 having a softening point not lower than 160 F
5. **Bitumen Felt:-** Bitumen felt shall conform to B.S.747 saturated water proofing bitumen felt type 1A.
6. **Sand:-** Sand shall be as specified under section "Plaster".
7. **Gravel:-** Gravel shall be ¼" to 5/8" size and shall be dry, free of dust soil or foreign matter. All shall pass through a ¾"screen.

Clause-3: SAMPLES:-

All the materials used for the items under this section shall be approved by the Engineer- in-charge and same type of material shall be used throughout the work in progress. If the Engineer-in-charge desire to get the material tested, this will got be done by the Contractor at his own cost from a laboratory approved by the Engineer-in-charge.

Clause-4: WORKMANSHIP:-

1. **Membrane Water Proofing**

i. <u>General:-</u>

Waterproofing shall be three to five ply as specified in schedule of Quantities. Waterproofing shall not be applied when the ambient temperature is 40 degree or below. Water proofing on roofs floor slabs in toilet rooms, shower rooms and similar spaces above grade shall be turned up around the walls or partitions enclosing such areas for a height of at least 6 inches, unless other height is indicated. Where pipes, conduit, or other items pass through the areas to be water proofed, and where floor drains occur in such areas, the waterproofing shall not be installed until after the flashing around of these items has been installed. The flashing thus installed shall be lapped and mopped into the plies of the water proofing in a

manner that will ensure a waterproof joint.

ii. Preparation of Surfaces:-

Surfaces to receive waterproofing shall be clean and dry. All holes, joints, and creaks shall be pointed flush with mortar and high spots shall be cut of ground smooth. Before waterproofing is applied, the surfaces to be covered shall be carefully swept to remove all dust and foreign matter, and shall be inspected and approved.

iii. Application of Water Proofing:-

Bituminous felts shall be applied in a solid mop coat of bitumen using not less than 30 pounds of bitumen for each 100 sq.ft. of surface. The bitumen shall be heated to flow freely, but the pitch shall not be heated above 350 degree F. The felt shall be applied in the hot bitumen free from wrinkles or buckles. The entire top surface shall then be given final mopping, using not less than 70 pounds of pitch for each 100 sq.ft of surface.

iv. Reinforcement of membrane at Corners:-

Additional membranes shall be used for reinforcing at angles and at other plies where the waterproof membrane may be subjected to unusual strain. Reinforcing shall consist of two additional plies of saturated felt of fabric and alternate mopping of bitumen. Saturated bitumen felt type 1A, as per BS 747 shall be applied in the hot, bitumen free from wrinkles and buckles. Membrane shall be applied by the shingle method with each strip lapped over the preceding strip 22 inches of 24-1/2 inches, for 32 inches wide or 36 inches wide material, respectively. Turn down on walls as indicated on drawings.

v. Protective Coating:-

If a protective coat of cement concrete is specified in Schedule of quantities, it shall be of the thickness specified in Schedule of Quantities and shall be composed of 1 part cement and 2 parts sand 4 parts aggregate mixed in the manner as specified under section "CONCRETOR" and laid in panels of 6'x6" as specified under "PAVIOR". The joints shall be filled with bitumen.

2. **Foam Concrete:-**

It shall be prepared by using additive for foam concrete of approved manufacture that will ensure the weight of concrete per Cft as specified in bill of quantities. It shall be prepared, and laid to slope as per printed instructions of manufactures:

Clause-5: MEASUREMENT & RATES:

The work of water proof felts shall be measured by multiplying the clear length by width or height of the surface. The rate shall be for the finished works for the number of felt layers specified. No allowance of waste, overlaps, turn up around the walls partitions etc. shall be made. Foam concrete shall be measured in cubic feet, and flooring shall be measured in Square feet. Rates for all the items under this section shall cover the cost of furnishing all the materials, labour scaffolding and appliances at site and all operations performed in accordance with the instruction of engineer-in-charge, Schedule of

Quantities and as specified above.

SECTION - 12
EXPANSION JOINTS

Clause-1: MATERIALS:-

1. **Copper:-** Copper shall conform to the requirements of B.S 1569 “Copper sheet and strip for roofing” and shall be of 24 gauges.
2. **Wood:-** Wood shall be best quality Shisham wood to be used as hard wood conforming to the requirements of Timber as specified under section "Carpenter, Joiner and Glazier”.
3. Lead flashing shall conform to the requirements of B.S 1178 “milled lead sheet and strip for building purposes” and shall be 1/8" thick.
4. P.V.C. water Stops shall be 5-1/2” wide with central bulb and shall be equal to Hydrofoil water stops manufactured by Expedites.
5. Filler shall be non-extruding of approved type and an approved flexible bitumastic seal of the normal joints type, which will retain its plastic properties at a temperature of 120 degree F.
6. Aluminum sheet shall conform to the requirements of B.S 170 Wrought aluminum and Aluminum alloys, sheet and strip and shall be 1/8" thick.
7. Angles, Bolts, Nuts, & Nails" etc. Shall be as specified under “Carpenter joiner and Glazier” & Steel Frector & metal worker”.

Clause-2: SAMPLES:-

All the material used for all the items under this section shall be approved by the Engineer-in-charge and same type of material will be used throughout the work in progress. If the Engineer-in-charge desires to get the material tested, this will be got done by the contractor at his own cost from a laboratory approved by the Engineer-in-charge.

Clause-3 WORKMANSHIP:-

The work shall be carried out strictly as detailed in drawings and specifications and in a workmanlike manner. Special care shall be taken during construction that joints are not clogged by debris and mortar droppings during construction. Before joints are filled by the non-extruding bit mastic fill, the joints should be certified by the Engineer-in-charge to be free of all debris otherwise contractor would be required to redo the joints at his own cost. Patentee's method of welding P.V.C. water stops should be used and no other method would be accepted. Tee or L junctions of P.V.C. water stops should be made as per printed instructions of the manufacturer.

Clause-4: MEASUREMENT & RATES:-

Expansion joints shall be measured by their length. Rates for all the items under this section shall cover the cost of furnishing of all the materials, labour, scaffoldings and appliances at site and performing all operations in connection with laying all the items under this section in accordance with the instructions of the Engineer-in-charge, Schedule of Quantities and as specified above.

SECTION-13
RAIN WATER DISPOSAL

Clause-1: SCOPE:-

The work covered under this section consist of furnishing all labour, supplies, equipment and materials, and in performing the portion of the work covering "Rain Water Disposal" in accordance with the drawings and specifications.

Clause-2 PRELIMINARY:

The materials used and workmanship applied in the works shall be of highest quality and grade and conform to the British Standard specifications and the code of practice and as per directions of the owner or his authorized representative and details laid out in the drawings, specifications and the bill of quantities. All materials, fittings, fixtures etc. shall be invariably got approved before hand by the Consultants. No substitute will be accepted in place of the specific types of brands provided for in the Schedule of quantities enclosed with the tender.

Clause-3: MATERIAL:

1. **Cast Iron rain water pipes and fittings:-**

   i. Cast Iron pipes and fittings 6" dia and 4" dia shall be of medium grade and the pipes shall weight not less than 73 lbs/6ft and 48 lbs / 6ft length respectively. These shall be perfectly straight and have uniform diameters and thickness. The pipes and fittings shall be coated with bitumen form inside and outside and costing shall be hard enough not to flow at a temperature of 145 degree F.

   ii. Hangers Supports and Anchors:- These shall be of suitable and approved design and shall be so arranged as to allow the pipes to lift in case of settlement of the buildings. These shall be painted with bit mastic enamel paint, to the paint of the same quality as per the pipes supported by these hangers.

2. **Jointing and packing Material:**

   i. Lead shall be sound, free from inclusion, and shall be of the best quality available in the market.

   ii. Packing Material:- The packing shall be of pure jute, hemp of hempen spun yarn.

Clause-4: WORKMANSHIP:

1. **Examination of Pipes:**

   Each pipe shall be carefully examined before being laid and defective, of damaged pipes shall not be used. The pipes shall be gently hammered with a wooden mallet to judge their soundness before these are laid or fixed.

   Any hollow sound showing cracks shall be rejected and removed immediately from site.

2. **Preparation of Pipes:**

   The pipes before being laid shall be brushed throughout to remove any soil or stones that may have accumulated therein, the inside of the sockets and outside of spigot being

carefully cleaned.

3. **Laying and Jointing of Pipes:**

i. General requirements:- The interior of the pipes shall be thoroughly cleaned off foreign matter before being fixed into position and shall be kept clean during laying operation by plugging or other approved method.

Any section of the pipe found to be defective before and after fixing, shall be replaced with sound pipe without additional expense to the owner. Fittings at bends in the pipeline shall be firmly anchored against the vertical face of the duct and ceiling of the basement in order to prevent the fittings form being blown off the lines when under pressure.

ii. **Jointing :-** Cast iron rain water pipe and fitting joints shall be made with lead jute, and hempen spun yarn. The packing material shall be well packed into the annular space so as to prevent the entrance of lead into the pipe. The remainder of the space shall be filled with molten lead that is hot enough to show a rapid change in colour when stirred scum shall be removed before pouring. The lead shall be caulked to form a tight joint without over-straining the bell and shall have a minimum depth of one inch after caulking. Horizontal pipes shall have a min slope of 1/16 inch per foot.

Clause-5: TESTING OF PIPELINES:

All piping shall be tested by the Contractor and approved by the owner or his authorized representative before acceptance.

i. Water Test:- The entire rain water drainage system shall have all necessary opening plugged to permit the entire system to be filled with water to the level of the highest stack. The system shall hold this water for 30 minutes without showing any drop.

ii. Air Test:- If tests are made with air, a pressure of not less than 5 lbs/sq. in shall be applied with a force pump and main tainted at least 15 minutes without leakage. A mercury column gauge shall be used in making the air test.

Clause-6: MEASUREMENTS AND RATES:-

All pipe work including fittings shall be measured in running feet of finished length. No wastage of length consumed in joints shall be measured and paid for the rate for pipe work shall include the following in addition to the provision mentioned in the bill of quantities and specifications.

i. Cost of providing, fixing in position and jointing of pipe work.

ii. Making and repairing any cuts, holes and chases in walls, floors slabs etc. where necessary.

iii. Providing and fixing hangers, supports clamps or anchors for installing pipes to floors, walls and ceiling.

iv. Painting exposed to view pipe work and supports as specified.

v. Testing and clearing of pipelines. All fixtures and fittings shall be measured in

number or in Rft etc. as specified in the bill of quantities.

SECTION-14
GENERAL SPECIFICATIONS FOR DRAINAGE AND SANITARY INSTALLATION

PLUMBING WORK

A. DRAINAGE:-

1. **Scope:-**

   The work covered by this section of the specification consist of furnishing all paints, labour, equipment, appliances and materials and in performing all operations in connection with plumbing, including all items of special equipment specified herein, complete in strict accordance with the specifications, Engineer Incharge instructions and the applicable drawings and subject to the terms and conditions of the Contract.

2. **General:-**

   General arrangement of plumbing has been indicated on the drawings. Sketches and drawings sufficient to indicate proposed departure due to actual field conditions of other causes shall submitted by the contractor to the engineer-in-charge. Contractor shall carefully examine all the drawings and specifications and shall be responsible for proper fitting of all materials and equipment in each building as indicated, without substantial alterations. All work shall be so installed as to be readily accessible for operations, maintenance and repair.

3. **Gradient:-**

   Every line of grain shall be accurately laid and shall be perfectly true to line and gradient from point to point in both vertical and horizontal planes. Every main drain shall be true for manholes and any change in direction shall take place inside drain shall be true from manholes and any change in direction shall take place inside the manhole by the use of curved main channels, similar change in internal diameter in drain shall be made in manholes by the use of tapers or bends in the line of drain outside the manhole. The following gradient shall be followed normally when not shown in the drawings otherwise actual gradient as shown on the drawing will be followed.

   4” (I.D.) Pipe, a gradient of at least 1 in 40
   6” (I.D.) Pipe, a gradient of at least 1 in 60
   9” (I.D.) Pipe, a gradient of at least 1 in 90
   12” (I.D.) Pipe, a gradient of at least 1 in 120.

   Where the falls are restricted and where the drains are well designed and well laid in accordance with the clauses herein stated 1 in 30 may be used with 4” dia pipes.

4. **Bends and Junctions:-**

   No bends are to be permitted in drainpipe nuns except at manhole. All junctions shall be oblique and the contained angle to be not less than 45 degrees. Access to be normally provided at bends in drain all cases where the change of direction angle is more than 45 degrees and elsewhere if there is a rise of flow being impeded The use of quarter bends (1/4 90 degree) shall be avoided except at the foot of vent pipe at manhole.

5. **Excavation:-**

   i. **<u>TRANCHING OUT GROUND FOR PIPES AND TURNELLING:-</u>**

Excavation for drains in open trenches shall be to the line and depth indicated in the drawings or as directed by the Engineer-in-charge. Great care shall be taken to excavate only to such depths as are correct and required for regular gradient grips for joints as required shall be formed. Trench bottom shall be of sufficient width to allow adequate working space for the pipe jointer, and should in no case be less than 15 inches or the external diameter of the pipe plus 12 inches. Trenches are to be kept clear of water including all necessary pumping or dewatering as required. No extra payment shall be made for any dewatering and pumping for keeping the trenches dry.

In event of excavations being made deeper than necessary by contractor then shall be filled proper level with cement concrete 1:4:8 at the contractor's expense. If the ground is very loose, ramming shall not be allowed and in that case cement concrete 1:4:8 is to be laid before the pipes are laid in position. Before the drainpipes are laid 6" sand filling will be done where the structure of soil is not uniform earth, but pebbles. Uniform bearing materials will be from manhole to manhole.

ii. PLANKING, STRUTTING AND STAGING:-

Excavated materials shall not be deposited within 1'-6" of the edge of the trench and the sides of the excavation shall be supported by planning and strutting if necessary to ensure a proper and speedy excavation of the work no extra cost will be paid.

iii. BLASTING:-

All pipes, ducts, cables mains and other services exposed by the excavations shall be effectively protected from damage and in and approved manner as directed by the Engineer-in-charge.

6. Drain Laying:-

Each pipe shall be carefully examined on arrival; any defective pipes shall not be used and shall be segregated and marked in a conspicuous manner. Minor damage to the protective coating of iron drain pipes shall be made good by pointing with hotter. F major defects in the coating exist, the pipes shall be returned to the works for recoating Drains shall be laid in straight lines and to even gradients as shown upon the drawing or as directed. Great care shall be exercised in setting out and determining the levels of the pipes and the Contractor shall provide suitable instrument and shall setup and maintain all sights fails bending rods and bench marks etc. necessary for the purpose. All drains shall be kept free from earth, debris, superfluous cements and other obstructions during laying and until completion. Pipes shall be laid with the sockets loading up hill and shall rest on solid and even foundations for the full length of the Harrell, socket holes shall be formed in the foundations short as practicable but sufficiently deep to allow the pipe joiner enough room to work right round the pipes.

7. Concrete Cast in SITU for Manholes and Chambers:-

The specified sizes of the manholes and chambers refer to inside dimensions. Execute the cast situ work manhole and chambers with cement concrete 1:2:4 on 6 inches to 9 inches cement concrete foundation. All situ work shall be plastered with cement plaster 1:4, ¾" thick and finished smooth with cement neru.

8. Laying and Jointing R.C.C. Drain Pipes:-

The pipes used will be R.C.C. pipes class “B” made" to Director General, Supply and Development specification No.G/W/W/58 unless specified otherwise. The jointing will be done first with spun yarn rope (dipped in standard mexphalte composition for jointing) filled in the grooves provided in the pipes and the pies are pressed together. The rope will be 1-1/2 times the dia of the groove so as to be sufficient to fill the groove in the other pipe also and make allowance for tightening up. After this, the collar will be slipped on the joint and cement joint with 1:1 mortar will be made between the pipes and the collar and finished off on the outside at an angle of 45 proper tools and plants such as jacks and templates will be used for pressing together pipes and making cement joints. In other respects, the R.C.C. pipes will be treated as the S.W. pipes.

9. Testing of Rains:-

Every drain shall be tested in sections between manholes by water test; in which they are to be filled with water to a feet head of water above the top of the highest pipe.

If it is found that certain pipe joints are leaking the water must be run of and joints recalled with cement and the drain got retested.

All expenses of testing drains, including the provision of the necessary pumps, temporary bulk heads, funnels, stoppers and other things and also the supply of water for testing are to be borne by the Contractor and shall be included in his rate for laying drains.

10. **Refilling:-**

Refilling in trenches for drains, shall be commenced after the drains have been tested and approved and the concrete have been approved. The refilling on the top and round the drain shall be done with great care and in such manner as will obtain the greatest amount of compactness and solidity possible. For that purpose the earth shall greatest amount of compactness and solidity possible. For that purpose the earth shall be laid in regular layers not more than 9" thick upto the surfaces and also watered and rammed at each layer.

11. Shallow Manholes type "A":-

For depth upto 3-1/2 ft (measured from the top of C.I. cover to the invert level of the drain), the internal dimensions of the manholes shall be 2ft x 1-11/2 ft. These shall be built on abed of 1:4:8 cement concrete 3'-10" by 3'-4". All walls shall be 9" thick in C.C. block masonry 1:3:6 in cement mortar 1:3. The internal surface shall be provided with 1/2" thick cement plaster (1:3) all round and fitted with C.I. cover and frames 16" dia inside, held in position by forced cement concrete slab 4” thick and 3’-10” long by 3'-4” wide.

12. Manholes Type "B":-

The internal size of plain manholes shall be 3' long add 2'-6" wide. These shall be built on a bed of 1:4:8 cement concrete 4’-10”c9’-4"x6" thick. All walls shall be 8" thick in C.C. block masonry 1:3:6 in cement mortar 1:3. The internal surface shall be provided with ½" thick cement plaster (1:3) all round and fitted with 1'-6" dia cast iron cover in R.C.C. slab at the top. The cement concrete in R.C.C. slab to be of 1:2:4 ratio (1 cement, 2 coarse sand, 4 of ¾" stone aggregate). The foot irons in manholes shall be cast iron of approved design, quality and ¾" tick, in cross section. These shall be fixed l' apart vertically and staggered laterally and shall not protrude more than 4-1/2" from wall. Benching in all types of manholes shall be of fine cement concrete and of dimensions as specified in the detailed drawings.

Type Design “A” Maximum depth 3'-6"

Type Design “B” For depth over 3 - 6” to 7-11”

Manholes for greater depth and larger size of sewers will have to design as required in each case. The size and weight of the cast iron cover and frame as required in each type design are specified as follows.

Type Design “A” 16” dia clear opening 1 Cwt 1 Qr.

Type Design “B” 18” dia clear opening 1 Cwt 1 Qr.

If the manhole happens to be on road, the clear opening of the frame shall be 20" dia and the weight 4 Cwts. The inside meeting of the cover and frame shall be of slanting design and the clear opening mentioned above shall be the inside dia of the frame at the bottom. The cover and frame shall be given a thick coat for anticorrosive bit mastic points. The cover shall be provided with strong lifting arrangements. The cover and frame shall conform the standard drawings and will be supplied to contractor.

13. House Drainage:-

Material and size: House drains shall be 4” dia: UPVC pipes as mentioned under sub-head Drainage but if they pass through any covered area or under floor, they shall be 4” dia. Upvc pipe conforming to Sch-40 UPVC pipe shall be of the plain spigot and socket type jointed with spun-yard packing in half the depth of the jointing space and the rest of the space filled in with lead and properly caulked and finished. After test, the pipe shall be encased in cement concrete (1:2:4) 6" thick all round.

14. Gully Traps:-

These shall have traps of suitable size and design according to the situation and fixed as described below. Each gully trap shall have one UPVC. grating 6”x6” and one C.I. cover and frame 12”x12”. Gully's are to be fixed on concrete foundation 1” square and not less than 4" thick. After fixing and testing galleys and branch drain and after permission has been given to concrete round the pipe the level with top edge of gully. A curb in cement concrete 1:3:6 block or brick masonry in 1:3 cement mortar about 3” high from the ground level is then to be built round top edge of gully rendered in ½”cement plaster, (1:3) in such a manner that surface water may not allowed to enter the gully.

Gully traps will be of cast iron or of cement concrete as stated in the Schedule of items of work:

NOTE:- House drains and each rain connection from W.C. pan or gully shall also be put to water test and treated in this respect similar to the pipe work in the main drains as described in Sub-head Drainage".

15. C.C. Gully Trap:-

The C.C. Gully Trap must be new, perfectly sound, and free from cracks, or standard nominal diameter and other dimension. Each gully trap shall have one C.I. grating 6" x 6” and one water tight C.I cover with grame (12”x12” inside dimensions) with machined seating faces. The excavation for gully traps shall be done true to dimensions and levels as indicated on plans or as directed by the Engineer-in-charge.

The gully trap shall be fixed on cement concrete foundations 2’--3” square and not less than 4" thick. The mix. For the concrete will 1:2:4:

After fixing and testing gully trap and branch drain a block masonry chamber 12" x12" (inside) laid in cement mortar 1:6 shall be built with 4" thick wall round the gully trap from the top of the bed concrete upto ground level. The space between the chamber walls and the trap shall be filled in with cement concrete of the specifications of bed concrete. The upper portion of the chamber i.e, above the top level of the trap shall be plastered inside with cement mortar 1;3 finished with floating coat of neat cement. The corners and bottom of the chamber shall be rounded off so as to slope towards the grating.

C.I. cover with frame 12"x 12" (inside) with machined seating faces shall then be fixed on the top of the block masonry with cement concrete 1:2:4 and entered smooth. The finished top of cover shall be left about 1-1/2" above the adjoining ground level so as to exclude the surface water from entering the gully trap.

16. Septic Tank:-

i. EXCAVATION:-

As specified in "Excavation" of civil contract. The rate shall be inclusive of back filling and disposal of surplus earth outside the municipal limits of the city or cantonment.

ii. CEMENT CONCRETE:-

As specified in section of concrete of Civil contract.

iii. BRICK MASONRY:-

As specified in section of concrete brick masonry of civil contract.

iv. REINFORCEMENT:

As specified in section of R.C.C. of Civil contract.

17. S.W. Drainage:-

Stone ware pipe drains: All drain shall be laid on a bed of 6' thick concrete projection on each side of the drain to the full width of the trench. The drains with their invert level at four feet depth and less from ground level shall also be covered with 6" thick concrete above crown of pipe and filled in a manner that it extends level to the top of pipe. The width at bottom of trenches ready for concrete shall be:-

For 4" S.W. Drain	1' - 9"
For 6" S.W. Drain	2' - 0"

For drain of larger sizes, working space on either side of the pipes, should not be less than 9" as measured from the outside of the pipe to the side of the trench and the whole width shall be concreted and treated in other respects as above.

NOTE:- Concrete for pipe work will be raised in trenches in soft and reclaimed soils only and where it is considered necessary as cover on top of the pipe for extra protection on a-c of traffic on it or other reasons, in the case, order of the Engineer-in-charge shall be obtained for its use and rate settled.

Stone ware Pipes:

All pipes shall be new and perfectly sound free from fire cracks and imperfection of glaze, cylindrical, straight, in length of stand and nominal diameter, length and depth of socket and barrel made of hard burnt stone ware of droll gray colour and thoughts salt glazed inside and

outside. Pipes made to British Standard Specification of equivalent will be accepted for use on works.

Laying and jointing of Stone ware Pipes:

The pipes shall be carefully laid to the level and gradient shown on the plans and section and great care shall be taken to prevent any sand, etc from entering the pipes. The pipe between manholes shall be laid truly in straight line without vertical or horizontal undulations.

The pipe will be laid "Socket up" the gradient. The bocley of the pipe must for its entire length rest on an even bed and places must be excavated in the trench to receive the socket of the pipe. In each joint, spun yarn socked in cement wash shall be passed around the joint and inserted in it by means of a calking tool are more yarn shall be added and well rammed home.

The object of the yarn is to center the spigot of one pipe, within the socket of the other and to prevent the cement mortar of the joint penetrating into the pipe.

Cement mortar (l cement 2 sand) shall be slight by mast end and must be on account, be soft or sloppy and shall be carefully inserted by hand into the joint, when the cement has been inserted it shall be added on until the space of the caulked cement. The joint shall be finished off neatly outside the joint it to be removed and to guard against any projection sacks or gunny bag shall be drawn past each joint after completion. The Contractor shall be responsible that each section of pipe is properly cleaned on completion of the work.

B. SANITARY FITTINGS

1. European type W.C. Pan:-

The W.C pan shall be readily flushed of “wash down type” and shall bear the mark of the manufacture. The pan shall be that of ICL/ Karam Ceramics. The closet shall be white vitreous China.

The seat with lid shall be of black Bacolite of approved make and size complete with rubber buffers and one-piece hinge. The flushing of W.C. pan shall be done by 3 gallons "low level” flushing cistern of white vitreous china with internal fittings, brackets and C.P. brass flushing handily, which shall be fixed at low level and connected to the W.C. pan by means of 1-1/2" diameter white enameled porcelain bend, and rubber inlet connection. There shall be ¾” over flow with mosquito proof coupling with 0.05 diameter per formations.

The pan shall be fixed with gunmetal screws to rough wood plugs let into the floor:

OR

The flushing of W.C: pan shall be done by the Medus valve brass chromium plated, with lever handle regulating valve on inlet and loose wall flange two piece flush pipe with clamp and buffers (Shanks No.49683 Catalogue "H” Page 84).

2. Orisa Type W.C. Pan:

The W.C pan shall be that of ICL/ Karam Ceramics type or in white vitreous China having not less than 19” clear opening between flushing rims. It shall have the flushing horn in the front unless it is not possible to accommodate, cistern to suit this design. The pan shall bear the mark of the manufacturing firm. It shall have integral foot treads and trap 2” vent arm shall be provided, if required.

The W.C Pan shall be sunk in floor sloped towards the pan in a workmanlike manner, care being taken not to damage the pan in the process of fixing. If damages in anyway, it shall be replaced. It shall be fixed on proper cement concrete bare taking care that the cushion is uniform and even without having any hollows between the cement base and the pan. The flushing of the W.C. pan shall be done by pull and let go flushing cistern. The cistern shall be of best case iron mosquito proof of 3 gallons' capacity together with cover, level chain and pull, ball valve with copper float and necessary unions etc for connection with inlet and outlet pipes and overflow. It shall be of valve-less siphon type.

3. Lavatory Basins:

The basins shall be of White vitreous China of slotted pattern. The size of the basin shall be 25" x 28" or 22" x 16". The basins shall be of Swat Ceramics. Each lavatory basin shall be provided with a pair of ½" C.P. Pillar taps 1-1/4" C.P brass waste of standard pattern with C.P. brass waste of standard pattern with C.P brass chain and 1-1/4" rubber plug and 1-1/4" diameter C.P. brass bottle trap and union which shall be connected to 1-1/4" dia waste pipe. The fitting shall be of foreign make and will be approved before use.

The basin shall be supported on a pair of C. I cantilever bracket etc embedded or fixed in position by means of wooden cleats and screws. The brackets shall be painted to the required shade. The waste pipe shall discharge on a floor trap leading to gully trap or direct into gully trap or shall be connected to a waste pipe stack. C.P. brass bottle trap and union may not be provided where surface drain or a floor trap is placed directly under lavatory basin and waste discharged into it vertically.

4. European Type Stall Urinals:-

These shall be of white glazed fireclay and of the following dimensions, unless specified otherwise.

Height from treads to top or Division = 4'-0"

Width Center to Center of Division = 2'-0"

The urinal range shall be provided with automatic flush cistern in white glazed fireclay of the capacity according to the No. of stalls to be flushed. The flush pipe and spreader shall be off C.P. brass. The trap shall be proper C.I. urinal trap 2-1/2" to 3" dia depending on the number of stalls in the range and approved by the Engineer-in-charge. For approved pattern of trap, see twyfords general catalogue page 255 No.354 and No.407.

5. Lipped Urinal:-

The urinal shall be flat back-lipped front basin 17" high of glazed earthen ware of shanks or its approved equivalent make. It shall be fixed in the position by using wooden plugs embedded in wall and screws of proper size each urinal shall be connected to 1-1/2" dia waste paper which shall discharge into a channel or a floor trap.

6. Stainless Steel Sink:-

The sink shall be Stainless steel sheet (size 40" x 20") of the 18/18 quality (18% chromium and 8% Nickel). The bowl is die drawn from one-piece stainless steel with outlet placed in the corner. It shall be provided with overflow arrangement. The drain channel of which is placed on the outside in the corner. The outlet in the bowl shall have 1-1/4" N.P. screwed ripple. The sink shall

be provided with 1-1/2" N.P brass waste standard pattern with C.P. brass chain and 1-1/2" rubber plug and 1-1/2" dia waste pipe. The fitting shall be of foreign make. The sink shall be supported on C.I. cantilever brackets embedded or fixed into positively by means of a wooden cleat and screws. The brackets shall be painted to the required shade as specified under flushing cistern.

7. Towel Rail:-

Rail shall be of C.P. brass with two C.P. brass brackets. The size of the rail shall be 30" x ¾". The brackets shall be fixed by means of C.P. brass screws to wooden cleats firmly in the wall.

8. Mirror:-

The mirror shall be of Belgium make glass with leveled edge. The size of the mirror shall be 24" x 18" unless other size is asked for. It shall be mounted on hardboard ground and shall be fixed in position by means of 4 C.P brass screws and washers over rubber washers and wooden plugs firmly embedded in the wall C.P. brass clumps with C.P. brass screws may be an alternative method for fixing.

9. Glass Shelf:-

The shelf shall be of glass of best quality with edges rounded off. The size of the shelf shall be 25" x 5" x 14" unless otherwise specified. The shelf shall have C.P. brass brackets, which shall be fixed with C.P brass screws to wooden plugs firmly embedded in the wall.

10. Toilet Paper Holder:-

The paper holder shall be C.P. brass screws shall be used for fixing (similar to 'Twyfor' design No.1108).

11. Plastic Connection:

½" dia plastic pipes shall be provided and fitted completed with two unions and heavy C.P: brass stopcock.

12. Floor Traps:

The traps shall be of self-cleaning provided with 1" puff pipe, where the length of the waste is more than 5'-0" or the floor trap is connected to a waste sack with bends. The other specifications for these shall be the same as those for H.C.I. soil, waste and vent pipes and fittings (the traps for the urinal connection shall have dome shaped C.P. brass grating with hinge).

13. Bib Cocks:-

The Bibcock shall be brass, acres down patterns of the size and quality as specified. "Waste Not/ Waste" type may also be used if required. All the fittings shall be approved by the Engineer-in-charge before they are installed.

SECTION-15 SOIL WASTE, VENT PIPE AND FITTINGS

1. Heavy Cast Iron Pipes and Fittings:

All soil waste and vent pipes and fittings shall conform to the British Standard Specification for 'Heavy Quality'. They shall be free from creaks and other flaws. The interior of pipes and fit tings shall be clean and smooth and painted inside and outside interior of pipes and fittings shall be clean and smooth and painted inside and outside while, hot with D. August Smith's solution or their approved anticorrosive paint. The access door fittings shall be of proper design so as not to form any cavities in which filth may accumulate. Doors shall be provided with 1/3" rubber insertion packing and when closed and bolted they shall be watertight. The pipes and fittings shall be fixed to walls by curing proper holder-bat clamps. The pipes shall be fixed perfectly vertical or in a line as directed. The spigot and shall about the shoulder of the socket and leave no angular space in between. All soil pipes shall be carried up above the roof and shall have H.C.I. terminal guard. Connections between main pipe and branch pipes shall be made by using proper branches and bends with across doors for cleaning.

All H.C.I pipes and fittings including joints will be tested by a smoke test and left in working order after completion. The smoke test shall be carried out stated under:

Smoke shall be pumped into the drains at the lowest and from a smoke machine, which consists of a blow and burner. The materials usually burnt are greasy cotton waste, which is easily detectable by sight as well as by smell if leaking at any point of the drain.

All the exposed H.C.I pipes and fittings shall be painted with enamel paint to match the colour of the surroundings.

The surface of the pipes and fittings to be painted shall be painted thoroughly. Redoxide of other primer shall be painted and allowed to dry. The finishing shall be done by painting 2 or more coats with paint of any shade matching with surroundings.

Lead Caulked Joints:

The annular space of between the socket an spigot will be first well packed in with spun- yarn leaving 1" from the lip of the socket for the lead. The joint may be leaded using proper leading rings or if they are not available by wrapping a ring of bump rope covered with clay round the lead shall be poured in (for pipes with sockets facing upwards ½" high small clay bund on the socket edge may be used).

The lead shall be rendered thoroughly fluid and each joint filled in one pouring. Before caulking the project in lead shall be removed by flat chisels and the joints caulked round with proper caulking tools and hammer of 2 to 3-pound weight in such a manner as to make the joint quite sound. After being well set joint is to be left flush, neat and even with the socket

2. PVC Pipes:

Soil waste and ventilation pipes shall be general-purpose poly vinyl chloride rigid pipes class "B" as manufactured by "AROKEY CHEMICAL INDUSTRIES LTD" Karachi or equivalent. Pipes shall be jointed using "Shavyl" solvent cement 70 or equal material with tapered sleeve fittings for permanent jointing. All horizontal runs of pipe work shall be supported at interval of 5 feet maximum; these supports shall comprise 1-1/2" M.S angles cast into the walls. All vertical stacks shall be supported in the walls with clamp anchors as required to relive joint stresses. Each pipe

shall be carefully examined on arrival and the site of work, any defective pipes shall not be used and shall be segregated and marked in a conspicuous manner. Minor damage shall be made good by cutting the damaged portion. If major defect exist the pipes shall be removed from the site of works. All pipes shall be laid in straight lines and to the proper gradient as shown on the drawings or as directed. All pipes shall be kept free form earth debris, superfluous cement and other obstructions and shall be laid in clean condition. All horizontal pipes shall be run at a uniform grade of mot less than 1/8" inch per foot of fall in the direction of flow except as noted. All vent pipes shall extend through the roof. It is emphatically stressed that all pipes shall be recessed in the floor and the walls and no pipe shall be exposed to the naked eye except where not possible to do so. Where ever the pipes pass through the floor or the wall sleeves should be provided of the required sizes. Cutting of opening and installation of sleeves through walls and surface shall be done in neat workman like manner. Opening shall be cut only as large as required for the installation of sleeves. Sleeves shall be made of 16 gauge M.S sheet and shall extend upto-finished surfaces.

3. G.I. Pipes fittings:-

The pipes shall be of galvanished wrought iron and of water quality manufactured by a firm of repute. The fittings may either be of galvanished wrought iron or galvanished malleable iron. Pipes and fittings shall conform to the specifications of the British Tube Makers Association for water pipe. Pipes and fitting of which the gal vanishing has been damaged shall not use.

The approximate weight of the pipes shall be as under:-

Bore in pipe in inches	Approx; weight in lbs per ft.
½'	0.89
¾"	1.19
1"	1.77
1-1/4"	2.40
1-1/2"	2.87
2"	3.86
2-1/2"	6.04
3"	8.00
4"	11.43
6"	13.00

Where pipes have to be cut or rethreaded ends shall be carefully filed out so that no obstruction to bore is offered. In jointing the pipes, the inside of the socket and screwed end of the pipe shall be rubbed over with white leave and free turns of hemp yarn wrapped round the screwed end of the which shall then be screwed home in the socket with pipe wrench. Care must be taken that all pipes and fittings are kept at all times free from dust and dirt during faxing.

For internal work, G.I. pipes and fitting inside and outside the walls shall be fixed visible. (not in chase) by means of standard pattern holed-bat clamps peeing the pipe ½" clear of the wall everywhere. When it is imperative to fix the pipe in front of house or in any conspicuous position,

where it looks unsightly, chasing may be adopted.

All pipes and fittings shall be fixed truly vertical and horizontal unless unavoidable.

For external work G.I. pipes and fittings shall be laid in trenches. The width of the trench shall be minimum width required for the working. The pipe laid under ground shall not be less than 2-1/2" feet from the ground level. They shall be surrounded on all sides by 6" river sand. The work of excavation and refilling shall be done in accordance with the general specifications for earthwork.

Al internal G.I. pipes and fittings shall be painted with white or any other tint, as specified. G.C.I pipes and fittings.

All pipes and fittings in external work shall be painted with anti-corrosive paint as directed by the engineer-in-charge. All G.I. pipes and fittings may be tested to a pressure of 100 lbs.per sq inch to ensure that pipes have proper threads and that proper materials (such as white lead and hemp) have been used in jointing. All leaky joints must be made leak-proof by tightening or redoing.

4. **Brass and Gun Metal Water fittings:**

The fittings shall be of strong construction and good finish as made in Pakistan to the Standard specification noted against each category or by any reputable maker to these specifications:

a.	Brass bib Cocks (tape) Stop Cocks	B.S.S. No. 1010
b.	Gun Metal Full way valves Ball Valves	D.S. &D.P.S.D/C-WW/57
c.	Ball Valves	B.S.S. 1212.

Pillar taps of ½" dia for fixing to lavatory basins and ¾"dia to baths shall be of reputable manufacturer as approved by the Engineer-in-charge.

In case of hot water supply, the pipe and special shall be under sub-head "D". The pipes and fitting shall be wrapped round with asbestos rope and then covering the same with Hessian clothe smearing properly with asbestos paste.

5. U.G. Hydrant:

The underground Hydrant shall be of spinal type with body, cover gland, cap on spindle of best iron, Nuts and valve (with leather face) valve sea, plug and outlet piece, which can be screwed to suit any brigade thread, of gun metal. Cap of the outlet piece screwed valve by a W.I. chain, may in either G.I. or gun metal screwed or unscrewed as desired. The spindle shall be of forged bronze (size 2-1/2" dia).

i. Stand pipe Hydrant shall be of valve type. The valves shall be of brass or gun metal with adopter and union of hosepipe. The valve shall have a brass or C.I. Wheel.

ii. The hosepipe shall be made of rubber-lined nylon, with brass coupling, brass nozzle; the length of pipe shall be as per schedule.

6. Sluice valve:

The sluice valves are to be of cast iron and to have gunmetal faces and removable seats and are also to have machine cut gunmetal screws. They are to work easily and smoothly under all conditions and are to be watertight when close a head of 200 ft. or such greater head as may be

specified.

7. Overhead Water Storage Tank:

The overhead water storage tanks shall be built by the Civil Contractor in waterproof reinforced cement concrete as per design and drawings. The Contractor shall have to supply and fix the following to the O.H. Tank during the progress of the construction of the same. Paddlo will be used at the rate of 5 lbs per bag of cement by weight in the concrete and inside plaster for waterproofing

i. **Outlet:-**

G.I. pipe as required with sluice valve and a G.I Tees arm of the required length. This pipe shall be carried 2 inside the internal side of the wall of the Reservoir. The “Tees" Arm will accommodate the number of outgoing branches of the required size and branch sluice sub- valves. The branches will not be allowed to be connected to the reservoir directly.

ii. **Cleaning out Pipe:-** Cleaning put pipe shall be G.I. pipe of required diameter with sluice draining valve. It shall be fitted as flush with the bottom of Reservoir as for as possible and carried down to the ground level as required and instructed by the Engineer-in-charge.

iii. Inlet Pipe:-

Inlet pipe shall be G.I. pipe according to the size of the pump or as indicated in the drawings and shall be fitted 12 inches below the ceiling of the R.C.C. roof of the Reservoir.

iv. Overflow:-

Overflow shall be G.I. pipe of the size greater than the inlet pipe and shall be brought down to the ground level and connected to special manhole chamber. The overflow pipe shall be fitted 8.inches below the ceiling of the R.C.C top slab of reservoir. An overflow warning pipe of higher dia than the outlet pipe shall be installed as directed by the Engineer-in-charge and or as indicated on the drawings.

SECTION-16 TECHNICAL SPECIFICATIONS FOR ELECTRIFICATIONS WORKS

01. GENERAL INSTRUCTIONS

1. The Contractor must have an electrical Contractors license issued by the Electrical Inspector, Government of Pakistan of the concerned region. The electrical work shall be carried out only by licensed workmen authorized by the Government of Pakistan to under take such work under the

   Provision of Indian Electricity Act and Rules as adopted in Pakistan as per latest I.E.E Regulations and under the direct supervision of whole a time Electrical Engineer and Electrical Supervisor having a certificate of competency for the type of work under execution. The Electrical Contractor license number, name of the Electrical Engineer, Electrical Supervisor, Electrician wiremen and particulars of their license shall be intimated in writing to the owner before the commencement of work.
2. The installation generally shall be carried out in conformity with the Pakistan Electricity Act and Rules and the latest addition of I.E.E. Wiring Rules:
3. Any special requirements of the local Electric Supply Company shall be complied with and all work shall be carried out to the entire satisfaction of the Bank or his representative, as provided in the contract.
4. The Contractor shall set out the work himself and if any discrepancy is found he shall report the matter to the Engineer Incharge and shall act as directed. If any defective or modify set out is carried out by the Contractor on his own will, he shall rectify or make it good at his own cost.
5. The Contractor shall keep pace with the work of Civil Contractor and site Engineer will be kept informed about the progress of his work so that there is no hindrance in the progress of work at site.
6. The Contractor shall take care not damage the structure during execution of the work in such as case repair and make good all losses at his own cost.
7. The Contractor will be responsible for arranging electric service connection for the premises. The pursuance of the case so as to ensure expeditious action by the supply authorities will also be the responsibility of the contractors. All expenses in this respect except service connection charges payable to Electric Supply Authorities shall be borne by the Contractors.
8. The rates against all the items of schedule of quantities shall include all labour and material specified.
9. **Temporary Electric Connection:** During the construction period and upto the time the building is handed over to the bank temporary electric connection shall be obtained by the contractor himself through local electric supply agency for the use of tools, equipment and lighting etc. at site. The contractor shall be responsible for this service, its maintenance repairs, payment to supply company and its operations at his own cost, starting two weeks after notification of award of the contract and as desired by the Bank.

02. MATERIAL REQUIREMENTS:

1. **General:** The Contractor shall furnish all material at site confirming fully to the specifications given herein and to the accepted standards as laid down by B.S.S, I.E.E. and P.S.I. It is not the intent of these specifications to include all details of design and Construction of various material and equipment to be supplied under this tender. The requirements of Material and equipment's shall in all respect conform to the high standard of engineering design, workmanship, performance and function as herein specified and shall fully meet the quality level and ruggedness requirements of the specifications. All material and equipment which has to be supplied and installed by the Contractor shall be passed / approved by the Engineer Incharge at site even if the same is exactly in accordance with the catalogue number or types specified in the schedule of Quantities of this tender.

2. **Wires & Cables:** Cables used for conduit wiring shall be single core with standed copper conductors except where specified P.V.C. insulated, tested to B.S2004-1961 and a manufactured by M/s. Pakistan cables Ltd. The cables shall be 250/440 volt grade unless other wise specified in Schedule of Quantities.

3. **Earth Continuity Conductors:**Earth continuity conductor and earthling leads shall be hard drawn solid bare copper wires except where specified. It shall be soft drawn standed cooper wires. The necessary fixing accessories, earthling clips, sweating sockets etc. shall be provided.

4. **Conduit & Conduits Accessories**

   i. **Conduit**

   All conduit supplied by the Contractor shall be in standard Manu factured lengths of heavy gauge steel (16.S.W.G) threaded type conduit, protected by the black enamel coating, manufactured and tested according to B.S 31 - 1940.

   The coating shall be of heavy enamel which should not flake or crack from bending or rough usage. Before applying black enamel coating on the outside surface of conduit a Red, oxide anti-rust coating shall be given on the cleaned surface of conduit. The black enamel coating shall also be given on the surface of conduit after fixing it in position. Each length of conduit shall be furnished with threaded ends and threaded coupling screwed on one end. The minimum size of conduit used shall be 3/4" dia unless a smaller size is specified situation which would be light gauge. Test certificates for tests carried out by the manufacturer according to B.S: 31 – 1940 shall be produced when ever required.

   ii. **Flexible Conduit:**

   Flexible conduit shall be furnished and installed where required or indicated on the drawing for connection to equipment subject to vibration or where necessary for convenient dismantling. Flexible conduit for use in dry locations shall be of spiral inter locked steel strip construction, zinc coated. The water tight flexible metal conduit shall be of spiral interlocked steel strip construction zinc coated, with rubber or plastic covering over all.

   iii. **Conduit Accessories:**

   The Contractor shall furnish all conduit fittings bushing elbows, coupling, bends inspection box, junction box, solid plugs, check nuts etc. as required for a complete conduit installation and they shall be of a quality equal to that specified for conduit above. Soft metal bushes shall be used at conduit termination ends in order to save wire insulation for damage, due

to sharp conduit edges, in cable pulling operations. The bush shall be of standard design and shall have soft rounded edges.

Fittings for use with flexible conduit shall adopt the conduit to threaded connections and shall have an inside diameter not less than the corresponding size of the heavy gauge steel conduit.

Junction boxes shall be 4 inch square minimum 1 ½" or 2 1/8" deep as required to accommodate the numbers of conductors or taps necessary. The junction boxes shall be made of 16 S.W.G sheet steel, with protective paint, coating inside and outside the box. All cost iron outlet boxes a light or fan point on ceiling or wall shall be large enough to accommodate the number of wires necessary. These shall not be less than 2" diameter round type and 1 5/8" deep except that smaller boxes may be used where required by the particular light fitting to be installed. The sizes of junction boxes and outlet boxes are given as minimum only. The actual sizes required at different situations shall be determined by the Contractor, keeping in view the case of operation at installation and maintenance.

All such outlet boxes shall be provided with one piece type cover plate, suitable for the device installed and blank for the junction boxes. The cover plates shall be flush with the finished surface of wall, ceiling etc. in the case of concealed wiring.

In case PVC conduit pipes are to be used the same and their accessories should be of Shavyl Galco or Rivna makes only.

5. **Switch & Socket outlet Boxes:**

Switch and socket outlet boxes shall be of the size suitable to the dimensions of switch and socket unit gang outlet boxes shall be use where two or more devises are grouped in location.
These outlet boxes shall be made of 16 S.W.G. sheet steel with protective black enamel paint coating inside and outside the box.
Before applying black enamel the cleaned surface of sheet steel box shall be given Red oxide anti-rust coating inside and outside the box. The cover of such outlet box shall be approved Masonite, tufnol, bakelite or plastic as specified in the Schedule of Quantities, mounting the switches or switch socket unit. Where switch and socket outlet boxes are to be installed on surface in an exposed conduit wiring system, these shall have, in addition to the protective quoting, colour paint to match the colour or the wall etc.

6. **Switches:**

Switches controlling light and fan points shall be single pole, suitable for 250 volts 50 c/s circuits. The ratings of switches shall be as called for in the schedule of quantities. These shall be made of bakelite or plastic and suitable for flush mounting in the outlet box as called for in schedule of quantities. Where more than one switch is to be installed at one location, the switches on one common board on a common outlet box. The gauges switches shall be molded type have in a plastic face plate for flush mounting. Where there are more than three switches at one location or fan regulators and switches are on common board, gang switches should not be used. At such location single switches and fan regulators, if any shall be grouped on a common outlet box and mounted on a 1/8" thick white plastic sheet / flush with the surface wall. Where switches are

installed in damp or wet area these shall be weather - proof type. The switches shall be as manufactured by M/s Pakistan plastic industries.

7. **Switch & Socket Units:**

Switch and socket units shall be 3-pin rated for 15 Amps at 250 V 50 c/s A.C as specified in schedule of quantities. These shall be moulded type with white plastic face plate and suitable for mounting recessed on wall or column on a 16 SWG sheet-steel box of appropriate size. Each socket shall have its control switch by the side of it on a common board and thus the complete unit specified in schedule of quantities shall comprise of switch and a 3-pin socket of the rating specified.

The unit shall be as manufactured by M/s Pakistan Plastic Industries. Where switch and socket unit are installed in a damp or wet area, they shall be weather proof type.

03. LIGHTING FIXTURES:

Lighting fixtures details are given in the Schedule of quantities. Where a definite manufacturer's type of lighting fixture has been specified it shall serve as an illustration of type and if that particular type is not available in the market any approved equal type may be suitable after getting prior approval of the Bank. The determination of equality will be based on certified photometric data, covering the coefficient of utilization, average brightness data, etc, as well as equivalence or construction material shape, finishes etc. For any substitution Banks Architects approval must be obtained. Lighting fixtures shall in all respect confirm to high standard of engineering design and workmanship, performance and function as specified as specified and shall fully meet the quality level requirements.
Where the type of fitting is not specified the Contractor shall submit samples based on the requirements of specifications and approval of the owner shall be obtained.

All fluorescent light fittings shall have lamps, and blasts of proper type and wattage as specified in the schedule of quantities. The fluorescent light fitting with more than one lamp shall have power factor correction capacitor to give a power factor of 0.9. All fluorescent light fittings shall have capacitors against radio interference. The fluorescent lamps shall be of cool day light colour. The sheet steel body of the flours cent light fitting shall be decreased and de-rusted. White stove enameled and shall have been bushed wire entries. The plastic diffuser with fluorescent light fittings shall be of 'PERSPEX' only. Chokes starters, holders shall be Philips make only.

The glass globes and shades specified with incandescent lighting fittings shall be of first quality glass without any air bubbles or voids. The wall bracket-fitting shall have adoptable plate to mount the fitting on the standard conduit outlet box.

04. L.T. SWITCH BOARDS:

Cubical Type:

The main İ.T switch board shall be sheet steel fabricated, cubicle type, floor mounting, factory assembled, ready wired. The rated voltage shall be 500 Volts, 50 c/s three phase. The rupturing capacity shall be 31 MVA at 415 Volts. The switch board shall be divided into panels and each

panel shall be divided into compartments to accommodate the required number of switches, circuit breakers, bus bar and meters.

The main incoming manually operated air circuit breaker shall have current rating as specified in the schedule of quantities. It shall be triple pole and neutral with rated voltage 500 V. The following protective releases shall be provided:-

i. Triple pole series connected adjustable bimetallic over current releases.

ii. Triple pole series connected instantaneous action magnetic short circuit releases.

The current transformers with suitable rating shall be provided for metering and protections. ON. OFF. And TRIP visual indicators shall be provided.

The following metering shall be provided on the incoming side of the main L.T switch board:

Ammeter of range and make as specified in the schedule of quantities.

Voltmeter 0-500 volts range and makes as specified

KWH meter, 3 phases, 4 wire for unbalanced loads. Make as specified

Power factor meter, 0.5 – 10.5 ranges, Make as specified.

The meters shall be square shaped, and flush mounting type. The bus bar chamber shall consist of air insulated, four hard drawn electrolytic flat copper bars with porcelain insulators. The current ratings of bus bar shall be as specified in the schedule of quantities.

The outgoing air circuit breakers shall have short circuit and over current protections. The over current bimetallic release shall be adjustable and the range of adjustment shall be as specified on the drawings. The outgoing switch fuses shall have H.R.C. type fuses with fuse grip and fuse base suitable for H.R.C designed to B.S.S 88 and ASTA 20 Certified. The H.R.C fuses shall have a category of duty 440 AC5. The visual indicators of 'blown' fuse link shall be provided on H.R.C fuses.

05. MINIATURE CIRCUIT BREAKERS:

In case where MCB's are specified in the schedule of quantities the same shall be of the following specifications:-

The MCB's used in distribution system shall be moulded case no fuse type having a switching mechanism. The MCB's shall have protection against overload and short circuit.

The MCB shall have a magnetic tripping time of 0.2 SEC max. When more the its rated current passes through it.

In the distribution boards the MCB's should be neatly installed in gang form by an appropriate arrangement. The MCB's shall be of Dorman, BBC AEG or. Terasaki make only.

The switch board shall be supplied with cable and boxes end cable glands for the sizes or cables shown on the drawing for incoming and outgoing connections.

The L.T panel shall be given Red oxide anti rust coating and two coats of approved colour paint. The switches etc, shall be numbered and the designations shall be printed in 3/8" high letters with black paint.

The tenderers shall submit the drawings and all relevant details of L.T. switch board offered.

06. PEDESTAL TYPE:

The pedestal type sub-main switch board shall be factory assem beld, ready wired for all internal wiring. The rated voltage shall be 500 volts, 50 c/s three phase. It shall consist of angle iron frame and pedestal and sufficient angle iron enforcing members to make it robust, self contained and rugged. The front shall have fixed sheet steel cover on which switches, circuit breakers etc. shall be mounted. There shall be a removal sheet steel cover on the back such that the internal wiring connections and live parts are not accessible in the normal working of the switch board. Necessary conduit entry holes shall be provided on the top and the bottom for outgoing connections. The incoming connections hall is in the bottom. The required number of circuit breakers, switches and distribution boards etc, as detailed in the schedule of quantities shall be mounted on the front securely and firmly.

The technical specifications of circuit breakers and switch fuses shall same as given for the outgoing circuit breakers and switches for the main L.T. switch board. The incoming load break switch shall be provided with arc Shutes and quick breaking mechanism. The rupturing capacity shall be 25 MVA

The switch shall be given Red Oxide anti rust coating and double coating of approved colour paint. The switches etc. shall be numbered and the designations shall be painted in 3/8" high letters in red colour. The required number of cable end boxes and cable glands for the incoming and outgoing cables as shown on the drawings shall be provided with the switch board.

The tenderer shall submit dimensioned drawings and all relevant details of the switch boards offered at the time submitting the tenders.

07. SUB-MAIN SWITCH BOARD:

The sub-main switch board shall comprise of switch fuses, bus bar chamber and distribution boards as detailed in schedule of quantities.

The switch fuse shall be iron clad or sheet steel fabricated, mounted on the surface of the wall, unless otherwise specified on the schedule of quantities. The position of the operating handle of the switch fuse shall be clearly marked ON/OFF on the cover. The switch fuse shall remain in locked position when the operating handle indicates ON. The switch fuse shall have only H.R.C type fuses. The fuse portion shall consist of porcelain fuse base and porcelain or bakelite fuse grip accommodation the H.R.C fuse.

The distribution fuse board shall have heavy gauge sheet steel enclosure with one leaf door and latch. The fuses shall be H.R.C type designed to BS.S.88 & ASTA 20, certified only, accommodated in a porcelain or bakelite fuse grip with porcelain fuse bases embedded firmly to the board. The number of ways shall be clearly marked and circuit numbers shall be printed on a bakelite strip mounted on the top of each row of fuses.

The bus bar chamber shall consist of high conductivity flat copper bars, supported on porcelain or bakelite bushes. The number of copper bars shall be four for triple pole and neutral and two for double pole. The bus bar chamber shall be enclosed in a heavy gauge sheet steel enclosure with one leaf door and latch.

All component of switch bard shall have separate individual housing and they shall be mounted on a common 16 SWG sheet steel enclosure, arranged neatly to occupy minimum space, keeping in view the free and unhindered operation of individual component. All live parts shall be enclosed and shall not be accessible in normal operations of the switches and distributions fuse board. The switch fuse, bus bar chamber, and distribution fuse boards shall be suitable for operations on 440/250 volt, three phase/single phase 50c/s A.C system as specified on drawings.

08. H.T SWITCH BOARD:

The high voltage, 11 KV switch board shall be totally enclosed, floor mounting, cubicle type, factory assembled, ready wired for 11 KV 3 phase, 50 c/s system. The breaking capacity of the switch board shall be 350 KVA at 11 KV.

The incoming 11 KV, triple pole oil circuit breaker shall be withdraw able type arranged for vertical isolation and horizontal withdrawal, It shall be trip free and fitted with adjustable trip devices to prevent incorrect and hesitant closing. The main contract shall be double break types fitted with D-Iron grid are control devices. The circuit breaker shall be fully interlocked. The interlocking mechanism should ensure that

i. The breaker can be closed only if the roll-out truck is in the operating or isolated position and not in any intermediate position.

ii. The roll-out truck cannot be moved out from the operating or isolated position when the breaker is close. Indicators shall be provided for indication of ON. OFF. Trip and positions of the breaker at withdrawal, earth and operation.

iii. The circuit breaker shall be fitted with voltage transformer and current transformers of appropriate ratings for metering and protections. The relay operated tripping mechanism for over current, earth fault and short circuit protections shall be provided with time delay and instantaneous settings of appropriate ranges.

iv. The following material shall be provided of the make as indicator in the BOQ.

v. Moving iron ammeters range 0-100 Amps with ammeter selector switch:

vi. Moving iron voltmeter, range 0-13 KV with voltmeter selector switch.

vii. Kilowatt hour meter, suitable for 3 phase wire system and for balanced and unbalanced loads, complete with maximum demand indicator.

viii. All meters shall be flush mounting type and square shape. The bus bar shall be of high conductivity solid copper bars with insulation covering and porcelain bushings.

ix. The outgoing 11 KV switch fuses shall be rated for 400 amps and shall have 30 Amps and 45 Amps H.R.C type fuses designed to B.S.S 88 & ASTA 20 certified respectively. The switch fuse shall have trip free mechanism and automatic mechanical trip mechanism

action on all three fuses blow of. There shall be tripping device to operate in conjunction with the Bechholz relay provided at the transformers.

x. The 11.KV switch board shall be complete in all respect including cable lend boxes for paper insulated underground 11 KV cables of suitable size as specified in the schedule of quantities for incoming and outgoing connections. The anchor bolts, name plates etc, shall also be provided.

09. H.T & L.T CABLES:

The high tension cables shall be copper conductor, 11 KV 3 core, paper insulated double steel tape armored and served. The serving shall be both below and above the armor, by means of compounded paper tape and compounded hesian tape. In order to prevent adhesion a coating of lime wash or other suitable material shall be applied to the outer surface of the cable. The core identifications marking shall be provided. The cable shall confirm to British Standard Specifications 480 part-I 1954.

The low tension P.V.C cables shall be copper conductor, 1.1 KV, 3½ core PVC insulated and PVC sheathed non-armored. The core identification marking shall be provided.

The low tension PVC armored cables shall be 1.1 KV, 3. ½ core PVC insulated, PVC bedded, single wire armored and sheathed with PVC overall. The cables shall conform to B.S.3346-1961. The core identification marking shall be provided.

The low tension paper insulated cable shall be copper conductor 1.1 KV 3 ½ core paper insulated lead covered double steel tape armored and served both below and above the armored by means of compounded paper tape and compounded hesian tape. The core identification marking shall be provided.

Wall mounting indoor type cable end boxes:

The wall mounting indoor type cable end boxes shall be used for H.T incoming L.T. outgoing connections at transformers. The HT cable end boxes shall be suitable for terminating the 11 KV 3 core paper insulated, lead covered double steel tape armoured cables of size as per schedule of quantities.

The L.T cable end boxes shall be suitable for terminating the 1.1 KV 3.1/2 core paper insulated, lead covered double steel tape armoured cables of size 6.4 sq. inch.

The cable end boxes shall be constructed of cast iron. Adequate space should be provided for splaying of cores. The box shall have a top cover with perfect fit and compound tightly joint. The black bituminous cable compound shall be provided, for terminating and bonding the lead sheath of the cable on incoming side of the box, brass wiping gland shall be provided. An armour clamp shall also be provided for bonding the armoring. On the outgoing side the box shall have insulator bushing made of glazed porcelain suitable for individual core of cable to pass. The box shall be of standard make and the tenderer shall submit the drawing and the relevant details of cable end boxes at the time of tendering.

10. TRANSFORMER:

The transformers shall be three phase oil immersed, and self cooled, indoor type and of the rating specified in the schedule of quantities. The no-load voltage ratio shall be 11 KVI / 430 V

and frequency 50 c/s. the transformer shall be Delta-Star connected and the vector group shall be DYli. The percentage impendence shall be 4-5% taking ambient temperature of 45 C the temperature rise shall confirm, to B.S.S. 171.1959.

The manually operated off-load tap changer on H. V side shall have tapings of 7% ±5% and ± 2.5%

The transformer shall be provided with a double float Bechholz relay for tripping and alarm as protection against abnormal working of the transformer.

The transformer tank shall be of welded steel construction tubular type. The transformer shall be complete with conservator, silica gel breather, oil gauge, dial type thermometer, arcing horns, oil drain plug, oil filling cap, drain valve with sampling device, lifting lugs, earthing terminals bi-directional rollers, diagram and rating plates, etc.

The transformer shall be tested at the factory, as per B.S.S.171, 1959 and a test certificate shall be provided at the time of approval.

The transformer shall be painted with anti corrosive paint of approved quality and finished in enamel steel grey colour. The drawings and complete technical data shall be submitted with the tender.

11. EARTHLING CONDUCTOR & ELECTRODES:

The earth continuity conductors shall be solid hard drawn bare copper wire of sizes specified on the drawings and schedule of quantities. The earth continuity conductors of size above 3/0 SWG shall be hard drawn standard bare copper wire. All fixing accessories earthling clips, sewating sockets, lugs, thimbles etc. shall be provided for a complete earthling insulation.

The earthling set shall be 2'x2'x1/4 in thick electrolytic copper plate. The surface of plate shall be tinned for protection. The plate shall have two terminals for connection the earthling leads, Nuts, Bolts and washers etc. shall be of either brass or copper tinned for protection against corrosion. The earthling points shall, comprise of tinned copper bar rectangular in shape having dimensions 6”x2”x1/4” Two terminals for connections shall be provided. The terminals shall have copper or brass bolts, nuts, and washers tinned for protection against corrosion. There shall be one galvanized iron bolt provided in the center for fixing the copper bar on the surface of wall.

12. GALVANIZED IRON PIPES:

The G.I pipe shall be used for protection of earth leads from earthling set to the earthling points and at locations shown on the drawings.

The pipe shall be galvanized inside and out by hot dip galvanizing process. The G.I pipe shall be free from stains, bars spots or any other defect. The G.I pipe shall be KPM Hyesons brand.

The pipe fittings and specials such as sockets, bends, check nuts etc. shall be galvanized inside outside. The saddles and clamps used for fixing the pipe on the surface shall be of gal vanished iron.

13. LIGHTENING PROTECTION SYSTEM

i. General:

The contractor shall furnish all material required for a complete lightening protection system as specified herein and as per British standards CP 326 101.

The system shall consist of vertical and horizontal air terminations, down copper conductors, and earth electrodes and joined effectively to form a continuous path for lightening current to earth.

ii. Air termination:

The vertical air termination shall consist of ¾" diameter 3 feet long tinned copper rod, pencil shape pointed at top end, copper terminal with clamp for connection to down conductor at the lower end of the rod and a self supporting base frame with two fixing holes, bolts, and nuts for fixing on the RCC roof. The vertical air termination shall be as shown on the drawings.

The horizontal termination shall consist of 1" x 1/8" copper strip.

iii. Down conductor:

The down conductor shall be 1/0 S.W.G hard drawn bare copper wire.

iv. Earth electrodes:

The earth electrode shall consist of ¾" diameter, steel cored copper rod less than 4 feet length with coupling and stud bolts at driving end for installing additional sections. The rod shall be tinned for protection against weather. There shall be three 4 feet sections of rod to be driven in the ground to form one 12 feet earth electrodes. The last 44 feet section of the rod shall have an earth terminal for connection to the down conductor and to adjacent earth electrodes.

14. INSTALLATION INSTRUCTIONS:

1. Wires & cables:

i. General:

The contractor shall furnish all material and labour to install wires and cables as indicated on drawings or listed in the schedule of quantities and as specified herein. Apart for the material specified under heading material specification the contractor shall provide, without any extra cost, material for terminating the wires and cables such as ceiling rose lugs, solder , clamps supports, bushes, fixing pipe etc. necessary for a complete wiring installation. Other miscellaneous items such as filling compound identification tag, earthling clips and straps shall also be furnished for a complete wiring installation in accordance with best modern practice.

All wires and cables shall be arranged to provide bends of reasonably large radius, whether they are run in conduit or cable turn king, bens shall not be made to a radius less than 10 times the overall diameter of cables. Wiring shall be continuous between terminations and use of connectors or joints will not be allowed. Looping in system shall be followed throughout.

ii. Concealed Conduit Wiring:

The installation of wires and cables in conduit or G.I pipes shall be done with care to prevent damaging the cables. To facilitate pulling cable, lubrication only as recommended by the cable manufacturer may be used for decreasing friction. Under no circumstances shall soap or oil of any kind be used. The cable manufacturer's specifications for minimum bending radius, pulling speed and maximum pulling tension on cables shall govern the cable puling operations. Where several cables or wires are to occupy the same conduit, they shall be pulled together.

Pull boxes shall be installed in conduit runs, wherever required to limit the pulling length of cables. The drawings are diagrammatic and do not indicate the locations of pull boxes, however, they should be installed in conduit runs to limit pulling lengths to the following:

i. Straight runs - not more than 200ft.
ii. Runs with on 90 degree bend – not more than 100ft:
iii. Runs with two 90 degree bends – not more than 50ft.

The minimum length of all inspection boxes, shall be equal to not less than four times the cable manufacturer's recommended bending radius of the cable.

iii. Cable termination:

Terminal lugs for most equipment are included with the equipment itself except lugs for connection to motor leads and necessary devices; the contractor shall furnish and install all lugs required for such equipment. Cables connectors and lugs shall be rated in capacity equal to or greater than the conductor with which they are used. Control cables entering control boards, switch gear etc, shall be surely fanned out in a neat arrangement and laced with linen waxed cord where the terminations are made. Wires and cables shall not be laced to conduction material unless a 1/16" tick plate of insulating material is placed between the conduction material and the cable. The ceiling roses in concealed conduit wiring shall be flush type. These shall be mounted on the conduit outlet boxes at light points such that the lip of the ceiling rose finishes flush with the surface. The terminal blocks shall be of the moulded base type with separate studs for incoming and outgoing cables, with barriers between terminal and terminal making strip sand cover. Terminal blocks shall be used at special locations where looping in is rendered difficult. The consent of Engineer-Incharge is required for the use for terminal blocks.

2. Conduit Installation:

i. General:

The contractor shall furnish all labour and material for the installation of conduit on surface or concealed in concrete or brick work, as required. The drawings show the

approximate routes and terminal points of conduit. However; if for any reason the contractor desires to use any alternate rout, he may do so at his own responsibility as to the interference with other equipment's and maintaining concealed runs of conduit. Such alternate routes shall incur no additional cost to the owner and must have prior written permission from the engineer-in charge.

Conduit and conduit accessories shall be as specified herein and shall be so installed that the require field conditions are full met.

ii. Concealed Conduit Runs:

The conduit runs shall be concealed in ceiling, floor slabs, columns wall etc. changes in direction of conduit runs shall be made with sweep bends using bending tools. Standard conduit bends may be used to facilitate installation and where conduit turns out of thin slabs. Where conduit is to be concealed in RCC work, the laying of conduit shall be complete in all respects before pouring of concrete. The conduit shall be laid above the bottom reinforcement steel of the slab and shall be firmly secured by tying to the reinforcing steel, in order to avoid being disturbed during the pouring of concrete. After pouring of concrete the concealed conduit shall have a covering of 11/2"to 2 inches. Junction boxes, pull boxes, outlet boxes etc, shall be held firmly and shall be flush with the suffix of the slab or beam, and keeping this in view the depth of outlet boxes, junction boxes etc. shall be appropriate.

The termination of conduit at or near the equipment, switch gear etc. is shown diagrammatically on the drawings. The exact final locations of the terminations shall be coordinated with the switch gear, panel board and other equipments to be installed. Any extension of conduit near the equipment, switch etc. to suit the field condition shall be made without any extra cost. All conduit terminations shall conform to the type of equipment enclosures to which the conduit connections are to be made. Conduit end pointing upward or downward shall be properly plugged, in order to prevent foreign matters entering it. All opening through which concrete may leak shall be carefully plugged and boxes themselves shall be suitable protected against filling with concrete. All ends of M.S conduit shall utilize bushes of soft material to prevent sharp edges of conduit ends from cutting or damaging the wires or cables to be pulled through them. Conduit crossing expansion joints in concrete slabs shall be provided with expansion fittings to compensate for the building expansion or construction.

Where conduit have to be concealed in RCC work after pouring of concrete or in brick work, chases shall be first made with appropriate tools not to dig unduly deeper than required. The conduit shall be firmly fixed into the recesses made previously and then it shall be covered to have at least 1-1/4" cover before plastering. The work of cutting in the RCC work or brick work shall be coordinated with the civil work and contractor shall get approval be the Engineer Incharge for the route etc. to suit the site conditions, before starting chasing and cutting. Where conduit passes through the wall, holes just enough to pass the conduit shall be made with special tools.

iii. Conduit on Surface:

Exposed runs of conduit on the surface of wall, column or ceiling shall be as indicated on drawings. The conduits and accessories shall be firmly held with the surface of wall by means of saddles, clamps, brackets etc, Special plugs such as Rawl plugs or Phil plugs must be used for fixing clamps, saddles etc. in the wall to support the conduit. In case where the use of such plug is not feasible due to the consideration of wall structures, wooden plugs may be used, but on all cases these should be capable of sustaining the weight of conduit and its accessories. The clamps shall be fixed at intervals depending upon the size and weight of conduit. In any case these shall not be fixed at more than 2-1/2 feet intervals. The straight runs of conduit shall not be more than 1-1/2 to 2ft below the ceiling level and share hindrance is met in the rout, the conduit shall be taken round the hindrance above or below neatly, and then run at the same height.

The exposed conduit and its accessories including clamps and support shall be given coats of anti-corrosive paint of approved standard, before and after the installation.

iv. Cleaning:

The entire conduit system shall be essentially completed before wiring is installing. Conduit shall be tested for continuity and obstruction. Any obstruction found shall be cleaned by use of a cutting mandrel of other approved device, and the conduit be cleaned out before the installation of cables.

v. Earthing:

The earth conductors shall be installed along the sub-main cables as shown on the drawings. At terminations copper earth continuity conductors shall be connected to the body of the switch board or to the earthing point by means of proper size brass or copper socket soldered to the earth wires ad fixed by means of proper size nuts, bolts and washers. All equipment frames, L/T & HT switch board, transformer, cable trays etc. shall be connected with earthing leads or earth continuity conductors of sizes shown on the drawing.

The earthing sets shall be installed at locations shown on the drawing. A 15 feet deep pit in the bare ground shall be excavated and the copper earth plate shall be placed vertically in bottom of the pit. The earth leads of 7/0.166 standed bare copper wire shall be connected at two points on the earth of ptate by means of copper sockets nuts and bolts. The copper earth leads shall be taken out of the pit and up to the earthing point in a 2" G I pipe. A mixture of grinded charcoal and powdered lime in the ratio of 4:1 by volume shall be poured around the earth plate to cover it by one foot on sides and top. The charcoal mixture shall be rammed in layers. The pit shall be back filled in layers of the earth consolidated by watering and ramming. At the ground level a 2 x 2 x 1 ½ deep cement concrete inspection chamber shall be constructed. The inside surface of the Chamber shall be plastered and an angle iron frame and a heavy duty cast iron cover with lifting lugs shall be provided and fixed. A ½ inch diameter G.I. pipe piece shall be fixed as inlet of water to the inspection chamber as directed at site.

The earth resistance shall be tested with and without water as per instructions given under section D-Testing of these specifications.

vi. Installation of Switches & Socket Outlets:

All light control switches and socket outlet units shall be fixed flush with the surface of wall on recessed 16 SWG sheet Stel box of appropriate dimensions. The light control switches up to 3 numbers at one location are specified as gang switches. These shall be mounted on gang boxes with the plastic face plate flush with the surface of wall or columns

At locations where any number of switches with fan regulator is grouped, gang type switches shall not be used. At such location single switches shall be grouped and fixed flush on a plastic sheet mounted on a recessed sheet steel box of appropriate dimensions. The mounting height of light control switch shall be 4 1/2ft, above finished floor level unless otherwise specified on the drawings. The switch and socket outlet units shall be fixed, flush with the surface of wall on recessed sheet steel box of appropriate dimensions, The mounting height of switch and socket outlet units shall be 9 inches above finished floor level unless otherwise specified on drawings

The fixing of plastic plate on outlet boxes and of single switches and fan regulators on plastic sheet shall be by means of flat head chromium plated brass screws. The' flat head of the screw shall be sunk in the plastic plate so as finish flush with the surface of plate.

vii. Installation of H.T & L.T Switch Board:

The Contractor shall provide all labour and material to install, test and commission the high tension and low tension switch boards. The anchoring bolts, angle iron supports, foundation plates etc. shall be provided and installed. After this Contractor supplies the detailed foundation drawings of the switch boards, the building contractor shall leave approved sized holes in cement concrete floor and the electrical contractor shall place the foundation bolt and anchoring plates in the holes and fill the same with 1:2:4. cement concrete mixture for preparing the foundation for the switch board.

The cubicle type and pedestal type switch boards shall be installed on the floor having a minimum clearance of 2 ft. between the back of the switch board and the wall. The switch board shall be bolted firmly and in level on the floor. In general the manufacturer's instructions for installations shall be followed.

The incoming and outgoing cable shall enter to switch board from the bottom. Special care shall be taken in connecting the paper insulated cable to cable and boxes so as to have no danger of compound leakage during operating. The cable compound and insulation tape etc. shall be furnished without additional cost to the owner.

The body of the switch board shall be connected at two points with the earth continuity conductor from the earthing point. Proper size brass or copper thimbles or sweating sockets shall be used for connecting the earthing conductor.

15. INSTALLATION OF H.T. & L.T CABLES:

The H.T and L.T cables shall be installed in the prepared cable trenches and on the surface of wall, column or ceiling as required. The cable trenches shall be constructed by the Building Contractor, details of which are required to be submitted by the electrical contractor at the time of submitting his tender.

The L.T cables shall be laid in cable trenches neatly such that they do not cross each on the haphazardly. At directions and bends, the minimum interval radius of bend shall be 4 times the overall diameter for PVC armoured and for paper insulated armoured cables.

The L.T cables shall be fixed on the surface of ceiling or wall, where shown on the drawing, by means of approved cast aluminum cleats of appropriate dimensions. The aluminum cleats shall be in two parts as shown on the drawing. The cleats shall be fixed by means of galvanized bolts or screws at six feet internal.

The Contractor shall provide all fixing material such as clamps, cleats screws, bolts etc required for the installation of cables without any additional cost to the owner.

i. Transformer:

The contractor shall furnish all labour and material to install, test and commission the transformers. The Building Contractor shall construct the cement concrete cable trenches in the transformer room.

The transformer shall be installed at the location shown on the drawings and all fittings dispatched loose from the factory shall be assembled as per manufacturer's instructions. All site tests shall be performed as per instructions given in Section "D-Testing" of these specifications.

The H.T and L.T cable end boxes shall be installed on the wall. The angle iron brackets for installing the cable end boxes shall be provided and installed. The cores of cables coming out of the cables end boxes shall be neatly fanned out and connected to the transformer terminals by means of proper size thimbles, nuts and bolts.

The transformer neutral shall be earthed via sub-station earth point. Two separate connections for transfer body earth shall also be made.

The transformer shall be tested and commissioned in the presence of the Engineer Incharge.

ii. Installation of Lightening Protection System:

The Contractor shall furnish all labour and material required for a complete installation of Lightening protection system. The air termination shall be installed at locations shown on the drawing. The vertical air termination shall be fixed on the flat roof surface rigidly and firmly. The horizontal air termination shall be connected effectively to the vertical air termination. The copper clamps, nuts, bolts and washers shall be provided. The horizontal air termination shall be fixed on the flat surface of the RCC roof by means of copper or brass fixing clamps at 6 feet intervals. All joints and bonds in the horizontal air termination shall be mechanically and electronically effective. The joints shall be bolted and shall have an overlap of at least one inch. Before bolting at the joint the surface of overlap shall be thoroughly cleaned and after bolting up, the joint shall be protected from weather by applying bitumen coat all round the joint. The down conductor shall be fixed on the outside surface of wall or column by means of copper or brass clamps fixed at 4 feet intervals. The I/O S.W.G down conductor shall be connected to the horizontal air termination copper strip be means of proper size compression type socket and nut bolt.

The protection of joint shall be made as for the joints in horizontal air termination mentioned earlier. The down conductor shall be connected effectively to the earth electrode.

The earth electrodes shall be driven in the ground as close to the building as possible. These shall be driven in three sections of 4 feet length to from one 12 feet long earth electrode. At each location shown on the drawing at least four such electrodes shall be fixed 12 feet apart, unless a lower earth resistance is obtained in lesser number of electrodes. The maximum earth resistance measured between the electrodes shall be 10 ohms. All earth electrodes at one location shall be connection to each other by means of I/O SWG bare copper wire buried directly underground. At each earth electrodes a cement concrete inspection chamber of l'xl'x6" deep with case iron cover shall be constructed for inspection and protections of down conductor's connection with the earth electrodes.

The completed system shall be tested for continuity and earth resistance. The combined earth resistance shall not exceed 10 ohms.

16. TESTS:

i. **General:**

Upon completion of installation the Contractor shall perform field tests on all equipment, materials and systems. All tests shall be conducted in the presence of the Engineer Incharge for the purpose of demonstrating equipment or systems compliance with specifications. The Contractor shall furnish, install and maintaining all tools, instruments test equipment, material, connections, etc and furnish all personnel including personnel including supervision and "stand- by" labour required for the testing, setting and adjustment of all electrical facilities, and other component parts, including putting same into operation.

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

The Contractor shall record all test values of the tests made by him on all equipment, giving both "as found" and "as left" conditions. Three (3) copies of all test data shall be given to the Engineer Incharge for record purposes.

The witnessing of any tests by the engineer Incharge does not relieve the Contractor of his guarantees for material, equipment and workmanship as specified in the conditions of Contract.

ii. **Insulation Test:**

Insulation resistance tests shall be made on all electrical equipment, using a self-contained instrument such as the direct indicating ohm-meter of the generator type. Direct current potentials shall be used in these tests and shall be as follows:-

Circuits under 220 Volts -- 500 Volt Test

Circuits 220 Volts to 400 Volts – 1000 Volt Test

The minimum acceptable insulation resistance value will be 5 Megohms.

The test equipment for insulation testing will be furnished by the Contractor. Before making connections at the ends of each cable the insulation resistance measurement test of each cable shall be made. Each conductor of a multi-core cable shall be tested individually to each conductor of the group and also the earth. If insulation resistance test readings are found to be less than the specified minimum in any conductor, the entire cable shall be replaced and the new cable tested.

All transformers, switch gears shall be given on insulation resistance measurement test to ground after installation but before any wiring is connected. Insulation tests shall be made between open contacts of circuit breakers, switches and between each phase and earth. If the insulation resistance of the circuit under test is less than that specified above, the case of the low reading shall be determined and removed. Corrective measures shall include dry out procedure by means of heaters if equipment is found to contain moisture. Where corrective measures have been necessary and the insulation resistance readings taken after the correction has been made satisfy the requirements specified herein, repeat insulation resistance measurements shall be made twice and at least 12 hours apart: The maximum range for each reading on the 3 successive tests shall not exceed 20% of the average value. After all tests have been made, the equipment shall be reconnected.

iii. **Earth Resistance Test:**

Earth resistance test shall be made by the Contractor on the earthling system, separating and reconnecting each earth connection as may be required by the Engineer Incharge. If it is indicated that soil treatment or other corrective measures are required to lower the ground resistance values, The Engineer Incharge will determine the extent of such corrective measures,

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

Earth resistance test shall be performed as per Electrical Inspector's requirements. Where more than one earthling sets are installed, the earth resistance test between two seats shall be measured by means of resistance bridge Instrument. The earth resistance between two sets shall not exceed one ohm.

iv. **Transformers & Switchgear:**

In addition to the insulation resistance test on the transformer, a polarity or phase rotation test shall also be made. Auxiliary devise breather, Buchholz, relay etc shall be tested for satisfactory operation.

Each air circuit breaker shall be operated electrically and mechanically, ascertaining that handle mechanisms are operating. All interlock control circuits shall be checked out for proper connections in accordance with the wiring diagrams given by the manufacturer.

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

Series over current trip elements shall be checked against rating of equipment served. Also to be checked for correct size and function are fuses, disconnect switches, number of interlocks, indicating lights, alarms and remote control devise. Name plates shall be checked for proper designation of equipment served.

v. **Operating Tests :**

Current load measurement shall be made on equipment and on all power and lighting feeders. The current reading shall be taken in each phase wire and in each neutral wire while the circuit or equipment is operating under actual load conditions. Clip-on ammeters may be used to take current readings. All light fittings shall be tested electrically and mechanically to check whether they comply with the standard of specifications. Fluorescent light fittings shall be tested so that when functioning properly no flickering or choke singing is felt.

vi. **Completed Tests:**

After any equipment has been tested, checked for operation etc and is accepted by the Owners representative, the Contractor shall be responsible for the proper protection of such equipment for assurance that subsequent testing of other equipment or systems do not disturb the completed work.

SECTION -17 TELE PHONE

MATERIAL REQUIRMENT: -

1.**Conduit & Conduit Accessories:**

The Contractor shall furnish and install a complete conduit system with associated outlet boxes and terminal boxes, so as to complete in all respects for installation of wires, cables and instruments. Conduits shall be of heavy gauge steel 16 SWG back enameled. The specification for conduit accessories remain same as given in D (i) of Section I of these specifications. At each telephone outlet location as shown on the drawings, The contractor shall furnish heavy gauge sheet steel box black enameled inside and out and install flush with the surface of wall suitable for mounting the telephone rosette.

2.**Distribution Boxes:**

Telephone cable distribution boxes shall be constructed with interior dimensions not less than those indicate in the Schedule of Quantities & Drawings. Distribution boxes for telephone cables shall be made of superior quality teak wood ½" thick and enclosed in tight fitting in black enameled steel outer box of 16 SWG the two being fixed together by means of nuts and bolts. A sheet steel door of 16 SWG with locking mechanism shall be fixed on the box, flush with the surface of the wall. The colour of the door shall match the wall colour.

The terminal strips fixed in the distribution box shall be made of copper. These shall be of Telephone Industries of Pakistan, or equivalent.

3.**Telephone Cables:**

Single pair telephone cables shall be P.V.C insulated twin copper conductor P.V.C sheathed flat. Multicore cables shall be P.V.C insulated and P.V.C. sheathed circuits in cross section containing as may pairs as called for in Schedule of Quantities and Drawings. All cables will be made up of bare copper wire conductors of 0.6 mm diameter, P.V.C. insulated, twisted in pairs and P.V.C. sheathed. The cables shall be of 250 volt grade with insulation resistance of 100 megohms / km

4.**Telephone Rosettes:**

Telephone rosettes shall be with copper terminals, 2-way 5amp, made of Plastic or bakelite, having a screw type dome cover with lip opening for outgoing cables.

INSTALLATION INSTRUCTIONS:

1.**Conduit Installation:**

The telephone conduit installation shall be as outlined in 1.2 of Section 1 of these specifications. Telephone conduit shall be laid not less than 6" away from the electrical conduits or cables, and wherever electrical conduit and telephone conduits cross each other they shall do so at right angles only.

Identification marking shall be given at the termination or free end of conduit so that it may not be confused with electrical conduits. The marking shall be both by colour and by attaching an approved brass tag using brass of bronze tie wire. Each tag shall be clearly stamped with "T" fore telephone conduit.

2.**Distribution Boxes:**

Distribution boxes for telephone cables shall be fixed recessed in the wall or column as called for in the drawings and shall be provided with sheet steel hinged door with locking mechanism having a common key for operating those boxes.

3.**Pulling of Telephone Cables in Conduits:**

Telephone cables shall be pulled in conduits following the same instructions as for pulling of electrical wires and cables given in Section 3, under the heading “Wire and Cables Installation". Where telephone cable enter distribution box, one foot length of cable shall be left coiled in the distribution box for T&T Department to solder them on the soldering terminals.

SECTION-18 FIRE ALARM

MATERIAL REQUIREMENTS:

5.**General**

The Contractor shall furnish and install a complete electrically supervised non coded fire alarm system as specified herein and as indicated on drawings. The fire alarm system shall be non-coded electrically supervised system. Operation of any manual station shall cause all sounding devices to sound continuously until the alarm condition is corrected and system is reset. The system shall operate on 230/415 volts, single phase/3 phase 50 c/s A.C supply. The fire alarm system is specified here on the basis of the equipment manufactured by Minneapolis Honeywell Regulator Co. U.S.A. represented in Pakistan by M/s Zelin Ltd, Zelin's Corner, Victoria Bunder road, Karachi. Any equipment manufactured by other standard companies may be offered.

6.**Manual Station.**

The manual station shall be operated by pulling down on the lever, when operated the lever shall remain down with the alarm contact closed until the station is resent. Honey well type S464B or similar. The manual station shall have sheet steel housing and mounted on a sheet steel box recessed on the wall.

7.**Alarm Bell**

Fire alarm bells shall be vibrating type with 6” gong. The alarm bells shall be provided with adaptor plate for mounting on standard conduit outlet box. The Alarm Bell shall be Honeywell type SC40 similar.

8.**Annunciator Panel:**

The main Annunciator panel located near the fire alarm panel shall have zone identifications, to identify each zone in the event of operation of manual station in that zone. The zone identification shall be printed on replaceable tape between the panel display screen and lamp. Display screen shall be of Tran's lucent glass. The sub main Annunciator shall be similar to the main Annunciator but with two zone identifications only. The Annunciator shall be Honeywell type W649B or similar.

9.**Fire Alarm Panel:**

The Fire Alarm Panel shall operate on 230/415 volt single phase 50 c/s A.C supply. The panel components shall include supervisory meter and relay for bell station circuit, trouble and alarm lights, integral trouble buzzer, and silencing switch. The fire alarm panel shall provide required bell

circuit as shown on the drawings. A transformer for low voltage bell circuit shall be provided. The fire alarm panel shall be semi-recessed or recessed mounting with hinged doors. The fire alarm panel shall be Honeywell type W728A or similar.

INSTALLATION INSTRUCTIONS:

10.**Conduit & Wiring:**

The installation of conduit and wiring shall be as given in Section 1 of these specifications

11.**Manual Stations:**

The manual Stations shall be installed on the surface of wall on the recessed conduit outlet boxes, at locations shown on the drawings. The center line of the unit shall be 5 feet above finished floor level. The manufacturer's installation instructions shall be followed.

12.**Fire Alarm Panel:**

The fire alarm panel shall be installed recessed or semi-recessed in the wall at location shown on the drawings. All wiring connections shall be made as per manufacturer's instructions. The center line of the panel shall be at height of 5 feet above finished floor level. The main Annunciator panel shall be mounted adjacent to the fire alarm panel. The sub-main Annunciator panels shall be fixed recessed or semi-recessed in the wall at locations shown on the drawings. The mounting height of sub-main Annunciator shall be same as that of fire alarm panel.

SECTION-19 CLOCK SYSTEM

MATERAIL REQUIREMENT:

13.**General:**

The clock system will consist of master clock unit producing electrical impulses at definite interval and feeding them over a two wire circuit to the secondary clocks installed at various locations. The secondary clocks will run by the impulses received from master clock and therefore all clocks will give on time indication

The contractor shall supply and install conduit, wires, Master clock, secondary clocks and all accessories required for a complete clock system as specified herein and as called for in the drawings.

14.**Conduit:**

The conduit shall be black enameled heavy gauge 16 S.W.G. The conduit and conduit accessories requirements shall be same as detailed in section 1 of these specifications.

15.**Wiring:**

The wires shall be single core standed, and P.V.C insulated and shall be of M/s Pakistan Cables Ltd.

16.**Master Clock:**

The master Clock unit is required to control minimum of 29 secondary clocks by sending electrical impulses at regular, intervals to the secondary clocks. The Master Clock shall be pendulum operated and shall incorporate an impulse transmitter to send impulses to secondary clocks over a two wire circuit. Should the main supply fail, the system will be kept going very many hours by the accumulators.

For advancing all clocks in the system, and advancing lever shall be provided. The accuracy of the clock shall be within ½ second per day.

The Master Clock unit shall be suitable to operate on 250 Volts, 50 c/s A.C single phase supply. The current supply is taken from trickle charged accumulator.

17. **Salve Clocks:**

The slave clock shall be suitable to operate in conjunction with the above specified master Clock. The slave clock shall have 12" diameter aluminum dial with black glistens serif numerals hour marking, convex face glass and satin silver colour metallic body.

INSTALLATION INSTRUCTIONS

18. **Conduit and Wiring:**

Identification marking shall be given at the termination of free end of conduit so that it may not be confused with the electrical conduit. The installation for wiring remains same as far electrical wires.

19. **Master Clock:**

The Master Clock shall be installed on the surface of wall. Manufacturer's instructions for installation and connections shall be followed.

20. **Slave Clock:**

The clocks shall be installed on the surface of wall or column at a height of about eight feet from the finished floor level or on the side of the beam as specified. The clock shall be installed, connected and tested so as to be ready for operations. The manufacturer's instructions for installation shall be followed.

MODEL OF PRICING

WIRING OF LIGHT POINT:

1. **One Point Controlled By One Switch:**

The rates against this item of schedule of quantities shall include all labour and material specified for wiring between the point and switch. The circuit conduit and siring are covered by separate items in schedule of quantities.

2. **Two or Three Points Controlled By One Switch:**

The rates against this item of schedule of quantities shall include all labour and material specified for wiring between outlet to outlet and the switch. Two or three light point outlets controlled by one switch shall be counted as one light point. The circuit conduit, and wiring are covered by separate items in schedule of quantities for this item.

3. **Wiring of 5 AMP Plug Point:**

The rates against this item of schedule of quantities shall include all labour and materials specified for wiring of plug point from the nearest circuit available as shown on the drawings. The socket and switch unit is covered schedule of quantities.

4.**Light Circuits:**

The rates against these items shall include all labour and material specified for circuit wiring. The circuit conduit is shown as bold continuous line on the drawing and the number of 7/0.29 wires are indicated. Where the circuit wires pass through the light point conduit, the conduit is not counted under items pertaining to it but the wire is measured upto its termination at switch or outlet. At such location conduit is considered included is wiring of light point items. The contractor shall determine the size of conduit for wiring of light point according to the number of wires shown on the drawing.

Technical Proposal

- **Site Organization**
- **Method Statement**
- **Mobilization Schedule**
- **Construction Schedule**
- **Equipment**

Site Organization

Method Statement

Mobilization Schedule

In accordance with the Particular Conditions, Sub-Clause 4.1, the Contractor shall not carry out mobilization to Site unless the Engineer gives consent.

Construction Schedule

Form EQU: Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	

Omit the following information for equipment owned by the Bidder.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

SECTION VI: STANDARD BIDDING FORMS

Table of Forms

Form of Bid.....
Letter of Bid – Technical Proposal.....
Letter of Bid - Financial Proposal .....
Bidder Information Form.....
Bidder's JV Members Information Form.....
Personnel .....
Financial Situation.....
EXPERIENCE .....
Form of Bid Security.....
Form of Bid-Securing Declaration .....
Appendix-A.....
The Base Date Prices and Current Date Prices of the specified elements shall be obtained from the sources specified in the contract.....
.....

FORM OF BID

Date: _____

To: Gentlemen and/or Ladies:

Having examined the Bidding Documents including Addenda Nos; _____ the receipt of which is

[insert numbers]

hereby duly acknowledged, we, the undersigned, offer to deliver _____

_____

_____

[Mention description of goods and services]

in conformity with the said Bidding Documents for the sum of

_____

_____

[Mention total Bid Amount in words and figures]

or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this Bid.

We declare that our Bidding price did not involve agreements with other Bidders for the purpose of Bid suppression.

We are hereby confirming _____
_____

[insert the name of the Appointing Authority]

to be the Appointing Authority, to appoint the adjudicator in case of any arisen disputes in accordance with **ITB Clause 45.1.**

We undertake, if our Bid is accepted, to deliver the goods in accordance with the delivery schedule specified in the Schedule of Requirements.

If our Bid is accepted, we undertake to provide a Performance Security (or Guarantee) in the form, in the amounts, and within the times specified in the Bidding Documents.

We declare that, as Bidder(s) we do not have conflict of interest with reference to **ITB Clause 3.7**.

We agree to abide by this Bid for the Bid Validity Period specified in **BDS 17**, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

We are not participating, as Bidders, in more than one Bid in this Bidding process, other than alternative offers in accordance with the Bidding Documents.

Our firm, its affiliates or subsidiaries – including any subcontractors or suppliers for any part of the contract – has not been declared ineligible by the Government of Pakistan under Pakistan's laws or official regulations.

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof and your notification of award, shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any Bid you may receive.

We certify / confirm that we comply with the eligibility requirements as per **ITB Clause 3** of the Bidding Documents.

Dated this_____day of_____20_____.

(Name)_____

[Signature]

[in the capacity of]

Duly authorized to sign Bid for and on behalf of

Letter of Bid – Technical Proposal

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT

Place this Letter of Bid in the first envelope "TECHNICAL PROPOSAL".

The Bidder must prepare the Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and business address.

Note: All italicized text in black font is to help Bidders in preparing this form and Bidders shall delete it from the final document.

Date of this Bid submission: [*insert date (_____) of Bid submission*]
RFB No.: [*insert number of Bidding process*_____]
Alternative No.: [*insert identification No if this is a Bid for an alternative*]

To: **[*National Bank of Pakistan*]**

We, the undersigned Bidder, hereby submit the first part of our Bid, the Technical Proposal

In submitting our Bid we make the following declarations:

(a) **No reservations:** We have examined and have no reservations to the bidding document, including addenda issued in accordance with Instructions to Bidders **(ITB 9);**
(b) **Eligibility**: We meet the eligibility requirements and have no conflict of interest in accordance with ITB 3;
(c) **Bid/Proposal-Securing Declaration**: We have not been suspended nor declared ineligible by the Procuring agency/Employer based on execution of a Bid Securing Declaration or Bid Securing Declaration in the Procuring agency/Employer's country in accordance with **ITB 3;**
(d) **Conformity:** We offer to execute works in conformity with the bidding document and in accordance with the works requirements: [*insert a brief description of the WORKS*];
(e) **Bid Validity Period**: Our Bid shall be valid for the period specified in **BDS 18.1** (as amended, if applicable) from the date fixed for the Bid submission deadline specified in **BDS 24.1** (as amended, if applicable), and it shall remain binding upon us, and may be accepted at any time before the expiration of that period;
(f) **Performance Security**: If our Bid is accepted, we commit to obtain a performance security in accordance with the bidding document;
(g) One Bid per Bidder: We are not submitting any other Bid(s) as an individual Bidder, and we are not participating in any other bid(s) as a Joint Venture member or as a subcontractor, and meet the requirements, other than Alternative Bids submitted in accordance with **ITB 20;**
(h) **Suspension and Debarment**: We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Procuring agency/Employer. Further, we are not ineligible under Pakistan laws;
(i) **State-owned enterprise or institution**: [*select the appropriate option and delete the other*] [*We are not a state-owned enterprise or institution*] / [*We are a state-owned enterprise or institution*];

(j) **Binding Contract**: We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;

(k) **Not Bound to Accept**: We understand that you are not bound to accept the Most Advantageous Bid or any other Bid that you may receive; and

(l) **Fraud and Corruption**: We hereby certify that we have taken steps to ensure that no person acting for us, or on our behalf, engages in any type of Fraud and Corruption.

Name of the Bidder: *[_____]

Country of Origin of the Bidder: *[_____]*

Name of the person duly authorized to sign the Bid on behalf of the Bidder: ** [_____ _____]

Title of the person signing the Bid: [_____]

Signature of the person named above: [_____]

Date signed [_____]

*: In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder.

**: Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

Letter of Bid - Financial Proposal

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT

Place this Letter of Bid - Financial Proposal in the second envelope marked "FINANCIAL PROPOSAL".

The Bidder must prepare the Letter of Bid - Financial Proposal on stationery with its letterhead clearly showing the Bidder's complete name and business address.

Note: All italicized text is to help Bidders in preparing this form.

Date of this Bid submission: [_____ *of Bid submission*]
Request for Bid No.: [*insert number of bidding process* _____]
Name of Project.: [*insert Name of Project*]
Alternative No.: [*insert identification No if this is a Bid for an alternative*]

To: [*National Bank of Pakistan*]

We, the undersigned Bidder, hereby submit the second part of our Bid, the Financial Proposal

In submitting our Financial Proposal, we make the following additional declarations:

(a) **Bid Validity Period**: Our Bid shall be valid for the period specified in **BDS 18.1** (as amended, if applicable) from the date fixed for the bid submission deadline specified in **BDS 24.1** (as amended, if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(b) **Total Price:** The total price of our Bid is:

In case of only one lot, the total price of the Bid is [*insert the total price of the bid in words and figures, indicating the various amounts and the respective currencies*];

In case of multiple lots, the total price of each lot is [*insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies*];

In case of multiple lots, total price of all lots (sum of all lots) [*insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies*];

(c) **Commissions, gratuities and fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract: [*insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity*].

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate "none.")

(d) **Binding Contract:** We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed.

Name of the Bidder:* [_____]

Name of the person duly authorized to sign the Bid on behalf of the Bidder: ** [_____ _____]

Title of the person signing the Bid: [_____]

Signature of the person named above: [_____]

Date signed [_____]

*: In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder.

**: Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

FORM ELI 1
Bidder Information Form

[The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]

Date: *[insert date (_____) of Bid submission*]
RFB No.: *[insert number of Bidding process_____]*
Alternative No.: *[insert identification No if this is a Bid for an alternative _____]*

Page _____ of_____ pages

1. Bidder's Name *[insert Bidder's legal name]* …….
2. In case of JV, legal name of each member: *[insert legal name of each member in JV]* ……
3. Bidder's actual or intended country of registration: *[insert actual or intended country of registration]* …….
4. Bidder's year of registration: *[……]*
5. Bidder's Address in country of registration: *[……]*
6. Bidder's Authorized Representative Information Name: *[……]* Address: *[……]* Telephone/Fax numbers: *[……]* Email Address: *[……]*
7. Attached are copies of original documents of *[check the box(es) of the attached original documents]* ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above. ☐ In case of JV, JV agreement, in accordance with ITB 3.3. ☐ Establishing that the Bidder is not under the supervision of the Procuring agency/Employer [in case of subsidiaries] 8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

ELI2
Bidder's JV Members Information Form

[The Bidder shall fill in this Form in accordance with the instructions indicated below. The following table shall be filled in for the Bidder and for each member of a Joint Venture].
Date: *[insert date (_____) of Bid submission*]
RFB No.: *[insert number of RFB process_____]*
Alternative No.: *[insert identification No if this is a Bid for an alternative _____]*

Page _____ of_____ pages

1. Bidder's Name: *[insert Bidder's legal name]* …….
2. Bidder's JV Member's name: *[insert JV's Member legal name]* ……. …….
3. Bidder's JV Member's country of registration: *[……]*
4. Bidder's JV Member's year of registration: *[……]*
5. Bidder's JV Member's legal address in country of registration: *[……. ……]*
6. Bidder's JV Member's authorized representative information Name: *[……]* Address: *[……]* Telephone/Fax numbers: *[……/ ……]* Email Address: *[……]*
7. Attached are copies of original documents of *[check the box(es) of the attached original documents]* ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above. 8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

Personnel

Form PER -1

Contractor's Representative and Key Personnel Schedule

Bidders should provide the names and details of the suitably qualified Contractor's Representative and Key Personnel to perform the Contract. The data on their experience should be supplied using the Form PER-2 below for each candidate.

Contractor' Representative and Key Personnel

1.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……..
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*] ……
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……
2.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……..
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*] ……

	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……
3.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……
4.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*] ……
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……
5.	**Title of position:**	
	Name of candidate	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*] ……
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……

6.	**Title of position:** *[insert title]*	
	Name of candidate	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*] ……
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……

Form PER-2:
Resume and Declaration
Contractor's Representative and Key Personnel

Name of Bidder

Position [#*1*]: [*title of position from Form PER-1*]		
Personnel information	**Name:**	**Date of birth:**
	Address:	**E-mail:**
	Professional qualifications:	
	Academic qualifications:	
	Language proficiency: *[language and levels of speaking, reading and writing skills]*	
details		
	Address of Procuring agency/Employer:	
	Telephone:	**Contact (manager / personnel officer):**
	Fax:	
	Job title:	**Years with present Procuring agency/Employer:**

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

Project	**Role**	**Duration of involvement**	**Relevant experience**
[main project details]	*[role and responsibilities on the project]*	*[time in role]*	*[describe the experience relevant to this position]*

Declaration

I, the undersigned *[insert either "Contractor's Representative" or "Key Personnel" as applicable]* , certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Bid:

Commitment	**Details**
Commitment to duration of contract:	*[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]* ……
Time commitment:	*[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]* ……

I understand that any misrepresentation or omission in this Form may:

(a) be taken into consideration during Bid evaluation;

(b) result in my disqualification from participating in the Bid;

(c) result in my dismissal from the contract.

Name of Contractor's Representative or **Key Personnel: [*insert name*]**

Signature: _____

Date: (day month year): _____

Countersignature of authorized representative of the Bidder:

Signature: _____

Date: (day month year): _____

Form CON – 2

Historical Contract Non-Performance, Pending Litigation and Litigation History

Bidder's Name: _____

Date: _____

JV Member Name_____

ICB/NCB No. and title: _____

Page _____of _____pages

Non-Performed Contracts in accordance with Qualification Criteria			
☐ Contract non-performance did not occur January *[insert year]* ☐ Contract(s) not performed since [*insert year]*			
Year	**Non-performed portion of contract**	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and PKR equivalent)**
		Contract Identification: Name of Procuring agency/Employer(PA): Address of PA: Reason(s) for nonperformance:	
Pending Litigation, in accordance with Qualification Criteria			
☐ No pending litigation ☐ Pending litigation			

Year of dispute	Amount in dispute (currency)	Contract Identification	Total Contract Amount
		Contract Identification: _____ Name of PA: _____ Address of PA: _____ Matter in dispute: _____ Party who initiated the dispute: ____ Status of dispute: _____	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria of the Prequalification document			
☐ No Litigation History ☐ Litigation History			
Year of award	**Outcome as percentage of Net Worth**	**Contract Identification**	**Total Contract Amount (currency), PKR Equivalent (exchange rate)**
[insert year]	*[insert percentage]*	Contract Identification: *[indicate complete contract name, number, and any other identification]* Name of PA: *[insert full name]* Address of PA: *[insert street/city/country]* Matter in dispute: *[indicate main issues in dispute]* Party who initiated the dispute: *[indicate "Procuring agency/Employer" or "Contractor"]* Reason(s) for Litigation and award decision *[indicate main reason(s)]*	*[insert amount]*

Financial Situation

Form FIN – 3.1:

Financial Situation and Performance

Bidder's Name: _____
Date: _____
JV Member's Name_____
ICB No. and title: _____
Page _____of _____pages

1. Financial data

Type of Financial information in (currency)	**Historic information for previous _____*years*, _____ (amount in currency, currency, exchange rate*, PKR equivalent)**				
	Year 1	Year 2	Year 3	Year4	Year 5
Statement of Financial Position (Information from Balance Sheet)					
Total Assets (TA)					
Total Liabilities (TL)					
Total Equity/Net Worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Working Capital (WC)					
Information from Income Statement					
Total Revenue (TR)					
Profits Before Taxes (PBT)					
Cash Flow Information					
Cash Flow from Operating Activities					

*Refer to ITB 16 for the exchange rate

2. Sources of Finance

Specify sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.

No.	Source of finance	Amount (PKR)
1		
2		
3		

2. Financial documents

The Bidder and its parties shall provide copies of financial statements for _____years pursuant to Evaluation and Qualifications Criteria, Sub-factor 3.1. The financial statements shall:

(a) reflect the financial situation of the Bidder or in case of JV member, and not an affiliated entity (such as parent company or group member).

(b) be independently audited or certified in accordance with local legislation.

(c) be complete, including all notes to the financial statements.

(d) correspond to accounting periods already completed and audited.

☐ Attached are copies of financial statements for the _____years required above; and complying with the requirements

Form FIN – 3.2:

Average Annual Construction Turnover

Bidder's Name: _____
Date: _____
JV Member's Name_____
ICB/NCB No. and title: _____
Page _____of _____pages

	Annual turnover data (construction only)		
Year	**Amount** **Currency**	**Exchange rate**	**PKR equivalent**
[indicate year]	*[insert amount and indicate currency]*		
Average Annual Construction Turnover *			

* See Section III, Evaluation and Qualification Criteria.

Form FIN – 3.3:

Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as specified in Section (Evaluation and Qualification Criteria)

Financial Resources		
No.	**Source of financing**	**Amount**
1		
2		
3		

Form FIN – 3.4:

Current Contract Commitments / Works in Progress

Bidders and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Current Contract Commitments					
No.	**Name of Contract**	**Procuring agency/Employer's Contact Address, Tel, Fax**	**Value of Outstanding Work [PKR Equivalent]**	**Estimated Completion Date**	**Average Monthly Invoicing Over Last Six Months [PKR/month)]**
1					
2					
3					
4					
5					

Form FIN - 5:

Self-Assessment Tool for Bidder's Compliance to Financial Resources (Criterion 2.1 of Section 3)

This form requires the same information submitted in Forms FIN – 3.3 and FIN -3.4. All conditions of "Available Financial Resources Net of CCC ≥ Requirement for the Subject Contract" must be satisfied to qualify.

Form FIN - 5A: For Single Entities

For Single Entities: (A)	Total Available Financial Resources from FIN – 3.3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 3.4 (C)	Available Financial Resources Net of CCC D = (B - C)	Requirement for the Subject Contract (E)	Results: Yes or No [*D must be greater than or equal to E*] (F)
_____ (Name of Bidder)				. . . . . ._	

Form FIN - 5B: For Joint Ventures

For Joint Ventures: (A)	Total Available Financial Resources from FIN – 3.3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 3.4 (C)	Available Financial Resources Net of CCC D = (B - C)	Requirement for the Subject Contract (E)	Results: Yes or No [*D must be greater than or equal to E*] (F)
One Partner:					
_____ __ (Name of Partner)				. . . . . .	
Each Partner:					

_____ _ (Name of Partner 1)				. . . .	
_____ _ (Name of Partner 2)				. . . .	
_____ _ (Name of Partner 3)				. . . .	
All partners combined	∑ D = Sum of available financial resources net of current contract commitments for all partners		∑ D = _____	. . . .	

Form FIN – 5 is made available for use by the bidder as a self-assessment tool, and by the employer as an evaluation work sheet, to determine compliance with the financial resources requirement as stated in 2.3.3. Failure to submit Form FIN - 5 by the Bidder shall not lead to bid rejection.

EXPERIENCE

Form EXP - 4.1

General Construction Experience

Bidder's Name: _____
Date: _____
JV Member's Name_____
ICB/NCB No. and title: _____
Page _____of _____pages

Starting Year	Ending Year	Contract Identification	Role of Bidder
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of PA: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of PA: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of PA: _____ Address: _____	

Form EXP - 4.2(a)

Specific Construction and Contract Management Experience

Bidder's Name: _____
Date: _____
JV Member's Name_____
ICB/NCB No. and title: _____
Page _____of _____pages

Similar Contract No.	**Information**			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount			PKR equivalent	
If member in a JV or sub-contractor, specify participation in total Contract amount				
PA's Name:				
Address: Telephone/fax number E-mail:				

Form EXP - 4.2(a) (cont.)

Specific Construction and Contract Management Experience (cont.)

Similar Contract No.	Information
Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:	
1. Amount	
2. Physical size of required works items	
3. Complexity	
4. Methods/Technology	
5. Construction rate for key activities	
6. Other Characteristics	

Form EXP - 4.2(b)

Construction Experience in Key Activities

Bidder's Name: _____
Date: _____
Bidder's JV Member Name: _____
Sub-contractor's Name[2] (as per ITB 34.2 and 34.3): _____
ICB/NCB No. and title: _____

Page _____ of _____ pages

All Sub-contractors for key activities must complete the information in this form as per ITB 38 and Qualification Criteria and Requirements, Sub-Factor 4.2.

1. Key Activity No One: _____

	Information			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount			PKR equivalent	
Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year	Total quantity in the contract (i)	Percentage participation (ii)		Actual Quantity Performed (i) x (ii)
Year 1				
Year 2				
Year 3				
Year 4				

[2] If applicable

	Information
PA's Name:	
Address: Telephone/fax number E-mail:	

2. Activity No. Two

3. ……

	Information
Description of the key activities in accordance with Section III:	

Form EXP - 4.2 (c)

Specific Experience in Managing ES aspects

[The following table shall be filled in for contracts performed by the Bidder, and each member of a Joint Venture]

Bidder's Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Member Name: *[insert full name]*
ICB/NCB No. and title: *[insert ICB/NCB number and title]*
Page *[insert page number]* of *[insert total number]* pages

1. Key Requirement no 1 in accordance with 4.2 (c): _____

Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Subcontractor ☐
Total Contract Amount			PKR	
Details of relevant experience				

2. Key Requirement no 2 in accordance with 4.2 (c): _____
3. Key Requirement no 3 in accordance with 4.2 (c): _____
4. …

Appendix-A

Form of Bid Security

(Bank Guarantee)

[The bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[Purchaser to insert its name and address]*

No.: *[Purchaser to insert reference number for the Request for Bids]*

Alternative No*.: [Insert identification No if this is a Bid for an alternative]*

Date: *[Insert date of issue]*

BID GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that _____ *[insert name of the Bidder, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof]* (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its Bid (hereinafter called "the Bid") for the execution of _____ under Request for Bids No. _____ _ ("the RFB").

Furthermore, we understand that, according to the Beneficiary's conditions, Bids must be supported by a Bid guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (_____) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

(a) has withdrawn its Bid during the period of Bid validity set forth in the Applicant's Letter of Bid ("the Bid Validity Period"), or any extension thereto provided by the Applicant; or

(b) having been notified of the acceptance of its Bid by the Beneficiary during the Bid Validity Period or any extension thereto provided by the Applicant, (i) has failed to sign the contract agreement, or (ii) has failed to furnish the performance security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, upon our receipt of copies of the Contract agreement signed by the Applicant and the performance security issued to the Beneficiary in relation to such Contract agreement; or (b) if the Applicant is not the successful Bidder, upon the earlier

of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Bidding process; or (ii) twenty-eight days after the end of the Bid Validity Period.

Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

_____

[Signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

Appendix-B

Form of Bid-Securing Declaration

[The Bidder shall fill in this Form in accordance with the instructions indicated.]

Date: *[date (as day, month and year)]*
No.: *[number of bidding process]*
Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[complete name of Procuring agency/Employer]*

We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid-Securing Declaration.

We accept that we will be blacklisted and henceforth cross debarred for participating in respective category of public procurement proceedings for a period of (not more than) six months, if fail to abide with a bid securing declaration, however without indulging in corrupt and fraudulent practices, if we are in breach of our obligation(s) under the Bid conditions, because we:

(a) have withdrawn our Bid during the period of Bid validity specified in the Letter of Bid; or

(b) having been notified of the acceptance of our Bid by the Procuring agency/Employer during the period of Bid validity, (i) fail or refuse to sign the Contract; or (ii) fail or refuse to furnish the Performance Security (or guarantee), if required, in accordance with the ITB.

We understand this Bid Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Name of the Bidder*****_____

Name of the person duly authorized to sign the Bid on behalf of the Bidder******_____

Title of the person signing the Bid_____

Signature of the person named above_____

Date signed _____ day of _____, _____

*****: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder
******: Person signing the Bid shall have the power of attorney given by the Bidder attached to the Bid

[Note: In case of a Joint Venture, the Bid-Securing Declaration must be in the name of all members to the Joint Venture that submits the Bid.]

Appendix-C

Formula for Price Adjustment

*[**Note to Procuring agency/Employer:** It is recommended that in the case of very large and/or complex works contracts, it may be necessary to specify several families of price adjustment formulae corresponding to the different works involved. **When finalizing the contract document, ensure that the finalized Schedule of Cost Indexation is attached to** **the Contract Agreement.***]

a) Price Adjustment/ escalation shall not be applicable on Civil, Mechanical and Electrical projects /contracts having contract life less than 365 days from the date of the signing of the contract.

b) Procuring Agency/Employer is advised not to change any provisions hereof unless otherwise stated by the Authority.

c) No method, other than given in this formula will be applicable to compute the price adjustment.

d) This document will be applicable only for Price Adjustment in local currency (Pak. Rs.). Price Adjustment in foreign currency is not allowed.

e) Price Adjustment formula and corresponding references to be inferred for price adjustment shall be agreed and firmed up before signing of the contract. Procuring agency and contractor shall firm up the weightages and co-efficient for respective items before signing of the contract and there shall be no change permissible in the weightages after signing of the contract.

f) For imported plant/ equipment and materials quoted in local currency (Pak. Rs.), foreign currency, exchange rates shall be fixed at the respective interbank currency exchange rates, 28 days prior to the tender opening date. The change in foreign currency exchange rate will be applicable to the foreign currency component stated in the Letter of Credit established by the Contractor or his Vendor.

g) This procedure is to assist the Procuring agency/Employer and bidder for the preparation of provisions for price adjustment in their bidding / contract documents. All the coefficients of the price adjustment formula shall be specified in the bidding document at the time of advertisement.

[The formulae for price adjustment shall be of the following general type:]

$$\mathbf{P}n = \mathbf{A} + \mathbf{b}\,\frac{\mathbf{L}n}{\mathbf{L}o} + \mathbf{c}\,\frac{\mathbf{M}n}{\mathbf{M}o} + \mathbf{d}\,\frac{\mathbf{E}n}{\mathbf{E}o} + \ldots\ldots\ldots\ldots$$

where,

"**P**n" is the Price Adjustment factor for the work carried out in the period "n".

"**A**" is a constant or the Non-Adjustable Portion of the Price Adjustment Factor to be specified in Appendix-C to Bid, representing the Non-Adjustable Portion of the Contract Price.

"**b**, **c**, **d .....**" are Coefficients or weightages of the order of 0.xx (i.e., fractions rounded off to two decimals) for each specified element of adjustment in the Contract. The sum of **A**, **b**, **c**, **d**, etc., shall be one.

"Ln", "En", "Mn", ... are the current cost indices or reference prices for period "n", expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the date 28 days prior to the last day of the period (to which the particular Payment Certificate relates); and

"Lo", "Eo", "Mo", ... are the base cost indices or reference prices, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the Base Date.

1. Construction schedule should be provided by the contractor as required in the Contract. Price Adjustment shall be applicable as payable in full for the original scheduled completion period.

2. In the event the completion of contract exceeds the original scheduled period:

   2.1 In case of default on the part of the contractor causing delay in original scheduled completion, the rate of Price Adjustment will be frozen at the original scheduled date of completion; however Price Adjustment will be applicable till actual completion. While computing Price Adjustment beyond the scheduled completion period, in the event the rate is reduced, then that reduced rate will be applied.

3. The Price Adjustment will be payable in full for the extended period if the contractor has been granted an extension of time for no fault on the part of the contractor, duly approved by the Employer.

4. Unless specifically stated otherwise in the contract, the basis for compensation will be only those elements, which are specifically listed as specified items in the tender documents. This list will specify the elements for Civil, Electrical, Mechanical, Sanitary, HVAC, etc., separately.

5. Formula for Price Adjustment provided herein will be applicable for all the contracts such

as Civil, Electrical, Mechanical, etc.

6. There shall be no Price Adjustment for the elements which the Employer has either supplied free of cost or at fixed prices as well as for those elements for which an umbrella *ex gratia* or escalation cover is provided by the Government through an Executive Order or Statutory Regulatory Order (SRO).

Weightages of Specified Items

Each of the cost elements, having cost impact of five (05) percent or highercan be selected for adjustment.

In determining the weightages, the following procedure shall be adopted:

a) Base Date Price alone of an element based on market rate shall be considered excluding cost of construction/ installation, overheads and profit.

b) Engineer's Estimate shall be prepared for complete project.

c) Appropriate Rate Analysis of the Engineer's Estimate shall be made to determine costs of the basic elements.

d) For such cost elements having various types of a particular element, individual cost of such family of the element used in the project to be determined and added to work out the element cost. (Grade-40 andGrade-60 steel shall be treated under same category).

e) Each cost element determined as above, shall be divided by the total amount of Engineer's Estimate to determine various weightages.

Weightage of Fixed Portion

Weightage of fixed portion (Non-adjustable portion of the estimated cost of the contract), shall be determined as under:

a) First the weightages of all the cost elements having value of five (5) percent or more to be added up to see whether the total is 75 percent or less. In that case the total is to be subtracted from one (01) to determine the weightage of the fixed portion,

b) In case total weightage of the cost elements including HSD and labour exceeds 75 percent, the element(s) having lowest weightage(s) other than HSD and labour, shall be excluded in considering the adjustable costs elements.

c) Fixed portion shall be 25 percent and in case the fixed portion exceeds 25 percent it shall be supported by calculations attached with the bidding documents.

d) Sum of fixed portion and weightages b, c, d, ….etc., of the adjustable portion shall always be one (01).

Base Date Price

The base date price (or base date index) of any element shall be the price of the element for the month on the day falling 28 days prior to the last day for submission of bids.

Current Date Price

The current date price (or current date index) of any element shall be the price of the element for the month falling on the day 28 days prior to the last day of the period to which the particular Payment Certificate relates.

Sources of Prices

The prices of elements subject to Price Adjustment shall be to the extent possible as given in the Statistical Bulletins published by Federal Bureau of Statistics (FBS), Statistical Division Government of Pakistan. Statutory notifications and official price from public sector organizations, where available, may be used at the option of the Employer. The source for prices of High Speed Diesel (HSD) shall be either Statistical Bulletins or Pakistan State Oil (PSO) or Oil and Gas Regulatory Authority (OGRA). However, for a particular adjustable element, the same source should be used throughout the currency of contract as also stipulated in the tender documents before issuing the tender documents.
The Base Date Prices and Current Date Prices of the specified elements shall be obtained from the sources specified in the contract.

Method for payment of bills

The billed amount of the Works for each calendar month will be obtained from the checked bills submitted by the Contractor. In case the billed amount is for more than one month, the amount of the bill shall be segregated for actual workdone in each month.

Coefficient or Weightages

a) The coefficient for each specified element shall be calculated and given in the bidding/tender documents. The coefficient for each specified adjustable element shall be determined by the user proportionate to its ratio in the total amount of the Engineer's Estimate, in accordance with the prescribed procedure. The sum of these coefficients shall form the adjustable portion of the Contract, which shall not exceed 0.75.
b) Coefficients for each adjustable item shall be agreed by both parties and shall be fixed and locked at the time of the signing of the contract and shall remain constant during the currency of the contract.

Price Adjustment for Lump Sum Contract

a) Formula of Price Adjustment shall be used in determining Price Adjustment for contracts having detailed breakdown of cost. However, when a contract is assigned on lump sum basis without detailed breakdown of quantities and cost, Price Adjustment for the Specified Elements in the contract will be computed as follows:

$$\text{Increase/ Decrease in Cost (Price Adjustment Factor)} = \frac{\text{Current Date Price} - \text{Base Date Price}}{\text{Base Date Price}}$$

b) If the resulting Price Adjustment Factor is positive (+ve), the price should be added tothe contractor's payable amount. If the result is negative (-ve), the price should be subtracted from the payable amount.

c) The executed quantities of the elements subject to Price Adjustment can be obtained from the actual measurement or from certified invoice of the contractor or any other mode agreed between the parties which shall be stipulated in the contract.

Section VIII. General Conditions (GC)

Red Book:

© FIDIC 2017. All rights reserved.

The Conditions of Contract are the "General Conditions" which form part of the "Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer ("Red book") Second edition 2017" published by the Federation Internationale Des Ingenieurs – Conseils (FIDIC) and the following "Particular Conditions" which shall complement the General Conditions of the Contract.

An original copy of the above FIDIC publication i.e. "*Conditions of Contract for Building and Engineering Works Designed by the Employer*" must be obtained from FIDIC.

International Federation of Consulting Engineers (FIDIC)

FIDIC Bookshop – Box- 311 – CH – 1215 Geneva 15 Switzerland

Fax: +41 22 799 49 054

Telephone: +41 22 799 49 01

E-mail: fidic@fidic.org

www.fidic.org

FIDIC code: ISBN13: 978-2-88432-084-9

Section IX. Special Conditions of the Contract

Special Conditions of the Contract

The Special Conditions of Contract (SCC) complement the General Conditions of Contract (GCC) to specify data and contractual requirements of the National Bank of Pakistan, the engineer, the sector, the overall project, and the works. In the event of a conflict, the provisions herein shall prevail over those in the GCC.

Part A – Contract Data

Contract data of the SCC, includes data to complement the GCC in a manner similar to the way in which the Bid Data Sheet complements the Instructions to Bidders.

SCC Clause Number	GCC Clause Number	Amendments of, and Supplements to, Clauses in the GCC
		General Provision (GCC 1)
1.	1.3	**For notices** Wing Head Engineering North, Engineering Group, LCMG, 2nd Floor NBP G-5/1 Building Islamabad: Contractors Authorized representatives name and address: …… ……
2.	1.4	**Governing Law;** The Applicable Law shall be: **Laws of the Country**
3.	1.4	**Communication Language:** The Communication Language shall be: **ENGLISH**
4.	1.5	**Documents forming the contract listed:** **(a) The Contract Agreement; (b) The Letter of Acceptance; (c)The Particular Conditions Part A – Contract Data(BDS); (d) the Particular Conditions Part B – Special Provisions(SCC); (f) General Conditions; (g) the Specification; (h) the Drawings; (i) the Schedules; (j) the JV**

		Undertaking (if the Contractor is a JV); and (k) any other documents forming part of the Contract.
The Employer/ Procuring agency/Employer (GCC Clause 2)		
5.	2.1	Time for access to the Site: **10** days after Commencement Date
The Engineer (GCC Clause 3)		
6.	3.2	Engineer's Duties and Authority: Variations resulting in an increase of the Accepted Contract Amount in excess of 15 % shall require approval of the National Bank of Pakistan.
The Contractor (GCC Clause 4)		
7.	4.2	Performance guarantee/ security will be *5%* of the Contract Price in the form of a bank guarantee from a scheduled bank of Pakistan/Insurance bond from an insurance company having at least AA rating from PACRA/JCR. **Contracts Worth Rs. 10 Mn. or above**
8.	4.7.2(a)	**Clause 4.7 Setting out** Period for notification of errors in the items of reference *"**30 Day**"*
9.	4.22	**Contractor's Operations on site** On Site *[Describe any other places as forming part of the Site]*
Sub-Contracting (GCC Clause 5)		
10.	5.1(a)	Maximum allowable accumulated value of work subcontracted (as a percentage of the Accepted Contract Amount) **Note: N/A**
11.	5.1 (b)	Works for which sub-contracting is not permitted. [*Insert works for which sub-contracting is not permitted*] **Note: N/A**
Staff and Labour (GCC Clause 6)		
12.	6.5	Normal working hours *[**12 Hours**]*
Plant, Material and Workmanship (GCC Clause 7)		
13.	7.2	Samples *[please specify if required]*
Commencement, Delays and Suspension (GCC Clause 8)		

14.	8.3	Number of additional paper copies of program Note: ***Through EPADS***
15.	8.8	Delay damages shall be payable for each day of delay shall be 0.1% of the Contract Price per day, in the currency and proportions in which the Contract Price is payable. Maximum amount of delay damages is *10*% of the Contract Price
Measurement and Valuation (GCC Clause 12)		
16.	12.2	The method of measurement shall be in accordance with the Bill of Quantities. Except as otherwise stated in the Contract, measurement shall be made of the net actual quantity of each item of the Permanent Works and no allowance shall be made for bulking, shrinkage or waste*]*
17.	12.3	Percentage profit *[*five percent (5%)*]*
Variations and Adjustments (GCC Clause 13)		
18.	13.4 (b)(ii)	Percentage rate to be applied to Provisional Sums for overhead charges and profit is ***20 %***
19.	13.7	Adjustments for Changes in Cost: The Contract Price shall be adjustable during Contract Execution. *[The Procuring agency/Employer shall ensure consistency with Bid Data Sheet]*
Contract Price and Payment (GCC Clause 14)		
20.	14.2	Total advance payment shall be 10 % Percentage of the Accepted Contract Amount payable in the currency and proportion of the contract. *[Insert number and timing of installments if applicable]* **Note: N/A**
21.	14.2.3	Repayment of Advance payment: [*insert percentage if applicabel* **Note: N/A**
22.	14.3(iii)	Percentage of retention: **5%** Limit of Retention Money

		5 %
23.	14.5(b)(i)	Plant and Materials: If Sub-Clause 14.5 applies: Plant and Materials for payment when shipped _____ *[list].* **Note: N/A**
24.	14.5(c)(i)	Plant and Materials: Plant and Materials for payment when delivered to the Site _____ *[list].* **Note: N/A**
25.	14.6.2	Withholding (amounts in) an IPC _____ % of the Accepted Contract Amount. **Note: N/A**
26.	14.7(a)	Period of payment of Advance Payment to the Contractor _____days *[insert number of days, normally 28 days]* **Note: N/A**
27.	14.7b(i)	Period for the Procuring agency/Employer to make interim payments to the Contractor under Sub-Clause 14.6 (interim Payment) **30 days** *[insert number of days, normally 30 days]*
28.	14.7b(ii)	Period for the Procuring agency/Employer to make interim payments to the Contractor under Sub-Clause 14.13 (Final Payment) **60 days** *[insert number of days, normally 60 days]*
29.	14.7(c)	Period for the Procuring agency/Employer to make final payment to the Contractor **60 days** *[insert number of days, normally 56 days]*
30.	14.8	financing charges for delayed payment (percentage points above the average bank short-term lending rate as referred to under sub-paragraph (a)) _____% **Note: N/A**
31.	14.11.1(b)	Number of additional paper copies of draft Final Statement
32.	14.15	**Currencies of Payment**

		The Contract Price shall be paid in the currency or currencies named in the Contract Data. If more than one currency is so named, payments shall be made as follows: (a) if the Accepted Contract Amount was expressed in Local Currency only or in Foreign Currency only.
33.	14.15 (a)(i)	The proportions or amounts of the Local and Foreign Currencies, and the fixed rates of exchange to be used for calculating the payments, shall be as stated in the Contract Data, except as otherwise agreed by both parties. **Note: N/A**
34.	14.15 (c)	Payment of Delay Damages shall be made in the currencies and proportions specified in the Contract Data.
35.	14.15 (f)	If no rates of exchange are stated in the Contract Data, they shall be those prevailing on the Base Date and published by the central bank of the Country.
36.	17.2 (d)	**Liability for Care of the Works** Any operation of the forces of nature (other than those allocated to the Contractor in the Contract Data) which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventative precautions.
		Insurance (GCC Clause 19) Note: N/A
37.	19.1	Permitted deductible limits **insurance required for the Works**: **Note: The sum stated in Letter of Acceptance plus fifteen percent 15%.** **insurance required for Goods**: **Note: Full replacement Cost** insurance required for liability for breach of professional duty: _ **Note: N/A** _____ insurance required against liability for fitness for purpose (if any is required): **Note: N/A** _____ **insurance required for injury to persons and** **damage to property**: a**) As per workmen compensation act b) Contractor's all Risk including Third party c) Damages to the Structure, stores if supplied by the Bank** insurance required for injury to employees: __

		other insurances required by Laws and by local practice: _____
38.	19.2.1(b)	Additional amount to be insured (as a percentage of the replacement value, if less or more than 15%
39.	19.2.1(iv)	List of Exceptional Risks which shall not be excluded from the insurance cover for the Works **Note: N/A**
40.	19.2.2	Extent of insurance required for Goods Amount of insurance required for Goods **(19.1) Note: Full replacement Cost**
41.	19.2.3(a)	amount of insurance required for liability for breach of professional duty **Note: N/A**
42.	19.2.3(b)	Insurance required against liability for fitness for purpose Yes/No [*delete as appropriate*] **Note: N/A**
43.	19.2.3	Period of insurance required for liability for breach of professional duty **Note: N/A**
44.	19.2.4	Amount of insurance required for injury to persons and damage to property **(19.1) Note: a) As per workmen compensation act b) Contractor's all Risk including Third party c) Damages to the Structure, stores if supplied by the Bank**
45.	19.2.6	**Insurance** Other insurances required by Laws and by local practice The contractor shall provide all other insurances required by the Laws of the countries where (any part of) the Works are being carried out, at the Contractor's own cost. Other insurances required by local practice (if any) shall be detailed in the Contract Data and the Contractor shall provide such insurances in compliance with the details given, at the Contractor's own cost.
Dispute Avoidance/ Adjudication Board (GCC Clause 21) Note: N/A		
46.	21.1	Time for appointment of DAAB *[specify]*
47.	21.1	The DAAB shall comprise *[specify] members*

48.	21.1	List of proposed members of DAAB - Proposed by Employer/ Procuring agency/Employer 1. …….. 2. …….. 3. …….. - Proposed by Contractor 1. …….. 2. …….. 3. ……..
49.	21.2	Appointing entity (official) for DAAB members

Part-B Special Provisions

The Procuring agency/Employer shall be required to draft the special provisions (particular conditions Part-B) by referring the concerned clauses as stipulated in the General Conditions of the Contract. These provisions should be drafted by keeping following guidelines in consideration:

i. Particular conditions must be drafted clearly and without any ambiguity;

ii. Party's duties, rights, obligations, roles and responsibilities shall be clearly described in line with General Conditions of the Contract, requirements as specified in the bidding document;

iii. While drafting special provisions realistic timelines must be provided for completion of the project / assignment;

iv. All disputes must be settled either through arbitration act 1940 or through International Chamber of Commerce.

Note: Special Provisions shall always over rule and supersede the respective provisions of General Conditions of the Contract. In order to conveniently trace the respective clause, reference of the concerned GCC clause must be provided.

Table: Summary of Sections (if any) Note: N/A

Description of parts of the Works that shall be designated a Section for the purposes of the Contract (Sub-Clause 1.1.73)	Value: Percentage[3] of Accepted Contract Amount (Sub-Clause 14.9)	Time for Completion (Sub-Clause 1.1.84)	Delay Damages (Sub-Clause 8.8)

[3] These percentages shall also be applied to each half of the Retention Money under Sub-Clause 14.9

SECTION VIII: CONTRACT FORMS

Notification of Award

(On Procuring agency/Employer's letterhead)

Letter of Acceptance

[Date]. . . . . .

To: . . . . .[Name and address of the contractor]

Subject: . . . . .[Notification of Award Contract No.]

This is to notify you that your Bid dated . . . . …….[date]. . . . . …… for execution of the . . . . .[name of the contract and identification number, as given in the Bid Data Sheet] . . . . . for the Accepted Contract Amount of the equivalent of . . . . . [amount in words and figures and name of currency]. . . . ., as corrected and modified in accordance with the Instructions to Bidders, is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose the Performance Security Form included in Section 9 (Contract Forms) of the Bidding Document.

Authorized Signature: .....

Name and Title of Signatory: .....

Name of Agency: .....

Attachment: Contract Agreement

Form of Contract

THIS AGREEMENT made the _____ day of _____ 20_____ between *[name and address of Procuring agency/Employer]* of Pakistan (hereinafter called "the Procuring agency/Employer") of the one part and *[name of Contractor]* of *[city and country of Contractor]* (hereinafter called "the ") of Contractor other part:

WHEREAS the Procuring agency/Employer desired that the works *[brief description of works]* should be executed by the contractor, and has accepted a Bid by the contractor for the execution and completion of these works and remedying of any defects therein, in the sum of *[contract price in words and figures]* (hereinafter called "the Contract Price").

NOW THIS CONTRACT WITNESSETH AS FOLLOWS:

1. In this Contract words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Contract, In the event of any ambiguity or conflict between the Contract Documents listed below, the order of precedence shall be the order in which the Contract Documents are listed below:-

    (a) This form of Contract;
    (b) Letter of Acceptance;
    (c) the Form of Bid and the Price Schedule submitted by the Bidder;
    (d) the Works Requirements;
    (e) the Technical Specifications;
    (f) the Drawings;
    (g) the General Conditions of the Contract
    (h) the Special Conditions of Contract,
    (i) the completed schedule including Bill of Quantities; and
    (j) [*add here: any other documents*]

3. In consideration of the payments to be made by the Procuring agency/Employer to the contractor as mentioned in this contract, the contractor hereby covenants with Procuring agency/Employer to execute the works to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Procuring agency/Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, 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 to be executed in accordance with their respective laws the day and year first above written.

Signed, sealed, delivered by _____the _____ (for the Procuring agency/Employer)	Signed, sealed, delivered by _____the _____ (for the Contractor)
Witness to the signatures of the Procuring agency/Employer ……	Witness to the signatures of the Contractor ……

Performance Guarantee Form

To: *[name of Procuring agency/Employer]*

WHEREAS *[name of Contractor]* (hereinafter called "the contractor") has undertaken, in pursuance of Contract No. *[reference number of the contract]* dated *[insert date]* for the execution of *[insert name of the works and its brief description] (*hereinafter called "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the contractor shall furnish you with a Bank Guarantee by a reputable bank for the sum specified therein as security for compliance with the Contractor's performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Contractor a guarantee:

THEREFORE, WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Contractor, up to a total of *[amount of the guarantee in words and figures],* and we undertake to pay you, upon your first written demand declaring the Contractor to be in default under the Contract and without cavil or argument, any sum or sums within the limits of *[amount of guarantee]* as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the: *[insert date]*

Signature and seal of the Guarantors

_____

[name of bank or financial institution]

_____

[address]

_____

[date]

Advance Payment Security

Demand Guarantee

_____

Beneficiary: _____

Date: _____

ADVANCE PAYMENT GUARANTEE No.: _____

Guarantor: _____

We have been informed that [Inset name of the Contractor] (hereinafter called "the Contractor") has entered into Contract No. _____ dated _____ with the [insert name of the Procuring agency/Employer] (hereinafter called "the Procuring agency/Employer") for the execution of _____ (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum _____ (_____) is to be made against an advance payment guarantee.

At the request of the Contractor, we as Guarantor, hereby irrevocably undertake to pay the Procuring agency/Employer any sum or sums not exceeding in total an amount of _____ upon receipt by us of the Procuring agency/Employer's complying demand supported by the Procuring agency/Employer's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:

(a) has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or

(b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Contractor has failed to repay.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Procuring agency/Employer's bank stating that the advance payment referred to above has been credited to the Contractor on its account number _____ at _____..

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as specified in copies of interim statements or payment certificates which shall be presented to us.

The Guarantee shall remain valid up to the aforesaid date and shall be null and void after the aforesaid date or earlier if the advance made to the Contractor is fully adjusted against payments from Interim Payment Certificates of the Contractor provided that the Guarantor agrees that the aforesaid period of validity shall be deemed to be extended if on the above mentioned date the advance payment is not fully adjusted.

_____

[signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

Retention Money Security

Demand Guarantee

_____ *[Guarantor letterhead or SWIFT identifier code]*

Beneficiary: _____ *[Insert name and Address of Procuring agency/Employer]*

Date: _____*[Insert date of issue]*

RETENTION MONEY GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that _____ *[insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Contractor") has entered into Contract No. _____ *[insert reference number of the contract]* dated _____ with the Procuring agency/Employer, for the execution of _____ *[insert name of contract and brief description of* Works*]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, the Procuring agency/Employer retains moneys up to the limit set forth in the Contract ("the Retention Money"), and that when the Taking-Over Certificate has been issued under the Contract and the first half of the Retention Money has been certified for payment, payment of *[*insert the second half of the Retention Money *or if the amount guaranteed under the Performance Guarantee when the Taking-Over Certificate is issued is less than half of the Retention Money,* the difference between half of the Retention Money and the amount guaranteed under the Performance Security and, if required, the ES Performance Security*]* is to be made against a Retention Money guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ *[insert amount in figures]* (_____) *[amount in words]* upon receipt by us of the Procuring agency/Employer's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without your needing to prove or show grounds for your demand or the sum specified therein.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Procuring agency/Employer's bank stating that the second half of the Retention Money as referred to above has been credited to the contractor on its account number _____ at _____ *[insert name and address of Contractor's bank]*.

This guarantee shall expire no later than the …. day of ……, 2…, and any demand for payment under it must be received by us at the office indicated above on or before that date.

_____

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

Integrity Pact

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC. PAYABLE BY THE SUPPLIERS OF GOODS, SERVICES & WORKS IN CONTRACTS WORTH RS.10.00 MILLION OR MORE

Contract Number: _____ Dated: _____
Contract Value: _____
Contract Title: _____

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

Without limiting the generality of the foregoing [Name of Contractor] represents and warrants that it has fully declared the brokerage, commission, fee 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 consultations 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 Contractor] 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, representative or warranty.

[Name of Contractor] accepts full responsibility and strict liability for making and false declaration, not making full disclosure, misrepresenting fact 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 right 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 Contractor] 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 time the sum of any commission, gratification, bribe, finder's fee or kickback given by [Name of Contractor] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP.

_____ _____

[Procuring agency/Employer] [Contractor]

Check List

S. No	Criteria	Yes/No	Page No.
1	Nationality in accordance with **ITB 4.3**		
2	No conflicts of interest in accordance with **ITB 3.7**		
3	Non-performance of a contract did not occur as a result of contractor default since ***[3 years]*.**		
4	Bidder's financial position and prospective long term profitability sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Bidder		
5	No consistent history of court/arbitral award decisions against the Bidder since 1st **January *[2022]***		
6	The Bidder shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as ……for the subject contract(s) net of the Bidders other commitments		
7	The Bidders shall also demonstrate, to the satisfaction of the Procuring agency/Employer, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments		
8	The audited balance sheets or, if not required by the laws of the Bidder's country, other financial statements acceptable to the Procuring agency/Employer for the last ***03* years** shall be submitted and must demonstrate the current soundness of the Bidder's financial position and indicate its prospective long-term profitability.		
9	Minimum average annual construction turnover of **PKR ……** calculated as total certified payments received for contracts in progress and/or completed within the last 03 years, divided by **03 years**		
10	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last **03 years**, starting from (insert date) …….		
11	A minimum number of similar contracts specified below that have been satisfactorily and substantially completed as a prime contractor, joint venture member, management contractor or sub-contractor between **03 years** and application submission deadline: (i) N contracts, each of minimum value V; Or (ii) Less than or equal to N contracts, each of minimum value V, but with total value of all contracts equal or more than N x V;…… **,** *(ii)……above if not applicable]*.		
12	For the above and any other contracts completed and under implementation as prime contractor, joint venture member, management contractor or sub-contractor on or after the first day of the calendar year during the period stipulated in 4.2 (a) above, a minimum construction experience in the following key activities successfully completed		
13	An active status on FBR Active Taxpayer List and with Provincial Revenue Board.		
14	Valid registration in Pakistan Engineering Council in financial category C-5 or		

	above with Specialization Code CE-10 & EE-04 on bidding date.		

Evaluation Criteria with respect to Project

NATIONAL BANK OF PAKISTAN

MAJOR RENOVATION & REFURBISHMENT WORK OF NBP KHAIRAGALI BRANCH RO ABBOTTABAD

Standard Bidding Documents for Procurement of Works

Bidding Opening Procedure: PPRA Rule 36 (a)

(For the purpose of this tender, all references to manual processes and manual submission of tender/bid should be deemed to have been replaced with the processes and procedures in pursuant E-Pak Acquisition & Disposal System (EPADS) and defined in E-PAK Procurement Regulation, 2023.)

This completed Bidding Documents; along with Bid Security Instrument and all necessary documents forthe responsiveness of the bid as specified in the bidding documents; shall be submitted / uploaded on PPRA's EPADS Portal; before close of bid submission time.

June 2025

National Bank of Pakistan
ENGINEERING WING
Federal Capital

PREFACE

Public Procurement is carried out in Pakistan in accordance with the provisions laid down in Public Procurement Regulatory Framework consisted of Public Procurement Ordinance- 2002; Public Procurement Rules-2004 and allied Regulations, Regulatory Guides and Guidelines.

National Standard Bidding/Procurement Documents are developed for standardizing the procurement procedures and practices in the procuring agencies of the Federation of Pakistan and has the status of the Regulations in terms of section 27 of the PPRA Ordinance read with Rule-23(4) of Public Procurement Rules.

The document consists of general as well as specific provisions to be applicable for the procurement of works and can be used with or without pre-qualification process. The specific provisions supplement to the general provisions and may be amended or opted by the procuring agencies in the manner and to the extent prescribed in the respective sections.

This document is a live document, and may be updated on 30th June of each financial year (as an when required) considering the regulatory experience feedback based on monitoring the procurement practices and valuable suggestions of the stakeholders (i.e. procuring agencies, vendors and general public).

Standard Bidding Documents

for

Procurement of Works

PART-A – BIDDING PROCEDURE & REQUIREMENTS

Section I - Invitation for Bids
Section II- Instructions to Bidders (ITB)

This Section provides information to help Bidders prepare their Bids. Information is also provided on the submission, opening, and evaluation of Bids and on the award of Contracts. (***This Section contains provisions that are to be used without modifications.)***

Section III- Bid Data Sheet (BDS)

This Section includes provisions specific to procurement and to supplement Section-II, Instructions to Bidders. ***(This section may be customized where option is available, in accordance with the requirements of the Procuring agency/Employer)***.

Section IV - Eligible Countries

This Section contains information regarding eligible countries.

Section V – Evaluation and Qualification Criteria

This section contains information regarding evaluation and qualification criteria including domestic preference.

Section VI – Works Requirements, Technical Specifications, Drawings, Supplementary Information and Bill of Quantities

This Section includes the Drawings, and supplementary information that describe the Works to be procured. ***(To be filled by the Procuring agency/Employer).***

Section VII – Standard Bidding Forms

This Section includes the standard forms for the Bid Submission, Price Schedules, and Bid Security etc. These forms are to be completed and submitted by the Bidder as part of its Bid.

PART-B – CONDITIONS OF CONTRACT AND CONTRACT FORMS

Section VIII - General Conditions of Contract (GCC)

This Section includes the general clauses to be applied in all the contracts. (***This Section contains provisions that are to be used without modifications).***

Section IX - Special Conditions of Contract (SCC)

This Section consists of Contract Data and Specific Provisions which contains clauses specific to this contract. ***(This section may be customized where option is available, in accordance with the requirements of the Procuring agency/Employer***).

Section X - Contract Forms

This Section contains forms which, once completed, will become part of the Contract including Letter of Acceptance, Contract Agreement, Integrity Pact **[Procurement exceeding the limit of PKR 10 Million shall be subject to an integrity pact between the User Group and the vendor]** and other relevant forms. The forms for **Performance Security/ Guarantee and Beneficial Owners Information, integrity pact as per SBD** will be provided by the successful bidder to whom Letter of Acceptance is issued, before the award of contract.

PART-A

BIDDING PROCEDURE & REQUIREMENTS

SECTION I: INVITATION FOR BIDS

NATIONAL BANK OF PAKISTAN

MAJOR RENOVATION & REFURBISHMENT WORK OF NBP KHAIRAGALI BRANCH RO ABBOTTABAD

INVITATION TO e-BID

1. This Invitation to Bids follows the Procurement Notice for the subject Project/Procurement which appeared in Newspapers and on **NBP** and **PPRA** Websites.

2. The National Bank of Pakistan has reserved the funds for the procurement planned during the financial year 2024. It is intended that part of the proceeds of the fund will be used to cover eligible payment under the contract for the aforesaid procurement.

3. The National Bank of Pakistan; now invites bids through EPADS from the original contractors, registered with Pakistan Engineering Council (PEC), Income tax & Provisional Tax department for **MAJOR RENOVATION & REFURBISHMENT WORK OF NBP KHAIRAGALI BRANCH RO ABBOTTABAD** eligible Renovation & Refurbishment with related Services; **through EPADS only.**

4. The bidding shall be conducted in line with the Single Stage Single Envelope procedure of the Public Procurement Rules 2004 and any Regulations, Regulatory Guides, Procurement Guidelines or Instructions issued by the Authority (from time to time), and is open to all potential bidders.

5. All bids must be accompanied by a scanned Copy of Bid Security in the form of Banker's Cheque or Payment Order or Bank Guarantee in the amount of **RS. 300,000/-.** The ORIGINAL BID SECURITY MUST be submitted to the National Bank of Pakistan any time before the Closing time of Bid Submission, failing which the bid shall be rejected.

6. The original bid, along with all the required documents as stated in the bidding documents; properly filled in, must be submitted Only through e-Pak Acquisition & Disposal System (EPADS) at or before **11:00 am** dated: **12 August, 2025**. The bids will be opened promptly thereafter on **EPADS** at **11:30 am** the same day, and in the presence of bidders' representatives who choose to attend in the opening at the under mentioned address.

Office of VP/Wing Head, Engineering Wing (North), Engineering Group, LCMG, 2nd Floor, National Bank of Pakistan, G-5/1 Building Islamabad

WING HEAD (Central & North)
Procurement Division, LCMG
NATIONAL BANK OF PAKISTAN
Regional Head Quarters, 26 McLagan Road, Lahore-Pakistan|
Direct: +92-42-99212694|PABX: +92-42-99210641|Ext: 3510 |

Table of Contents

A. INTRODUCTION 13
1. Scope of Bid 13
2. Source of Funds 13
3. Eligible Bidders 13
4. Eligible Material and Equipment 16
5. One Bid per Bidder 16
6. Cost of Bidding 17
B. BIDDING DOCUMENTS 17
7. Contents of Bidding Documents 17
8. Clarification of Bidding Document, Pre-bid Meeting 18
9. Amendment of Bidding Documents 19
C. PREPARATION OF BIDS 20
10. Language of Bid 20
11. Documents Establishing Eligibility of Material, Equipment and Works, their Conformity to Bidding Documents 20
12. Documents Establishing Eligibility and Qualification of the Bidder 22
13. Letter of Bid and Schedules 23
14. Letter of Bid 23
15. Bid Prices 23
16. Currencies of Bid and Payment 24
17. Documents Comprising the Technical Proposal 25
18. Bid Validity Period 25
19. Bid Security or Bid Securing Declaration 25
20. Alternative Bids by Bidders 28
21. Withdrawal of Bids 28
22. Format and Signing of Bid 29
D. SUBMISSION OF BIDS 29
23. Sealing and Marking of Bids 30
24. Deadline for Submission of Bids 30
25. Late Bids 30
26. Substitution and Modification of bids 30

E. OPENING AND EVALUATION OF BIDS 30
27. Opening of Bids 30
28. Confidentiality 33
29. Clarification of Bids 35

30. Preliminary Examination of Bids 36
31. Examination of Terms and Conditions; Technical Evaluation 38
32. Correction of Arithmetic Errors 39
33. Conversion to Single Currency 40
34. Evaluation of Bids 40
35. Domestic Preference 40
36. Determination of Most Advantageous Bid 40
37. Qualification of Bidder 40
38. Sub-Contractors 40
39. Abnormally Low Financial Bid 41
F. AWARD OF CONTRACT 46
40. Criteria of Award 46
41. Negotiations 46
42. Procuring agency/Employer's Right to reject All Bids 46
43. Variations 48
44. Instructions for variations 48
45. Valuation of Variations 49
46. Notification of Award 49
47. Signing of Contract 50
48. Performance Security (or Guarantee) 50
49. Advance Payment 51
50. General Performance of the Bidders 48
51. Corrupt & Fraudulent Practices 48
F. GRIEVANCE REDRESSAL & COMPLAINT REVIEW MECHANISM 48
52. Constitution of Grievance Redressal 48
53. GRC Procedure 48
G. MECHANISM OF BLACKLISTING 50
54. Mechanism of Blacklisting 50
SECTION III: BID DATA SHEETBid Data Sheet (BDS) 57
Section IV. Eligible Countries 64
Section V. Evaluation and Qualification Criteria 60
SECTION V: WORKS REQUIREMENT, TECHNICAL SPECIFICATIONS, DRAWINGS, SUPPLEMENTARY INFORMATION AND BILL OF QUANTITIES 72
Scope of Works 78
Technical Specifications 79
Drawings 80
Supplementary Information 81
Bill of Quantities 82

Bill of Quantities..... 80
Grand Sammary 116
Specification of Materials 119
SECTION VI: STANDARD BIDDING FORMS 220
Notification of Award..... 268
Performance Guarantee Form..... 310
Integrity Pact..... 277

SECTION II: INSTRUCTION TO BIDDERS (ITBs)

[This Section contains provisions that are to be used without modifications.]

A. INTRODUCTION

1. Scope of Bid	1.1	The Procuring agency/Employer (PA), as indicated in the **Bid Data Sheet** (BDS) invites Bids for the execution of Works as specified in the BDS and **Section V- Works Requirements**. The name, identification, and number of lots (contracts) of this National/ International Competitive Bidding process are specified in BDS.
2. Source of Funds	2.1	Source of funds as referred in Bid Data Sheet.
3. Eligible Bidders	3.1	A bidder may be natural person, company or firm or public or semi-public agency of Pakistan or any foreign country**,** or any combination of them with a formal existing agreement (on Judicial Papers) in the form of a joint venture or consortium. In the case of a joint venture or consortium, all members shall be jointly and severally liable for the execution of the Contract in accordance with the terms and conditions of the Contract. The joint venture or consortium shall nominate a Lead Member as nominated in the BDS, who shall have the authority to conduct all business for and on behalf of any and all the members of the joint venture or consortium during the Bidding process, and in case of award of contract, during the execution of contract. *(The limit on the number of members of JV or Consortium may be prescribed in BDS, in accordance with the guidelines issued by the PPRA)*.
	3.2	The appointment of Lead Member in the joint venture or consortium shall be confirmed by submission of a valid Power of Attorney to the Procuring agency/Employer
	3.3	Verifiable copy of the agreement that forms a joint venture or consortium shall be required to be submitted as part of the Bid.
	3.4	Any bid submitted by the joint venture or consortium shall indicate the part of proposed contract to be performed by each party and each party shall be evaluated (or post qualified if required) with respect to its contribution only, and the responsibilities of each party shall not be substantially altered

		without prior written approval of the Procuring agency/Employer and in line with any instructions issued by the Authority.
	3.5	The invitation for bids is open to all prospective bidders subject to any provisions of incorporation or licensing by the respective national/ international incorporating agency or statutory body established for that particular trade or business.
	3.6 .	Foreign Bidders must be locally registered with the appropriate national incorporating body or the statutory body, before participating in the national/international competitive bidding with the exception of such procurements made by the foreign missions of Pakistan. For such purpose the bidder must have to initiate the registration process before the bid submission and the necessary evidence shall be submitted to the Procuring agency/Employer along with their bid, however, the final award will be subject to the complete registration process.
	3.7	A Bidder shall not have a conflict of interest. All Bidders found to have a conflict of interest shall be disqualified. A Bidders may be considered to have a conflict of interest with one or more parties in this Bidding process, if they: a) are associated or have been associated in the past, directly or indirectly with a firm or any of its affiliates which have been engaged by the Procuring agency/Employer to provide consulting services for the preparation of design or technical specifications of the works that are the subject of the bid; or b) any of its affiliates has been hired (or is proposed to be hired) by the Procuring agency/Employer as Engineer for the Contract implementation; or c) The works to be executed are resulting from or directly related to consulting services for the preparation or implementation of the project that the bidder provided or were provided by any affiliate that directly or indirectly controls, is controlled by, or is under common control with that firm;

		d) have controlling shareholders in common; or e) receive or have received any direct or indirect subsidy from any of them; or f) have the same legal representative for purposes of this Bid; or g) have a relationship with each other, directly or through common third parties, that puts them in a position to have access to information about or influence on the bid of another bidder, or influence the decisions of the Procuring agency/Employer regarding this Bidding process; or h) Submit more than one bid in this bidding process.
	3.8	A Bidder may be ineligible if – (a) he is declared bankrupt or, in the case of company or firm, insolvent; (b) payments in favor of the bidder is suspended in accordance with the judgment of a court of law other than a judgment declaring bankruptcy and resulting (in accordance with the national laws) in the total or partial loss of the right to administer and dispose of its property; (c) legal proceedings are instituted against such bidder involving an order suspending payments and which may result, in accordance with the national laws, in a declaration of bankruptcy or in any other situation entailing the total or partial loss of the right to administer and dispose of the property; (d) the bidder is convicted, by a final judgment of a Court of Law or relevant Professional Statuary Body, of any offence involving professional conduct; (e) The bidder is debarred/ blacklisted by a national level Procuring agency/Employer and hence debarred due to involvement in corrupt and fraudulent practices, or performance failure or due to breach of bid securing declaration.

		(f) The bidder is blacklisted or debarred by a foreign country, international organization, or other foreign institutions for the period defined by them.
	3.9	Bidders shall provide to the Procuring agency/Employer evidence of their eligibility, proof of compliance with the necessary legal requirements to carry out the contract effectively.
	3.10	Bidders shall provide such evidence of their continued eligibility to the satisfaction of the Procuring agency/Employer, as the Procuring agency/Employer shall reasonably request.
	3.11	Bidders shall submit proposal relating to the nature, conditions and modalities of sub-contracting wherever the sub-contracting of any elements of the contract is envisaged.
4. Eligible Material and Equipment	4.1	All the material and equipment to be mobilized under the contract shall have their origin in eligible source countries, and all expenditures made under the contract will be limited to such materials and equipment. For this purpose, ineligible countries are stated in the section-IV titled as "Eligible Countries".
	4.2	For purposes of this Clause, "origin" means the place where the material, equipment is produced, manufactured, or processed, or through manufacture, procession, or assembly, another commercially recognized article results that differs substantially in its basic characteristics from its imported components or the place from where the services are/to be supplied.
	4.3	The nationality of the bidder shall not determine the origin of the material and equipment.
	4.4	To establish the eligibility of the material and equipment, Bidders shall fill the country-of-origin declarations included in the Form of Bid.
5. One Bid per Bidder	5.1	A bidder shall submit only one bid, in the same bidding process, either individually as a bidder or as a member in a joint venture or any similar arrangement.
	5.2	No bidder can be a sub-contractor while submitting a bid individually or as a member of a joint venture in the same bidding process.

6. Cost of Bidding	6.1	The Bidder shall bear all costs associated with the preparation and submission of its bid, and the Procuring agency/Employer shall in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.
		B. BIDDING DOCUMENTS
7. Contents of Bidding Documents	7.1	The scope of Works, bidding procedures, and terms and conditions of the contract are prescribed in the bidding documents. In addition to the Invitation for Bids, the bidding documents which should be read in conjunction with any addenda issued in accordance with **ITB 9.2** include: **Section I -**Invitation for Bids **Section II** Instructions to Bidders (ITBs) **Section III** Bid Data Sheet (BDS) **Section IV** Eligible Countries **Section V** Works Requirements Technical Specifications & Schedule of Requirements **Section VI** Standard Bidding Forms **Section VII** General Conditions of Contract (GCC) **Section VIII** Special Conditions of Contract (SCC) **Section IX** Contract Forms
	7.2	The number of copies to be completed and submitted with the Bid is specified in the **BDS.**
	7.3	The Procuring agency/Employer is not responsible for the completeness of the bidding documents and their addenda, if they were not obtained directly from the Procuring agency/Employer or the signed pdf version downloaded from the website of the Procuring agency/Employer or the Authority's website or **e-Procurement System** as the case may be. However, procuring agency/Employer shall place both the pdf and editable version of the same on its website and Authority's website or **e-Procurement System** to facilitate the bidder for filling the standard bidding forms. **Note: Bidding Documents are downloaded from PPRA's EPADS Portal**
	7.4	The bidder is expected to examine all instructions, forms, specifications, terms and conditions prescribed in the bidding documents. Failure to furnish all the information required in

		the bidding documents will be at the bidder's risk and may result in the rejection of his bid.
8. Clarification of Bidding Document, Pre-bid Meeting	8.1	A prospective bidder requiring any clarification of the bidding document may notify the Procuring agency/Employer in writing or in **electronic form** that provides record of the contents of communication at the Procuring agency/Employer's address indicated in the **BDS. Note: All clarifications may be notified through PPRA's EPADS Portal**
	8.2	The Procuring agency/Employer will within three (3) working days after receiving the request for clarification, respond in writing or in **electronic form** to any request for clarification provided that such request is received not later than three (03) days prior to the deadline for the submission of Bids as prescribed in **ITB 24.1.** However, this clause shall not apply in case of alternate methods of procurement. **Note: Response shall be through PPRA's EPADS Portal**
	8.3	Copies of the Procuring agency/Employer's response will be forwarded to all identified prospective bidders through an identified source of communication, including a description of the inquiry, but without specifying its source. In case of downloading of the bidding documents from the website of Procuring agency/Employer or **e-Procurement System**, the response of all such queries will also be available on the same platform available at the website. **Note: Employer's response(s) to the clarification(s); will be made available to all the identified prospective bidders at PPRA's EPADS Portal**
	8.4	Should the Procuring agency/Employer deem it necessary to amend the bidding documents as a result of a clarification, it shall do so following the procedure as prescribed under **ITB 09.**
	8.5	If indicated **in the BDS**, the bidder's designated representative is invited at the bidder's cost to attend a pre-bid meeting at the place, date and time mentioned in the **BDS**. During this pre-bid meeting, prospective bidders may request clarification of the schedule of requirement, the evaluation criteria or any other aspects of the bidding documents.

	8.6	Minutes of the pre-bid meeting, if applicable, including the text of the questions asked by bidders, including those during the meeting (without identifying the source) and the responses given, together with any responses prepared after the meeting will be transmitted promptly to all prospective bidders who have obtained the bidding documents. Any modification to the bidding documents that may become necessary as a result of the pre-bid meeting shall be made by the Procuring agency/Employer exclusively through the use of an Addendum pursuant to **ITB 9.** Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder. **Note: Minutes of meeting will be uploaded on PPRA's EPADS Portal.**
	8.7	The bidder is advised to visit and examine the Site of Works and its surroundings and obtain for itself on its own responsibility all information that may be necessary for preparing the bid and entering into a contract for construction of the Works. The costs of visiting the Site shall be at the bidder's own expense.
	8.8	The bidder and any of its authorized personnel will be granted permission by the Procuring agency/Employer to enter upon its premises and lands for the purpose of such visit, but only upon the express condition that the bidder and its personnel will release and indemnify the Procuring agency/Employer from and against all liability in respect thereof, and will be responsible for death or personal injury, loss of or damage to property, and any other loss, damage, costs, and expenses incurred as a result of the inspection.
9. Amendment of Bidding Documents	9.1	Before the deadline for submission of bids, the Procuring agency/Employer for any reason, whether at its own initiative or in response to a clarification requested by a prospective bidder or pre-bid meeting may modify the bidding documents by issuing addenda.
	9.2	Any addendum issued including the notice of any extension of the deadline shall be part of the bidding documents pursuant to **ITB 7.1** and shall be communicated in a timely manner and on equal opportunity basis. Where notification of such change, addition, modification or deletion becomes essential, such

		notification shall be made in a manner similar to the original advertisement. *Provided that the bidder who had either already submitted their bid or handed over the bid to the courier prior to the issuance of any such addendum shall have the right to withdraw his already filed bid and submit the revised bid prior to the original or extended bid submission deadline.* **Note: Addendum at PPRA's EPADS Portal, ww.ppra.org.pk or NBP Website: http://www.nbp.com.pk**.
	9.3	To give prospective bidders reasonable time in which to take an addendum/corrigendum into account in preparing their bids, the Procuring agency/Employer may, at its discretion, extend the deadline for the submission of bids: *Provided that the Procuring agency/Employer shall extend the deadline for submission of bid, if such an addendum is issued within last three (03) days of the bid submission deadline.*

C. PREPARATION OF BIDS

10. Language of Bid	10.1	The bid prepared by the bidder, as well as all correspondence and documents relating to the bid exchanged by the bidder and the Procuring agency/Employer shall be written in the English language unless specified in the B**DS.** Supporting documents and printed literature furnished by the bidder may be in another language provided they are accompanied by an accurate translation of the relevant pages in the English language unless specified in the **BDS**, in which case, for purposes of interpretation of the bidder, the translation shall govern.
11. Documents Establishing Eligibility of Material, Equipment and Works, their	11.1	The bid prepared by the bidder shall constitute the following components: - a) Documentary evidence established in accordance with **ITB 11** that the material, equipment and services to be

Conformity to Bidding Documents		provided by the Bidder are eligible material, equipment and services, and conform to the Bidding Documents; b) Documentary evidence established in accordance with **ITB 12** that the bidder has been authorized to carry out the Construction works; c) Documentary evidence established in accordance with **ITB 12** that the bidder is eligible and/or qualified for the subject bidding process; d) Form of Bid and Bid Prices completed in accordance with **ITB 14 and 15;** **e)** Completed schedules as required, including priced Bill of Quantities in accordance with **ITB 13 & 15.** **f)** Technical Proposal completed in all aspects in accordance with **ITB-17**. g) Bid security or Bid Securing Declaration furnished in accordance with **ITB 19;** h) Alternative bids, if permissible, in accordance with **ITB 20;** i) Duly Notarized Power of Attorney authorizing the signatory of the Bidder to submit the bid**;** and j) Any other document required in the **BDS**. **Note: The Bid prepared by the Bidder to be uploaded on PPRA's EPADS Portal**;
	11.2	In addition to the requirements, bids submitted by a JV shall include a copy of the Joint Venture Agreement entered into by all members. Alternatively, a letter of intent to execute a Joint Venture Agreement in the event of a successful bid shall be signed by all members and submitted with the bid, together with a copy of the proposed Agreement.
	11.3	The bidder shall furnish, as part of its bid, all those documents establishing the eligibility in conformity to the terms and conditions specified in the bidding documents for all material, equipment and works which the bidder proposes to execute.
	11.4	The documentary evidence of conformity of the material, equipment and works to the Bidding Documents may be in the form of literature, drawings, and data, and shall consist of:

		a) a detailed description of the work methodology, approach, schedule and resources to be mobilized at site; b) an item-by-item commentary on the Procuring agency/Employer's Technical Specifications demonstrating substantial responsiveness of the material, equipment and works to those specifications, or a statement of deviations and exceptions to the provisions of the Technical Specifications; c) any other procurement specific documentation requirement as stated in the **BDS**.
	11.5	The required documents and other accompanying documents must be in English. In case any other language than English is used the pertinent translation into English shall be attached to the original version.
12. Documents Establishing Eligibility and Qualification of the Bidder	12.1	The bidder shall furnish, as part of its bid, all those documents establishing the bidder's eligibility to participate in the bidding process and/or its qualification to perform the contract if its bid is accepted.
	12.2	The documentary evidence of the bidder's eligibility to bid shall establish to the satisfaction of the Procuring agency/Employer that the bidder, at the time of submission of its bid, is from an eligible country as defined in Section-IV titled as "Eligible Countries".
	12.3	The documentary evidence of the bidder's qualification to perform the contract if its bid is accepted shall establish to the satisfaction of Procuring agency/Employer that: a) The bidder has the financial and technical capability necessary to perform the Contract, meets the qualification criteria specified in Section-V, Evaluation and Qualification Criteria and **BDS**. b) In the case of a bidder not doing business within Pakistan, the bidder is or will be (if awarded the contract) represented by a local bidder (Joint Venture) in accordance with the PEC works bylaws, and in case of award of works such foreign firm is required to participate in the execution of works to

		carry out its obligations as prescribed in the Conditions of Contract and /or Technical Specifications. c) That the bidder meets the qualification criteria listed in Section-V, Evaluation and Qualification Criteria and **BDS.**
13. Letter of Bid and Schedules	13.1	The Letter of Bid (Technical or Financial as the case may be) and Schedules, including the Bill of Quantities, shall be prepared using the relevant forms furnished in Standard Bid Forms. The forms must be completed without any alterations to the text, and no substitutes shall be accepted except as provided under **ITB 22.** All blank spaces shall be filled in with the information requested.
14. Letter of Bid	14.1	The bidder shall fill the Letter of Bid (Technical or Financial as the case may be) furnished in the bidding documents. The Standard Bid Forms must be completed without any alterations to its format and no substitute shall be accepted.
15. Bid Prices	15.1	The bid prices quoted by the bidder in the Standard bid Forms, Bill of Quantities and in the Price Schedules shall conform to the requirements specified below or exclusively mentioned hereafter in the bidding documents.
	15.2	The bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. If a Price Schedule shows items listed but not priced, their prices shall be construed to be included in the prices of other items in the Bill of Quantities and will not be paid for separately by the Procuring agency/Employer.
	15.3	Items not listed in the Price Schedule shall be assumed not to be included in the bid, and provided that the bid is still substantially responsive in their absence or due to their nominal nature, the corresponding average price of the respective item(s) of the remaining substantially responsive bidder(s) shall be construed to be the price of those missing item(s): Provided that: a) where there is only one (substantially) responsive bidder, or b) where there is provision for alternate proposals and the respective items are not listed in the other bids,

		The Procuring agency/Employer may fix the price of missing items in accordance with market survey, and the same shall be considered as final price.
	15.4	The Bid price to be quoted in the Form of Bid in accordance with **ITB 15.1** shall be the total price of the bid.
	15.5	Unless otherwise specified in the **BDS** and the Contract, the rates and prices quoted by the bidder are subject to adjustment during the performance of the Contract in accordance with the provisions of the Conditions of Contract.
	15.6	If so specified in **ITB 1.1**, bids may be invited for individual lots (contracts) or for any combination of lots (packages).
	15.7	Prices quoted by the Bidder shall be fixed during the bidder's performance of the contract and not subject to variation on any account. A bid submitted with an adjustable price will be treated as non-responsive and shall be rejected, pursuant to **ITB 30,** unless otherwise price adjustment is permissible under Conditions of the Contract.
	15.8	All duties, taxes, and other levies payable by the Contractor under the Contract, or for any other cause, as of the date twenty-eight (28) days prior to the deadline for submission of bids, shall be included in the rates and prices and the total bid price submitted by the bidder.
16. Currencies of Bid and Payment	16.1	The currency(ies) of the bid and the currency(ies) of payments shall be as specified in the **BDS.**
	16.2	For the purposes of comparison of bids quoted in different currencies, the price shall be converted into a single currency specified in the bidding documents. The rate of exchange shall be the selling rate, prevailing on the date of opening of (financial part of) bids specified in the bidding documents, as notified by the State Bank of Pakistan on that day.
	16.3	Bidders shall indicate details of their expected foreign currency requirements in the Bid, if prescribed in the BDS.
	16.4	Bidders may be required by the Procuring agency/Employer to clarify their foreign currency requirements, if prescribed in the

		BDS and to substantiate that the amounts included in Lump Sum and in the **SCC** are reasonable and responsive to **ITB 16.1**.
17. Documents Comprising the Technical Proposal	17.1	The bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in **Section IV – Standard Bid Forms**, in sufficient detail to demonstrate the adequacy of the bidder's proposal to meet the work requirements and the completion time.
18. Bid Validity Period	18.1	Bids shall remain valid for the period specified in the **BDS** after the bid submission deadline prescribed by the Procuring agency/Employer. A bid valid for a shorter period shall be rejected by the Procuring agency/Employer as non-responsive**.** The period of bid validity will be determined from the complementary bid securing instrument i.e. the expiry period of bid security or bid securing declaration as the case may be.
	18.2	Under exceptional circumstances, prior to the expiration of the initial bid validity period, the Procuring agency/Employer may request the bidders' consent to an extension of the period of validity of their bids only once, for the period not more than the period of initial bid validity. The request and the bidders' responses shall be made in writing or in electronic forms that provide record of the content of communication. The Bid Security provided under **ITB 19** shall also be extended 28 days beyond the deadline of extended bid validity period. A bidder may refuse the request for the extension of his bid without forfeiting his bid security or causing to be executed his Bid Securing Declaration. A bidder agreeing to the request will not be required nor permitted to modify its bid, but will be required to extend the validity of its Bid Security or Bid Securing Declaration for the period of the extension, and in compliance with **ITB 19** in all respects.
19. Bid Security or Bid Securing Declaration	19.1	Pursuant to **ITB 11.1** unless otherwise specified in the **BDS**, the bidder shall furnish as part of its bid, a Bid Security in form of fixed amount not exceeding five percent of the estimated value of procurement determined by the Procuring agency/Employer and in the amount and currency specified in the **BDS** or Bid

		Securing Declaration as specified in the **BDS** in the format provided in **Section VI (Standard Bidding Forms)**. In case Procuring agency/Employer is inviting bids in lots / packages, the bidder shall be required to submit his bid security against the respective lot/ package for which he is submitting his bid, which shall not exceed five percent of the estimated value of that particular lot/ package.
	19.2	The Bid Security or Bid Securing Declaration is required to protect the Procuring agency/Employer against the risk of Bidder's conduct before award of the contract to the most advantageous bidder which would warrant the security's forfeiture, pursuant to **ITB 19.9.**
	19.3	The Bid Security shall be denominated in the local currency or in another freely convertible currency, and it shall be in the form specified in the **BDS** which shall be in any of the following: a) A bank guarantee, an irrevocable letter of credit issued by a Scheduled bank in the form provided in the Bidding Documents or another form acceptable to the Procuring agency/Employer and valid for twenty-eight (28) days beyond the end of the validity of the Bid. This shall also apply if the period for Bid Validity is extended. In either case, the form must include the complete name of the bidder; b) A cashier's or certified cheque; or c) Another security as indicated in the **BDS.**
	19.4	The Bid Security or Bid Securing Declaration shall be in accordance with the Form of the Bid Security or Bid Securing Declaration included in **Section VI (Standard Bidding Forms)** or another form approved by the Procuring agency/Employer prior to the bid submission.
	19.5	The Bid Security shall be payable promptly upon written demand by the Procuring agency/Employer in case any of the conditions listed in **ITB 19.9** are invoked.
	19.6	Any bid not accompanied by a Bid Security or Bid Securing Declaration in accordance with **ITB 19.1 or 19.3** shall be rejected

		by the Procuring agency/Employer and shall be declared as non-responsive bid, pursuant to **ITB 30**.
	19.7	Unsuccessful bidders' Bid Security will be discharged or returned as promptly as possible, however in no case later than thirty (30) days after the expiration of the period of Bid Validity prescribed by the Procuring agency/Employer pursuant to **ITB 18**. The Procuring agency/Employer shall make no claim to the amount of the Bid Security, and shall promptly return the Bid Security document, after whichever of the following that occurs earliest: (a) The expiry of the Bid Security; (b) The entry into force of a procurement contract and the provision of a performance security (or guarantee), for the performance of the contract if such a security (or guarantee), is required by the Biding documents; (c) The rejection by the Procuring agency/Employer of all Bids; (d) The withdrawal of the bid prior to the deadline for the submission of bids, unless the biding documents stipulate that no such withdrawal is permitted.
	19.8	The successful bidder's Bid Security will be discharged upon the bidder signing the contract pursuant to **ITB 47,** or furnishing the performance security (or guarantee), pursuant to **ITB 48**.
	19.9	The Bid Security may be forfeited or the Bid Securing Declaration executed: a) if a Bidder: i) Withdraws its Bid during the period of Bid Validity as specified by the Procuring agency/Employer, and referred by the bidder on the Form of Bid except as provided for in **ITB 18.2**; or ii) Does not accept the correction of errors pursuant to **ITB 32;** or b) In the case of a successful bidder, if the bidder fails: i) to sign the contract in accordance with **ITB 47**; or ii) to furnish performance security (or guarantee) in accordance with **ITB 48.**

	19.10	In case of Bid Security issued by the foreign bank is allowed by the Procuring agency/Employer, the same should be counter guaranteed by a corresponding bank in Pakistan. Furthermore, in case of joint venture, it should be in the name of Joint venture to ensure joint responsibility.
20. Alternative Bids by Bidders	20.1	Bidders shall submit offers that comply with the requirements of the bidding documents, including the basic bidder's technical design as indicated in the specifications and Bill of Quantities. Alternatives will not be considered, unless specifically allowed for in the **BDS**. If so allowed, **ITB 20** shall prevail.
	20.2	When alternative schedule for execution of works is explicitly invited, a statement of that effect will be included in the **BDS** as will the method for evaluating different schedule for execution of works.
	20.3	If so allowed in the **BDS**, bidders wishing to offer technical alternatives to the requirements of the bidding documents must also submit a bid that complies with the requirements of the bidding documents, including the basic technical design as indicated in the specifications. In addition to submitting the basic bid, the bidder shall provide all information necessary for a complete evaluation of the alternative by the Procuring agency/Employer, including technical specifications, breakdown of prices, and other relevant details. Only the technical alternatives, if any, of the Most Advantageous Bidder conforming to the basic technical requirements (without altering the bid price) shall be considered by the Procuring agency/Employer.
21. Withdrawal of Bids	21.1	Before bid submission deadline, any bidder may withdraw, substitute, or modify its bid after it has been submitted by sending a written notice, duly signed by an authorized representative, and the corresponding must accompany the respective written notice. **Note: Before bid submission deadline, any bidder may withdraw, substitute, or modify its Bid after it has been submitted through EPADS.**

	21.2	Bids requested to be withdrawn in accordance with **ITB 21.1** shall be returned unopened to the bidders.
22. Format and Signing of Bid	22.1	The Bidder shall prepare an original and the number of copies of the bid as indicated in the **BDS**, clearly marking each **"ORIGINAL"** and **"COPY"** as appropriate. In the event of any discrepancy between them, the original shall prevail: *Provided that except in Single Stage One Envelope Procedure, the bid shall include only the copies of technical proposal.* **Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
	22.2	The original and the copy (ies) of the bid shall be typed or written in indelible ink and shall be signed by the bidder or a person or persons duly authorized to sign on behalf of the bidder. This authorization shall consist of a written confirmation as specified in the **BDS** 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, except for un-amended printed literature, shall be initialed by the person or persons signing the bid. **Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
	22.3	Any interlineations, erasures, or overwriting shall be valid only if they are signed by the person(s) authorized for signing the Bid.

D. SUBMISSION OF BIDS

23. Sealing and Marking of Bids	23.1	In case of Single Stage One Envelope Procedure, the bidder shall seal the original and each copy of the bid in separate envelopes, duly marking the envelopes as **"ORIGINAL"** and **"COPY".** The envelopes shall then be sealed in an outer envelope securely sealed in such a manner that opening and resealing cannot be achieved undetected. **Note:** *The envelopes shall be sealed and marked in accordance with the bidding procedure adopted as referred in Rule-36 of Public Procurement Rules,2004.* **Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
	23.2	The inner and outer envelopes shall:

		a) be addressed to the Procuring agency/Employer at the address given in the **BDS**; and b) bear the title of the subject procurement or project name, as the case may be as indicated in the **BDS**, the Invitation for Bids (ITB) title and number indicated in the **BDS**, and a statement: **"DO NOT OPEN BEFORE",** to be completed with the time and the date specified in the **BDS**, pursuant to **ITB 24.1. Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
	23.3	In case of Single Stage Two Envelope Procedure, The Bid shall comprise two envelopes submitted simultaneously, one called the Technical Proposal and the other Financial Proposal. Both envelopes to be enclosed together in an outer single envelope called the Bid. Each Bidder shall submit his bid as under: a) Bidder shall submit his **TECHNICAL PROPOSAL** and **FINANCIAL PROPOSAL** in separate inner envelopes and enclosed in a single outer envelope. b) **ORIGINAL** and each copy of the Bid shall be separately sealed and put in separate envelopes and marked as such. c)The envelopes containing the **ORIGINAL** and copies will be put in one sealed envelope and addressed / identified as given in **ITB 23.2.** **Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
	23.4	The inner and outer envelopes shall: a) be addressed to the Procuring agency/Employer at the address provided in the **BDS**; b) bear the name and identification number of the contract as defined in the **BDS**; and provide a warning not to open before the time and date for bid opening, as specified in the **BDS** pursuant to **ITB 24.1.** c)In addition to the identification required in **ITB 23** hereof, the inner envelope shall indicate the name and address of the bidder to enable the bid to be returned unopened

		in case it is declared "late" pursuant to **ITB 25. Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
	23.5	If all envelopes are not sealed and marked as required by **ITB 23.2**, **ITB 23.3** and **ITB 23.4** or incorrectly marked, the Procuring agency/Employer will assume no responsibility for the misplacement or premature opening of bid. **Note: The submission of bids will only be done through EPADS. No physical submission is accepted; except Original Bid Security Instrument**
24. Deadline for Submission of Bids	24.1	Bids shall be received to the Procuring agency/Employer no later than the date and time specified in the **BDS. Note: EPADS will not allow bid submission later than the deadline**
	24.2	The Procuring agency/Employer may, under exceptional circumstances and at its discretion, extend the deadline for the submission of bids by amending the Bidding Documents in accordance with **ITB 9**, in which case all rights and obligations of the Procuring agency/Employer and bidders previously subject to the deadline will thereafter be subject to the new deadline.
25. Late Bids	25.1	The Procuring agency/Employer shall not consider for evaluation of any bid that arrives after the deadline for submission of bids, in accordance with **ITB 24**. **Note: EPADS will not allow bid submission later than the deadline**
	25.2	Any bid received by the Procuring agency/Employer after the deadline for submission of bids shall be declared late, recorded, rejected and returned unopened to the bidder. **Note: EPADS will not allow bid submission later than the deadline**
26. Substitution and Modification of bids	26.1	A bidder may substitute or modify his bid after it has been submitted, provided that written notice of the substitution or modification of the bid, is received by the Procuring agency/Employer prior to the deadline for submission of bids. **Note: Process through EPADS**
	26.2	Revised bid may be submitted after the substitution or modification made in the original bid in accordance with the provisions referred in **ITB 22.**

E. OPENING AND EVALUATION OF BIDS

27. Opening of Bids	27.1	The Procuring agency/Employer will open all bids, in public, in the presence of bidders' or their representatives who choose to attend, and other parties with a legitimate interest in the bid proceedings at the place, on the date and at the time, specified in the **BDS**. The bidders' representatives present shall sign a attendance sheet as a proof of their attendance. **Note: Process through EPADS**
	27.2	First, envelopes marked **"WITHDRAWAL"** shall be opened and read out and the envelope with the corresponding bid shall not be opened, but returned to the bidder. No bid withdrawal shall be permitted unless the corresponding withdrawal notice contains a valid authorization to request the withdrawal and is read out at bid opening. **Note: Process through EPADS**
	27.3	Second, outer envelopes marked **"SUBSTITUTION**" shall be opened. The inner envelopes containing the Substitution Bid shall be exchanged for the corresponding Original Bid being substituted, which is to be returned to the bidder unopened. No envelope shall be substituted unless the corresponding Substitution Notice contains a valid authorization to request the substitution and is read out and recorded at bid opening. **Note: Process through EPADS**
	27.4	Next, outer envelopes marked **"MODIFICATION"** shall be opened. No Technical Proposal and/or Financial Proposal shall be modified unless the corresponding Modification Notice contains a valid authorization to request the modification and is read out and recorded at the opening of the bids. Any modification shall be read out along with the Original Bid except in case of Single Stage Two Envelope Procedure where only the Technical Proposal, both Original as well as Modification, are to be opened, read out, and recorded at the opening. Financial Proposal, both Original and Modification, will remain unopened till the prescribed financial bid opening date. **Note: Process through EPADS**
	27.5	Other envelopes holding the bids shall be opened one at a time, in case of Single Stage One Envelope Procedure, the bidders' names, the bid prices, the total amount of each bid and of any

		alternative bid (if alternatives have been requested or permitted), the presence or absence of Bid Security, Bid Securing Declaration and such other details as the Procuring agency/Employer may consider appropriate, will be announced by the Procurement Evaluation Committee. **Note: Process through EPADS**
	27.6	In case of Single Stage Two Envelope Procedure, the Procuring agency/Employer will open the Technical Proposals in public at the address, date and time specified in the **BDS** in the presence of bidders' designated representatives who choose to attend and other parties with a legitimate interest in the bid proceedings. The Financial Proposals will remain unopened and will be held in custody of the Procuring agency/Employer until the specified time of their opening. **Note: Process through EPADS**
	27.7	The envelopes holding the Technical Proposals shall be opened one at a time, and the following read out and recorded: (a) the name of the bidder; (b) whether there is a modification or substitution; (c) the presence of a Bid Security or Bid Securing Declaration, if required; and (d) Any other details as the Procuring agency/Employer may consider appropriate. **Note: Process through EPADS**
	27.8	Bids not opened and not read out at the bid opening shall not be considered further for evaluation, irrespective of the circumstances.
	27.9	Bidders are advised to send in a representative with the knowledge of the content of the bid who shall verify the information read out from the submitted documents. Failure to send a representative or to point out any un-read information by the sent bidder's representative shall indemnify the Procuring agency/Employer against any claim or failure to read out the correct information contained in the bidder's bid. **Note: Process through EPADS**
	27.10	No bid will be rejected at the time of bid opening except for late bids which will be returned unopened to the bidder, pursuant to **ITB 25.**

	27.11	The Procuring agency/Employer shall prepare minutes of the bid opening. The record of the bid opening shall include, as a minimum: the name of the bidder and whether or not there is a withdrawal, substitution or modification, the bid price if applicable and the presence or absence of a Bid Security or Bid Securing Declaration.
	27.12	The bidders' representatives who are present shall be requested to sign on the attendance sheet. The omission of a bidder's signature on the record shall not invalidate the contents and affect the record. A copy of the record shall be distributed to all the bidders.
	27.13	A copy of the minutes of the bid opening shall be furnished to individual bidders upon request.
	27.14	In case of Single Stage -Two Envelop Bidding Procedure, after the announcement of technical evaluation report, the Procuring agency/Employer, shall at a time within the bid validity period, publicly open the financial proposals of the technically responsive bidder only. The financial proposal of bidders found technically non-responsive shall be returned un-opened to the respective bidders after seven days of the announcement of technical evaluation report, except those aggrieved bidder(s) whose complaints are pending before the Grievance Redressal Committee. **Note: Process through EPADS**
28. Confidentiality	28.1	Information relating to the examination, clarification, evaluation and comparison of bids and recommendation of contract award shall not be disclosed to bidders or any other persons not officially concerned with such process until the time of the announcement of the respective evaluation report.
	28.2	Any effort by a bidder to influence the Procuring agency/Employer processing of bids or award decisions may result in the rejection of its bid.
	28.3	Notwithstanding **ITB 28.2** from the time of bid opening to the time of contract award, if any bidder wishes to contact the Procuring agency/Employer on any matter related to the bidding process, it should do so in writing or in electronic forms that provides record of the content of communication.

29. Clarification of Bids	29.1	To assist in the examination, evaluation and comparison of bids, the Procuring agency/Employer may, ask any bidder for a clarification of its bid including breakdown of prices invariably in writing. Any clarification submitted by a bidder that is not in response to a request by the Procuring agency/Employer shall not be considered.
	29.2	The request for clarification and the response shall be in writing or in electronic forms that provide record of the content of communication. No change in the prices or substance of the bid shall be sought, offered, or permitted, except clarification for the correction of arithmetic errors discovered by the Procuring agency/Employer during the evaluation of bids which shall be sought in accordance with **ITB 32**.
	29.3	The alteration or modification in the bid which in any case affect the following parameters will be considered as a change in the substance of a bid: a) evaluation & qualification criteria; b) required scope of work; c) contract price; d) all securities requirements; e) tax requirements; f) terms and conditions of bidding documents. g) change in the ranking of the bidder
	29.4	From the time of bid opening to the time of Contract award if any bidder wishes to contact the Procuring agency/Employer on any matter related to the bid it should do so in writing or in electronic forms that provide record of the content of communication.

30. Preliminary Examination of Bids	30.1	Prior to the detailed evaluation of bids, the Procuring agency/Employer will determine whether each bid: a) meets the eligibility criteria defined in **ITB 3** and **ITB 4**; b) has been prepared as per the format and contents defined by the Procuring agency/Employer in the bidding documents; c) has been properly signed; d) is accompanied by the required securities; and e) is substantially responsive to the requirements of the bidding documents. The Procuring agency/Employer's determination of a bid's substantial responsiveness will be based on the contents of the bid itself.
	30.2	A substantially responsive Bid is one which conforms to all the terms, conditions, and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one that: - a) affects in any substantial way the scope, quality, or performance of the Works; b) limits in any substantial way, inconsistent with the bidding documents, the Procuring agency/Employer's rights or the bidders' obligations under the Contract; or c) if rectified, would affect unfairly the competitive position of other bidders presenting substantially responsive bids.
	30.3	The Procuring agency/Employer will confirm that the documents and information specified under **ITB 11, 12** and **13** have been provided in the bid. If any of these documents or information is missing, or is not provided in accordance with the Instructions to Bidders, the bid shall be rejected.

	30.4	The Procuring agency/Employer may waive-off any minor informality, nonconformity, or irregularity in a bid which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Bidder. ***Explanation:*** *A minor informality, non-conformity or irregularity is one that is merely a matter of form and not of substance. It also pertains to some immaterial defect in a Bid or variation of a bid from the exact requirements of the invitation that can be corrected or waived without being prejudicial to other bidders. The defect or variation is immaterial when the effect on quantity, quality, or delivery is negligible when contrasted with the total cost or scope of the works. The Procuring agency/Employer either shall give the bidder an opportunity to cure any deficiency resulting from a minor informality or irregularity in a bid or waive the deficiency, whichever is advantageous to the Procuring agency/Employer. Examples of minor informalities or irregularities include failure of a bidder to –* (a) *Submit the number of copies of signed bids required by the invitation;* (b) *Furnish required information concerning the number of its employees;* (c) *the firm submitting a bid has formally adopted or authorized, before the date set for opening of bids, the execution of documents by typewritten, printed, or stamped signature and submits evidence of such authorization and the bid carries such a signature.*
	30.5	Provided that a Technical Bid is substantially responsive, the Procuring agency/Employer may request the bidder to submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities or omissions in the Technical Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any such aspect of the technical Proposal linked with the

		ranking of the bidders. Failure of the bidder to comply with the request may result in the rejection of its bid.
	30.6	Provided that a Technical Bid is substantially responsive, the Procuring agency/Employer shall rectify quantifiable nonmaterial nonconformities or omissions related to the Financial Proposal. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of the missing or nonconforming item or component.
	30.7	If a bid is not substantially responsive, it will be rejected by the Procuring agency/Employer and may not subsequently be evaluated for complete technical responsiveness.
31. Examination of Terms and Conditions; Technical Evaluation	31.1	The Procuring agency/Employer shall examine the bid to confirm that all terms and conditions specified in the **GCC** and the **SCC** have been accepted by the bidder without any material deviation or reservation. For this purpose: "Deviation" means departure from the requirements specified in the Bidding Document. "Reservation" means setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Document.
	31.2	The Procuring agency/Employer shall evaluate the technical aspects of the bid submitted in accordance with **ITB 31,** to confirm that all requirements specified in **Section V – Works Requirement**, **Technical Specifications of** the Bidding Documents have been met without material deviation or reservation.
	31.3	If after the examination of the terms and conditions and the technical evaluation, the Procuring agency/Employer determines that the bid is not substantially responsive in accordance with **ITB 30,** it shall reject the bid.

32. Correction of Arithmetic Errors	32.1	Bids determined to be substantially responsive will be checked for any arithmetic errors. Errors will be corrected as follows: - a) if there is a discrepancy between unit prices and the sub-total price that is obtained by multiplying the unit price and quantity, the unit price shall prevail, and the sub-total price shall be corrected, unless in the opinion of the Procuring agency/Employer there is an obvious misplacement of the decimal point in the unit price, in which the total price as quoted shall govern and the unit price shall be corrected; b) if there is an error in a total corresponding to the addition or subtraction of sub-totals, the sub-totals shall prevail, and the total shall be corrected; and c) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern. d) Where there is discrepancy between grand total of price schedule and amount mentioned on the Form of Bid, the amount referred in Price Schedule shall be treated as correct subject to elimination of other errors.
	32.2	The amount stated in the Bid will, be rectified by the Procuring agency/Employer in accordance with the above procedure for the correction of errors and, with, the concurrence of the bidder, shall be considered as binding upon the bidder. If the bidder does not accept the corrected amount, its bid shall be rejected after forfeiture of Bid Security or execution of the Bid Securing Declaration, as the case may be, in accordance with **ITB 19.9.**

33. Conversion to Single Currency	33.1	The unit rates and the prices shall be quoted by the bidder entirely in Pak rupees. A bidder expecting to incur expenditures in other currencies for inputs to the Works from outside the Procuring agency/Employer's country (referred to as the "Foreign Currency Requirements") shall indicate the same in the letter of bid-financial proposal. The proportion of the Bid Price (excluding Provisional Sums) needed by him for the payment of such Foreign Currency Requirements either (i) entirely in the currency of the Bidder's home country or, (ii) at the bidder's option, entirely in Pak rupees provided always that a bidder expecting to incur expenditures in a currency or currencies other than those stated in (i) and (ii) above for a portion of the foreign currency requirements, and wishing to be paid accordingly, shall indicate the respective portions in his bid.
	33.2	To facilitate evaluation and comparison, the Procuring agency/Employer will convert all bid prices expressed in the amounts in various currencies in which the bid prices are payable. For the purposes of comparison of bids quoted in different currencies, the price shall be converted into a single currency specified in the bidding documents. The rate of exchange shall be the selling rate, prevailing on the date of opening of (financial part of) bids specified in the bidding documents, as notified by the State Bank of Pakistan on that day.
	33.3	The currency selected for converting bid prices to a common base for the purpose of evaluation, along with the source and date of the exchange rate, are specified in the **BDS**.
34. Evaluation of Bids	34.1	The Procuring agency/Employer shall evaluate and compare only the bids determined to be substantially responsive, pursuant to **ITB 30**.
	34.2	In evaluating the Technical Proposal of each Bid, the Procuring agency/Employer shall use the criteria and methodologies listed in the **BDS** and in terms of works requirement. No other evaluation criteria or methodologies shall be permitted.
	34.3	The Procuring agency/Employer's evaluation of a bid will take into account:

		a) the bid price, excluding provisional sums and the provision, if any, for contingencies in the summary bill of quantities, but including day work items, where priced competitively; b) price adjustment for correction of arithmetic errors in accordance with **ITB 32.1;** c) converting the amount resulting from applying (a) and (b) above, if relevant, to a single currency in accordance with **ITB 33**;
	34.4	The estimated effect of the price adjustment provisions of the Conditions of Contract, applied over the period of execution of the Contract, shall not be taken into account in bid evaluation.
	34.5	If these bidding documents allow bidders to quote separate prices for different lots, and the award to a single bidder of multiple lots, the methodology of evaluation to determine the lowest evaluated lot combinations in the Form of Bid, is specified in the **BDS.**
	34.6	If the bid, which results in the Evaluated Bid Price (Most Advantageous Bid), is seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract. **Explanation:** *"Unbalanced" or "front-loaded" bids consist of deliberately submitting bids with artificially high prices or unit rates for the*

		early stages of a construction project, offset by artificially low prices or unit rates for the later stages of the project, to improve the contractor's cash flow.
35. Domestic Preference	35.1	If the **BDS** so specifies, the Procuring agency/Employer will grant a margin of preference to the domestic contractor in line with the rules, regulations, regulatory guides or instructions issued by the Authority from time to time.
36. Determination of Most Advantageous Bid	36.1	The Procuring agency/Employer shall compare the evaluated bids in accordance with the predefined bidding procedure, of all substantially responsive bids to determine the Most Advantageous bidder.
37. Qualification of Bidder	37.1	The Procuring agency/Employer shall determine to its satisfaction whether the bidder is substantially responsive and whose bid is declared as most advantageous bid either continues to meet (if prequalification applies) or meets (if post-qualification applies) the qualifying criteria specified in Evaluation and Qualification Criteria. *Note: In case of International bidding, the parameters for incorporation or licensing within Pakistan may be fulfilled as part of post qualification.*
	37.2	The determination shall be based upon an examination of the documentary evidence of the bidder's qualifications submitted by the bidder, pursuant to **ITB 12**.
	37.3	Prior to contract award, the Procuring agency/Employer will verify that the successful bidder (including each member of a JV) is not blacklisted/debarred. The Procuring agency/Employer will conduct the same verification for each sub-contractor proposed by the successful bidder.

38. Sub-Contractors	38.1	The bidder shall provide details regarding any specialized sub-contractor to the Procuring agency/Employer. In case change of sub-contractors, the bidder shall promptly notify the Procuring agency/Employer and obtain approval for replacement of sub-contractors.
	38.2	Bidders may propose sub-contracting up to the percentage of total value of contracts or the volume of works as specified in the **BDS.**

39. Abnormally Low Financial Bid	39.1	Where the bid price is considered to be abnormally low, the Procuring agency/Employer shall perform price analysis either during determination of Most Advantageous Bid or as a part of the post-qualification process. The following process shall apply: a) The Procuring agency/Employer may reject a bid if the Procuring agency/Employer has determined that the price in combination with other constituent elements of the bid is abnormally low in relation to the subject matter of the procurement (i.e. scope of the procurement or ancillary services) and raises concerns as to the capability and capacity of the respective Bidder to perform that contract; b) Before rejecting an abnormally low bid the Procuring agency/Employer shall request the bidder an explanation of the bid or of those sections which it considers contribute to the bid being abnormally low; take account of the evidence provided in response to a request in writing; and subsequently verify the bid or parts of the bid being abnormally low; c) The decision of the Procuring agency/Employer to reject a bid and reasons for the decision shall be recorded in the procurement proceedings and promptly communicated to the bidder concerned; d) The Procuring agency/Employer shall not incur any liability solely by rejecting abnormally bid; and e) An abnormally low bid means, in the light of the Procuring agency/Employer's estimate and of all the bids submitted, the bid appears to be abnormally low by not providing a margin for normal levels of profit. **Guidance for Procuring agency/Employer:** In order to identify the Abnormally Low Bid (ALB) following approaches can be considered to minimize the scope of subjectivity: (i) Comparing the bid price with the cost estimate;

		(ii) Comparing the bid price with the bids offered by other bidders submitting substantially responsive bids; and (iii) Comparing the bid price with prices paid in similar contracts in the recent past either government- or development partner-funded.
	39.2	The Procuring agency/Employer will determine to its satisfaction whether the bidder that is selected as having submitted the most advantageous bid is qualified to perform the contract satisfactorily, in accordance with the criteria listed in **ITB 12**
	39.3	The determination will take into account the bidder's financial and technical capabilities. It will be based upon an examination of the documentary evidence of the bidder's qualifications submitted by the bidder, pursuant to **ITB 12,** as well as such other information as the Procuring agency/Employer deems necessary and appropriate. Factors not included in these bidding documents shall not be used in the evaluation of the bidders' qualifications.
	39.4	Procuring agency/Employer may seek "Certificate for Independent Price Determination" from the bidder and the results of reference checks may be used in determining award of contract. ***Explanation:*** *The Certificate shall be furnished by the bidder. The bidder shall certify that the price is determined keeping in view of all the essential aspects such as raw material, its processing, value addition, optimization of resources due to economy of scale, transportation, insurance and margin of profit etc.*
	39.5	An affirmative determination will be a prerequisite for award of the contract to the bidder. A negative determination will result in rejection of the bidder's bid, in which event the Procuring agency/Employer will proceed to the next ranked bidder to make a similar determination of that bidder's capabilities to perform satisfactorily.

F. AWARD OF CONTRACT

40. Criteria of Award	40.1	Subject to **ITB 36** and **37**, the Procuring agency/Employer will award the Contract to the bidder whose bid has been determined to be substantially responsive to the bidding documents and who has been declared as Most Advantageous Bidder, provided that such bidder has been determined to be: a) eligible in accordance with the provisions of **ITB 3;** b) is determined to be qualified to perform the Contract satisfactorily; and c) Successful negotiations have been concluded, if any. **Note: Process through EPADS**
41. Negotiations	41.1	The Committee of the Procuring agency/Employer may negotiate with the Most Advantageous Bidder relating to the following areas: (a) a minor alteration to the technical (drawings, design technical specifications) details of the statement of works; (b) Methodology, work plan, staffing in view to streamline the work; (c) a minor amendment to the special conditions of Contract; (d) finalizing payment arrangements; (e) clarifying details that were not apparent or could not be finalized at the time of Bidding;
	41.2	Where negotiation fails to result into an agreement, the Procuring agency/Employer may invite the next ranked bidder for negotiations. Where negotiations are commenced with the next ranked bidder, the Procuring agency/Employer shall not reopen earlier negotiations.
42. Procuring agency/Employer's Right to reject All Bids	42.1	Notwithstanding **ITB 37**, the Procuring agency/Employer reserves the right to reject all the bids, and to annul the bidding process at any time prior to acceptance of bid, without thereby incurring any liability to the affected bidder(s). However, the Authority (i.e. PPRA) may call from the Procuring agency/Employer the justification of those grounds.
	42.2	Notice of the rejection of all bids shall be given promptly to all bidders that have submitted bids.

	42.3	The Procuring agency/Employer shall upon request communicate to any bidder the grounds for its rejection of its bids, but is not required to justify those grounds.

43. Variations	43.1	The Engineer shall make any variation in the quantity of the Works or any part thereof that may, in his opinion, be necessary and for that purpose, or if for any other reason it shall, in his opinion, be appropriate, he shall have the authority to instruct the Contractor to do and the Contractor shall do any of the following: a) increase or decrease the quantity of any work included in the Contract, b) omit any such work (but not if the omitted work is to be carried out by the Employer or by another contractor), c) change the character or quality or kind of any such work, d) change the levels, lines, position and dimensions of any part of the Works, e) execute additional work of any kind necessary for the completion of the Works, or f) change any specified sequence or timing of construction of any part of the Works. No such variation shall in any way vitiate or invalidate the Contract, but the effect, if any, of all such variations shall be valued in accordance with **ITB 15**. Provided that where the issue of an instruction to vary the Works is necessitated by some default of or breach of contract by the Contractor or for which he is responsible, any additional cost attributable to such default shall be borne by the Contractor.
44. Instructions for variations	44.1	The Contractor shall not make any such variation without an instruction of the Engineer. Provided that no instruction shall be required for increase or decrease in the quantity of any work where such increase or decrease is not the result of an instruction given under this Clause, but is the result of the quantities exceeding or being less than those stated in the Bill of Quantities.

45. Valuation of Variations	45.1	All variations and any additions to the Contract Price which are required to be determined in accordance with **ITB 15** (for the purposes of this Clause referred to as "varied work"), shall be valued at the rates and prices set out in the Contract if, in the opinion of the Engineer, the same shall be applicable. If the Contract does not contain any rates or prices applicable to the varied work, the rates and prices in the Contract shall be used as the basis for valuation so far as may be reasonable, failing which, after due consultation by the Engineer with the Procuring agency/Employer and the Contractor, suitable rates or prices shall be agreed upon between the Engineer and the Contractor. In the event of disagreement, the Engineer shall fix such rates or prices as are, in his opinion, appropriate and shall notify the Contractor accordingly, with a copy to the Employer. Until such time as rates or prices are agreed or fixed, the Engineer shall determine provisional rates or prices to enable on-account payments to be included in certificates issued in accordance with **ITB 15.**
46. Notification of Award	46.1	Prior to the award of contract, the Procuring agency/Employer shall issue a Final Evaluation Report giving justification for acceptance or rejection of the bids. **Note: Process through EPADS**
	46.2	Where no complaints have been lodged, the bidder whose bid has been accepted will be notified of the award by the Procuring agency/Employer prior to expiration of the bid validity period in writing or through electronic means that provide record of the content of communication. However, the Procuring agency/Employer shall not award any procurement contract atleast for fifteen (15) days after the acceptance of bid. The notification letter (herein after and in the condition of the contract and contract form called “Letter of Acceptance” will specify the sum that the Procuring agency/Employer will pay the successful bidder in consideration for the execution and completion of the works as prescribed by the Contract (hereinafter and in the Contract called the "Contract Price).
	46.3	The notification of award will constitute the formation of the Contract, subject to the bidder furnishing the Performance

		Security (or guarantee) in accordance with **ITB 48** and signing of the contract in accordance with **ITB 47.**
	46.4	Upon the successful bidder's furnishing of the performance security (or guarantee) pursuant to **ITB 48**, the Procuring agency/Employer will promptly notify each unsuccessful bidder, the name of the successful bidder and the Contract amount and will discharge the Bid Security or Bid Securing Declaration of the bidder(s) pursuant to **ITB 19**.
47. Signing of Contract	47.1	Promptly after notification of award, Procuring agency/Employer shall send the successful bidder the draft agreement, incorporating all terms and conditions as agreed by the parties to the contract.
	47.2	Immediately after the Redressal of grievance by the GRC, and after fulfillment of all conditions precedent of the Contract Form, the successful bidder and the Procuring agency/Employer shall sign the contract.
	47.3	Where no formal signing of a contract is required, work order issued to the bidder shall be construed to be the contract.
48. Performance Security (or Guarantee)	48.1	After the receipt of the Letter of Acceptance, the successful bidder, within the specified time, shall deliver to the Procuring agency/Employer a Performance Guarantee in the amount and in the form stipulated in the **BDS and SCC**, denominated in the type and proportions of currencies in the Letter of Acceptance and in accordance with the Conditions of Contract.
	48.2	If the Performance Guarantee is provided by the successful bidder and it shall be in the form specified in the **BDS** which shall be in any of the following: (a) certified cheque, cashier's or manager's cheque, or bank draft; (b) irrevocable letter of credit issued by a scheduled bank of Pakistan or in the case of an irrevocable letter of credit issued by a foreign bank, the letter shall be confirmed or authenticated by a scheduled bank of Pakistan; (c) bank guarantee confirmed by a reputable local bank or, in the case of a successful foreign bidder, bonded by a foreign bank; or

		(d) surety bond callable upon demand issued by any reputable surety or insurance company. Any Performance Guarantee submitted shall be enforceable in Pakistan.
	48.3	Failure of the Most Advantageous Bidder to comply with the requirement of **ITB 47** shall constitute sufficient grounds for the annulment of the award and forfeiture of the Bid Security or declare blacklisted (in case bid securing declaration is submitted) in which event the Procuring agency/Employer may make the award to the next most advantageous bidder or reinitiate the procurement process afresh (as a case may be).
49. Advance Payment	49.1	Advance payment will be provided to the bidder in percentage and in the manner as agreed by the both parties in terms of Conditions of the Contract.
	49.2	The Procuring agency/Employer will provide an advance payment as stipulated in the Conditions of Contract, subject to a maximum amount, as stated and/or Conditions of the Contract. The advance payment request shall be accompanied by an advance payment security (guarantee) in the form provided in Section X. For the purpose of receiving the advance payment, the bidder shall make and estimate of, and include in its bid, the expenses that will relate to the purchase of equipment, machinery, materials, and on the engagement of labor during the first month beginning with the date of the Procuring agency/Employer's "Notice to Commence" as specified in the **SCC.**

50. General Performance of the Bidders	50.1	The Procuring agency/Employer reserves the right to obtain information regarding performance of the bidders on their previously awarded contracts / works. The Procuring agency/Employer may seek information / report from the previous employer for consideration. However, the Procuring agency/Employer shall incorporate such parameters in the evaluation criteria and accordingly decide the fate of the bid submitted.
51. Corrupt & Fraudulent Practices	51.1	Procuring agencies (including beneficiaries of Government funded projects and procurement) as well as Bidders/Suppliers/Contractors under Government financed contracts, observe the highest standard of ethics during the procurement and execution of such contracts, and will avoid to engage in any corrupt and fraudulent practices.

F. GRIEVANCE REDRESSAL & COMPLAINT REVIEW MECHANISM

52. Constitution of Grievance Redressal	52.1	Procuring agency/Employer shall constitute a Grievance Redressal Committee (GRC) comprising of odd number of persons with proper power and authorization to address the complaint. The GRC shall not have any of the members of Procurement Evaluation Committee. The committee must have one subject specialist depending the nature of the procurement.
53. GRC Procedure	53.1	Any party can file its written complaint against the eligibility parameters or any other terms and conditions prescribed in the prequalification or bidding documents found contrary to provision of Procurement Regulatory Framework, and the same shall be addressed by the GRC well before the bid submission deadline.
	53.2	Any bidder feeling aggrieved by any act of the Procuring agency/Employer after the submission of his bid may lodge a written complaint concerning his grievances not later than seven days of the announcement of technical evaluation report and five days after issuance of final evaluation report.

	53.3	In case, the complaint is filed against the technical evaluation report, the GRC shall suspend the procurement proceedings.
	53.4	In case, the complaint is filed after the issuance of the final evaluation report, the complainant cannot raise any objection on technical evaluation of the report: Provided that the complainant may raise the objection on any part of the final evaluation report in case where single stage one envelope bidding procedure is adopted.
	53.5	The GRC, in both the cases shall investigate and decide upon the complaint within ten days of its receipt.
	53.6	Any bidder or the Procuring agency/Employer not satisfied with the decision of the GRC may file Appeal before the Appellate Committee of the Authority on prescribed format after depositing the Prescribed fee.
	53.7	The Committee, upon receipt of the Appeal against the decision of the GRC complete in all respect shall serve notices in writing upon all the parties to Appeal.
	53.8	The committee shall call the record from the concerned Procuring agency/Employer or the GRC as the case may be, and the same shall be provided within prescribed time.
	53.9	The committee may after examination of the relevant record and hearing all the concerned parties, shall decide the complaint within fifteen (15) days of receipt of the Appeal.
	53.10	The decision of the Committee shall be in writing and shall be signed by the Head and each Member of the Committee. The decision of the committee shall be final.

G. MECHANISM OF BLACKLISTING

54. Mechanism of Blacklisting	54.1	The Procuring agency/Employer shall bar for not more than the time prescribed in Rule-19 of the Public Procurement Rules, 2004, from participating in their respective procurement proceedings, bidder or contractor who either: Involved in corrupt and fraudulent practices as defined in Rule-2 of Public Procurement Rules; i) Fails to perform his contractual obligations; and ii) Fails to abide by the id securing declaration;
	54.2	The show cause notice shall contain: (a) precise allegation, against the bidder or contractor; (b) the maximum period for which the Procuring agency/Employer proposes to debar the bidder or contractor from participating in any public procurement of the Procuring agency/Employer; and (c) the statement, if needed, about the intention of the Procuring agency/Employer to make a request to the Authority for debarring the bidder or contractor from participating in public procurements of all the procuring agencies.
	54.3	The Procuring agency/Employer shall give minimum of seven days to the bidder or contractor for submission of written reply of the show cause notice.
	54.4	In case, the bidder or contractor fails to submit written reply within the requisite time, the Procuring agency/Employer may issue notice for personal hearing to the bidder or contractor/ authorize representative of the bidder or contractor and the Procuring agency/Employer shall decide the matter on the basis of available record and personal hearing, if availed.
	54.5	In case the bidder or contractor submits written reply of the show cause notice, the Procuring agency/Employer may decide to file the matter or direct issuance of a notice to the bidder or contractor for personal hearing.
	54.6	The Procuring agency/Employer shall give minimum of seven days to the bidder or contractor for appearance before the designated officer of the Procuring agency/Employer for personal hearing. The designated officer shall decide the matter on the basis of the available record and personal hearing of the bidder or contractor, if availed.

	54.7	The Procuring agency/Employer shall decide the matter within fifteen (15) days from the date of personal hearing unless the personal hearing is adjourned to a next date and in such an eventuality, the period of personal hearing shall be reckoned from the last date of personal hearing.
	54.8	The Procuring agency/Employer shall communicate to the bidder or contractor the order of debarring the bidder or contractor from participating in any public procurement with a statement that the bidder or contractor may, within thirty (30) days, prefer a representation against the order before the Authority.
	54.9	Such blacklisting or barring action shall be communicated by the Procuring agency/Employer to the Authority and respective bidder or bidders in the form of decision containing the grounds for such action. The same shall be publicized by the Authority after examining the record whether the procedure defined in blacklisting and debarment mechanism has been adhered to by the Procuring agency/Employer.
	54.10	The bidder may file the review petition before the Review Petition Committee Authority within thirty (30) days of communication of such blacklisting or barring action after depositing the prescribed fee and in accordance with "Procedure of filing and disposal of review petition under Rule-19(3) Regulations, 2021". The Committee shall evaluate the case and decide within ninety (90) days of filing of review petition.
	54.11	The committee shall serve a notice in writing upon all respondent of the review petition. The notices shall be accompanied by the copies of review petition and all attached documents of the review petition including the decision of the Procuring agency/Employer. The parties may file written statements along with essential documents in support of their contentions. The Committee may pass such order on the representation may deem fit.

	54.12	The Authority on the basis of decision made by the committee either may debar a bidder or contractor from participating in any public procurement process of all or some of the procuring agencies for such period as the deemed appropriate or acquit the bidder from the allegations. The decision of the Authority shall be final.

SECTION III: BID DATA SHEET

Bid Data Sheet (BDS)

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

BDS Clause Number	ITB Number	Amendments of, and Supplements to, Clauses in the Instruction to Bidders
A. Introduction		
1.	**1.1**	Name of Procuring agency/Employer: **NATIONAL BANK OF PAKISTAN (NBP)** The subject of procurement is: **MAJOR RENOVATION & REFURBISHMENT WORK OF NBP KHAIRAGALI BRANCH RO ABBOTTABAD** Period for completion of the works **(150 Days)** Commencement date execution of the works: **(_____)** [*insert: insert immediately or number of days after signing the contract*] Type of Procurement **[*National competitive bidding]***
2.	**2.1**	Financial year for the operations of the Procuring agency/Employer: **[*2024-25*]** Name of Project **MAJOR RENOVATION & REFURBISHMENT WORK OF NBP KHAIRAGALI BRANCH RO ABBOTTABAD** Name of financing institution: **[*NBP*]** Name and identification number of the Contract: **[……]**
3.	**3.1**	Maximum number of members in the joint venture, consortium shall be: **[……]**.

B. Bidding Documents

4.	**7.2**	The number of copies to be completed and returned is one original and [*specify number of certified copies of original*] **Note: As per EPADS provisions (if any)**
5.	**8.1**	The address for clarification of Bidding Documents is [*insert full address*] **Note: Through EPADS**
	8.5	Pre-bid meeting Nil *[Insert address of venue, or indicate that the meeting will not take place. The meeting should take place not later than one week before the deadline for Bid submission.]*

C. Preparation of Bids

6.	**10.1**	The Language of all correspondences and documents related to the Bid is: [*ENGLISH*]
7.	**11.1 (i)**	In addition to the documents stated in **ITB 11,** the following documents must be included with the Bid ***a)*** *The bidder should have an active status on FBR Active Taxpayer List and with Provincial Revenue Board.* ***b)*** *valid registration in Pakistan Engineering Council in financial category C-6 or above with Specialization Code CE-10 & EE-04 on bidding date.* ***c)*** *The bidder must fulfill all requisite information in* ***Section V Evaluation and Qualification Criteria, Section VI Standard Forms, Form of Bid & forms in*** **Eligibility and Qualification Criteria** **Note: Through EPADS**
8.	**11.5 (c)**	Other procurement specific documentation requirements are: [*specify the requirements*]. **Note: Through EPADS**
9.	**15.5**	The bid price shall be adjusted in accordance with Appendix A – Formula for Price Adjustment.
10.	**15.6**	Name of the works **MAJOR RENOVATION & REFURBISHMENT WORK OF NBP KHAIRAGALI BRANCH RO ABBOTTABAD** The identification No. _____

		The No. and identification of lots (contracts) comprising this open competitive bid **NIL**
11.	**16.1**	The currency of the Bid shall be ***(PKR);***
12.	**18.1**	The Bid Validity period shall be ***[365]*** days.
13.	**19.1**	The amount of Bid Security shall be (**RS: *300,000/-***) The currency of the Bid Security shall be: **PKR**. Or Indicate whether Bid Securing Declaration is applicable ***["No"]***
14.	**19.3**	The Bid Security shall be in the form of: **Pay Order or Bankers cheque or Bank Guaranty.**
15.	**19.3 (c)**	Other forms of security are:[***N/A***]
16.	**20.1**	Alternative Bids to the requirements of the Bidding Documents [*insert "will' or "will not,' as appropriate*] be permitted with respect to [***N/A***]
17.	**20.2**	If alternative scheduled for execution of work is explicitly invited (please insert the method for evaluation of different schedules for execution of works) [**N/A**]
18.	**22.1**	The number of copies of the Bid to be completed and returned shall be [insert number]. **Note: Through EPADS**
19.	**22.2**	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: **Note: Through EPADS**

D. Submission of Bids

20.	**23.2 (a)**	Bid shall be submitted [*specify the PA's address* below] Street address: *[insert street address]* Building/Plot No*. [insert Building/Plot]* Floor/Room No.: *[insert floor/room]*

		City/Town: *[insert city/town]* **Note: Through EPADS and as specified in the Notice for Invitation for Bids published in Press and posted on PPRA and NBP Websites**
21.	**23.2 (b)**	Title of the subject Procurement or Project name: **MAJOR RENOVATION & REFURBISHMENT WORK OF NBP KHAIRAGALI BRANCH RO ABBOTTABAD** ITB title and No: *[insert IFB title and number]* ***Note: Through EPADS*** Time and date for submission: *[Date: _____ Time: _____]*
22.	**24.1**	The deadline for Bid submission is a) Day*:* ***Tuesday*** b) Date*:* **12 August, 2025** c) Time*:* ***11:00 AM***

E. Opening and Evaluation of Bids

23.	**27.1**	The Bid opening shall take place at: **Wing Head Engineering North, NBP 2nd Floor, G-5/1 Building Islamabad,** Day*:* ***Tuesday*** a) Date: **12 August, 2025** Time*:* ***11:30 AM*** **Note: Through EPADS and as specified in the Notice for Invitation for Bids published in Press and posted on PPRA and NBP Websites**
24.	**33.2**	The currency that shall be used for Bid evaluation and comparison purposes to convert all Bid prices expressed in various currencies is: ***[PKR]*** The source of exchange rate shall be:

		[State Bank of Pakistan Exchange Rate ***https://www.sbp.org.pk/ecodata/rates/m2m/m2m-current.asp****]* The date of exchange rate shall be: *[**Date Of Bid Opening**]*
25.	**33.3**	The bids shall be quoted in (**PKR**)
26.	**34**	**Evaluation Techniques** **Least Cost Based Selection (LCBS)** After meeting the requirements of eligibility, qualification and substantial responsiveness, the bid in compliance with all the mandatory (drawings/ design/ technical specifications /requirements and/or requisite quality threshold (if any), and having lowest evaluated cost (or financial proposal) shall be considered highest ranked bid. **Quality and Cost Based Selection (QCBS) Note: N/A** In such combination, there shall be some specific weightage of both the technical features (such as prescribed in **ITB 35.2**) and financial aspects of the proposal. The financial marks shall be awarded in accordance with the formula stipulated in the BDS or Evaluation Criteria prescribed in the bidding documents. The highest ranked bid shall be declared, on the basis of combined evaluation.
27.	**34**	Specific criteria in case evaluating the bids submitted by JVs and consortium to be used in the evaluation and their evaluation method or reference to the Technical Specifications. [*specify*]
28.	34	In case of award to a single Bidder of multiple lots; the methodology of evaluation to determine the lowest evaluated Lot combinations, in the Form of Bid is [**Most Advantageous Bid**].
29.	**35**	Domestic preference to apply. **or**

		Domestic preference not applicable. *[Delete the non-applicable option.]* Preference to domestic or national suppliers or contractors shall be provided in accordance with policies of the Federal Government and/or in accordance with the regulations issued by the Authority. *The percentage for the domestic preference along with calculation formula is provided in the evaluation and qualification criteria.*
30.	**38.2**	Sub-contracting (please insert percentage) of the total value of the contract. **Note: N/A**
F. Award of Contract		
31.	**48**	The Performance Security (or guarantee) shall be *5 percent of the Contract Price:* **Contracts Worth Rs. 10 Mn. or above**
32.	**48**	The Performance Security (or guarantee) shall be in the form of Bank Guarantee/Insurance Bond and is valid till the completion date of the project as per the LOI. **Contracts Worth Rs. 10 Mn. or above**
G. Review of Procurement Decisions		
33.	**53.6**	The Address of PPRA to submit a **copy** of appeal: Grievance Redressal Appellate Committee, Public Procurement Regulatory Authority 1st Floor, G-5/2, Islamabad, Pakistan Tel: +92-51-9202254

Section IV. Eligible Countries

All the bidders are allowed to participate in the subject procurement without regard to nationality, except bidders of some nationality, prohibited in accordance with policy of the Federal Government.

Following countries are ineligible to participate in the procurement process:

1. India
2. Israel

Section V. Evaluation and Qualification Criteria

The Procuring agency/Employer shall evaluate the bids in accordance with predefined evaluation and qualification criteria mentioned in this document. No other factors, methods or criteria shall be used. The Bidder shall provide all the information requested in the forms included in the Bidding Forms.

Wherever a Bidder is required to state a monetary amount, Bidders should indicate the currency prescribed in the BDS. In case of foreign currency, the exchange rates shall be taken from State Bank of Pakistan on that bid opening day. Any error in determining the exchange rates in the Bid may be corrected in accordance with **ITB 32** (Correction of Arithmetic Errors)

1. Domestic Preference

If allowed in the BDS, a margin of preference shall be granted to domestic contractors, in accordance with policy of the Federal Government and guidelines issued by the Authority, and subject to, the following provisions:

(a) Contractors applying for such preference shall provide, as part of the data for qualification, such information, including details of ownership, as shall be required to determine whether, according to the classification established by the Procuring agency/Employer, a particular contractor or group of contractors qualifies for a domestic preference. The bidding documents shall clearly indicate the preference and the method that will be followed in the evaluation and comparison of bids to give effect to such preference.

(b) After bids have been received and reviewed by the Procuring agency/Employer, responsive bids shall be classified into the following groups:
   (i) Group A: bidder eligible for the domestic preference.
   (ii) Group B: other bidder.

(c) All evaluated bids in each group shall, as a first evaluation step, be compared to determine the most advantageous bid, and the most advantageous bids in each group shall be further compared with each other. If, as a result of this comparison, a bid from Group A is the most advantageous, it shall be selected for the award. If a bid from Group B is the most advantageous, as a second evaluation step, all bids from Group B shall then be further compared with the most advantageous bid from Group A. For the purpose of this further comparison only, the percentage of price preference of the respective bid price corrected for arithmetical errors, shall be added to the evaluated price offered in each bid from Group B. If the bid from Group A is the most advantageous, it shall be selected for award. If not, the most advantageous bid from Group B based on the first evaluation step shall be awarded the contract.

Evaluation

In addition to the criteria listed in **ITB 34.3** the following criteria shall be applied for the evaluation of bids:

2.1 Assessment of adequacy of Technical Proposal with Requirements

Evaluation of the Bidder's Technical Proposal will include an assessment of the Bidder's technical capacity to mobilize key equipment and personnel for the contract consistent with its proposal regarding work methods, scheduling, and material sourcing in sufficient detail and fully in accordance with the requirements stipulated in Section V Works Requirements.

2.2 Technical Alternatives:

Technical alternatives, if permitted under BDS, will be evaluated as follows;
(*The Procuring agency/Employer shall describe how this factor will be evaluated).*

2.3 **Multiple Contracts**:

If works are grouped in multiple contracts and pursuant to **ITB 34**, the Procuring agency/Employer shall evaluate and compare Bids on the basis of a contract, or a combination of contracts, or as a total of contracts in order to arrive at the Most advantageous bid for the Procuring agency/Employer by taking into account bids offered by Bidders in case of award of multiple contracts. If a Bidder submits several successful (lowest evaluated substantially responsive) bids, the evaluation will also include an assessment of the Bidder's capacity to meet the following aggregated requirements as presented in the bid:

1) Average annual construction turnover,
2) Financial resources,
3) Equipment to be allocated, and
4) Personnel to be fielded

If permitted under ITB 34, will be evaluated as follows:

Award Criteria for Multiple Contracts:

Lots
If specified in the procurement planning and allowed in the BDS, the Procuring agency/Employer may ask to the bidder to bid for any one or more lots. Bids will be evaluated lot-wise for combined lots. The contract(s) will be awarded to the Bidder or Bidders offering the most advantageous bid to the Procuring agency/Employer for combined lots, subject to the selected Bidder(s) meeting the required qualification criteria for lot or combination of lots as the case may be.

Packages

If specified in the procurement planning and allowed in the BDS the bidder may choose to Bid for any one or more packages and for any one or more lots within a package. Bids will be evaluated package-wise, for combined packages and/or lots within a package. The contract(s) will be awarded to the Bidder or Bidders offering the most advantageous bid to the Procuring agency/Employer for combined packages, subject to the selected Bidder(s) meeting the required qualification criteria for combination of packages and or lots as the case may be.

2.4 **Specialized Subcontractors**

Only the specific experience of sub-contractors for specialized works permitted by the Procuring agency/Employer will be considered. The general experience and financial resources of the specialized sub-contractors shall not be added to those of the Bidder for purposes of qualification of the Bidder.

The specialized sub-contractors proposed shall be fully qualified for their work proposed, and meet the following criteria: (*Specify Criteria below)*

Qualification

The Procuring agency/Employer may utilize this criteria if the pre-qualification process is not carried out separately prior to the bidding process.

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
1. Eligibility							
1.1	**Nationality**	Nationality in accordance with **ITB 4.3**	Must meet requirement	Must meet requirement	Must meet requirement	N/A	**Forms ELI – 1.1 and 1.2, with attachments**
1.2	**Conflict of Interest**	No conflicts of interest in accordance with **ITB 3.7**	Must meet requirement	Must meet requirement	Must meet requirement	N/A	**Letter of Bid**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
Historical Contract Non-Performance							
2.1	**History of Non-Performing Contracts**	Non-performance of a contract did not occur as a result of contractor default since ***[3 years].***	Must meet requirement	Must meet requirements	Must meet requirement	N/A	**Form CON-2**
2.2	**Pending Litigation**	Bidder's financial position and prospective long term profitability sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Bidder	Must meet requirement	N/A	Must meet requirement	N/A	**Form CON – 2**
2.3	**Litigation History**	No consistent history of court/arbitral award decisions against the Bidder since 1st **January *[2022]***	Must meet requirement	Must meet requirement	Must meet requirement	N/A	**Form CON – 2**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
3. Financial Situation and Performance							
3.1	**Financial Capabilities**	(i) The Bidder shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as **PKR 4.0 (M)** for the subject contract(s) net of the Bidders other commitments (ii) The Bidders shall also demonstrate, to the satisfaction of the Procuring agency/Employer, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments. (iii) The audited balance sheets	Must meet requirement Must meet requirement	Must meet requirement Must meet requirement	N/A N/A	N/A N/A	**Form FIN – 3.1, with attachments**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
		or, if not required by the laws of the Bidder's country, other financial statements acceptable to the Procuring agency/Employer for the last ***03* years** shall be submitted and must demonstrate the current soundness of the Bidder's financial position and indicate its prospective long-term profitability.	Must meet requirement	N/A	Must meet requirement	N/A	
3.2	**Average Annual Construction Turnover**	Minimum average annual construction turnover of **PKR 10 Million**, calculated as total certified payments received for contracts in progress and/or completed within the last 03 years, divided by **03 years**	Must meet requirement	Must meet requirement	Must meet _____%, _____of the requirement	Must meet _____ _%, _____ __of the requirement	**Form FIN – 3.2**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
4. Experience							
4.1 (a)	**General Construction Experience**	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last **03 years**, starting from (insert date) 1st **November *2021***	Must meet requirement	N/A	Must meet requirement	N/A	**Form EXP – 4.1**
4.2 (a)	**Specific Construction & Contract Management Experience**	(i) A minimum number of similar contracts specified below that have been satisfactorily and substantially completed as a prime contractor, joint venture member, management contractor or sub-contractor between **03 years** and application submission deadline: (i) N contracts, each of minimum value V; Or (ii) Less than or equal to N contracts, each of minimum value V, but with total value of all contracts equal or more than N x	Must meet requirement	Must meet requirement	N/A	N/A	**Form EXP 4.2(a)**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
		V; ***03 x 5.0 (M),*** *delete (ii) above if not applicable]*. *[In case the Works are to be bid as individual contracts under a slice and package (multiple contract) procedure, the minimum number of contracts required for purposes of evaluating qualification shall be selected from the options specified in ITB 34.5]*					
		[Add the following if specialized sub-contractor is permitted and describe nature and characteristics of specialized works:] *"(ii) For the following specialized works, the Procuring agency/Employer permits specialized sub-contractors as per ITB 38.2"*	*"Must meet requirement for one contract (Requirement can be met through a Specialized Sub-contractor)"*	*Must meet requirement*	*N/A*	*"Must meet requirement (Requirement can be met through a Specialized Sub-contractor) "*	**Note: N/A**
4.2 (b)		For the above and any other contracts completed and under implementation	Must meet requirements	Must meet requirements	N/A	Must meet the following requirements for the key	**Form EXP – 4.2 (b)**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
		as prime contractor, joint venture member, management contractor or sub-contractor on or after the first day of the calendar year during the period stipulated in 4.2 (a) above, a minimum construction experience in the following key activities successfully completed: *[list activities indicating volume, number or rate of production as applicable]*				activities listed below *[list key activities and the corresponding minimum requirements]*	
4.2 (c)	**Specific Experience in managing ES aspects (Note N/A)**	For the contracts in 4.2 (a) above and/or any other contracts [substantially completed and under implementation] as prime contractor, joint venture member, or Subcontractor between 1st January *[insert year]* and Application submission deadline, experience in managing ES risks and impacts in the following	Must meet requirements	Must meet requirement	Must meet the following requirements: [*list key requirements to be met by each member otherwise state: "N/A"]*	Must meet the following requirements: *[list key requirements to be met by one member otherwise state: "N/A"]*	Form EXP – 4.2 (c) **Note; N/A**

Eligibility and Qualification Criteria			**Compliance Requirements**				**Documentation**
No.	**Subject**	**Requirement**	**Single Entity**	**Joint Venture (existing or intended)**			**Submission Requirements**
				All Parties Combined	**Each Member**	**One Member**	
		aspects: *[Based on the ES assessment, specify, as appropriate, specific experience requirements to manage ES aspects.]*					

Note: [For Multiple lots (contracts) specify financial and experience criteria for each lot under 3.1, 3.2, 4.2]

Contractor's Representative and Key Personnel

The Bidder must demonstrate that it will have a suitably qualified Contractor's Representative and suitably qualified (and in adequate numbers) Key Personnel, as described in the Specification.

The Bidder shall provide details of the Representative and Key Personnel and such other Key Personnel that the Bidder considers appropriate to perform the Contract, together with their academic qualifications and work experience. The Bidder shall complete the relevant Forms in the Bidding Forms.

Equipment

The Bidder must demonstrate that it has access to the key equipment listed hereafter:

[Specify requirements for each lot as applicable]

No.	Equipment Type and Characteristics	Minimum Number required
1		
2		
3		
4		
5		

The Bidder shall provide further details of proposed items of equipment using Form EQU in Section V.

SECTION V: WORKS REQUIREMENT, TECHNICAL SPECIFICATIONS, DRAWINGS, SUPPLEMENTARY INFORMATION AND BILL OF QUANTITIES

Scope of Works

(Describe Scope of Work)

Technical Specifications

Notes for Preparing the Technical Specifications

A set of precise and clear specifications is a prerequisite for bidders to respond realistically and competitively to the requirements of the Procuring agency/Employer without qualifying their bids. The specifications must be drafted to permit the widest possible competition and, at the same time, present a clear statement of the required standards of workmanship and materials for the works to be procured. Only if this is done will the objectives of economy, efficiency, and fairness in procurement be realized, responsiveness of bids be ensured, and the subsequent task of bid evaluation facilitated.

Samples of specifications from previous similar procurements are useful in this respect. The use of metric units is encouraged. Depending on the complexity of the works and the repetitiveness of the type of procurement, it may be advantageous to standardize the General Technical Specifications and incorporate them in a separate subsection. The General Technical Specifications should cover all classes of workmanship, materials, and equipment commonly involved in the procurement of works, although not necessarily to be used in a particular procurement. Deletions or addenda should then adapt the General Technical Specifications to the particular procurement.

Care must be taken in drafting specifications to ensure that they are not restrictive. In the specification of standards for equipment, materials, and workmanship, recognized international standards should be used as much as possible. Where other particular standards are used, whether national standards of the Procuring agency/Employer's country or other standards, the specifications should state that equipment, materials, and workmanship that meet other authoritative standards, and which ensure at least a substantially equal quality than the standards mentioned, will also be acceptable. The following clause may be inserted in the Special Conditions of Contract or the Technical Specifications.

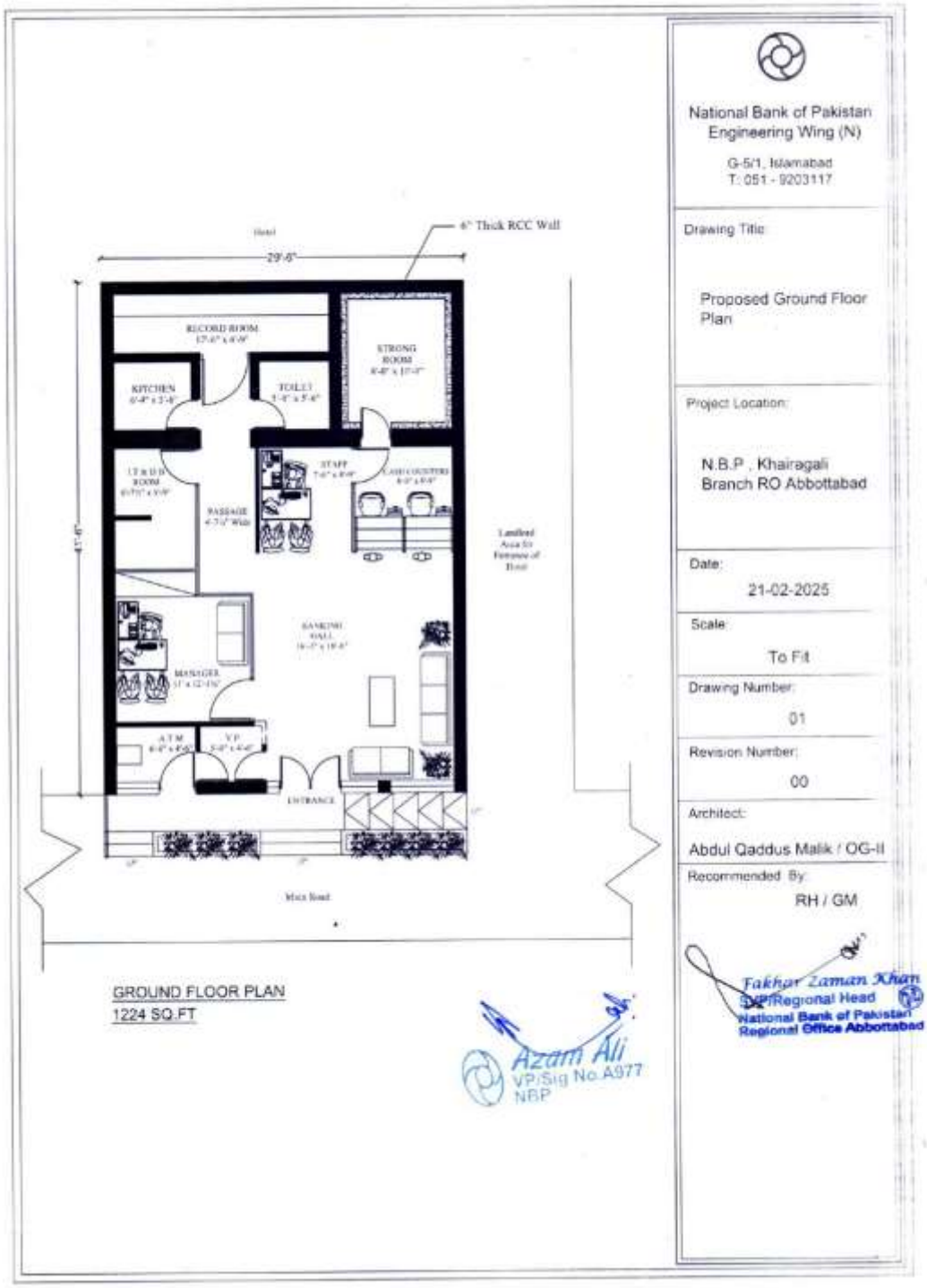
Sample Clause: Equivalency of Standards and Codes

Wherever reference is made in the Technical Specifications to specific standards and codes to be met by the works and materials to be executed or tested, the provisions of the latest current edition or revision of the relevant shall apply, unless otherwise expressly stated in the Contract.

Where appropriate, drawings, including site plans as required, may be furnished by the Procuring agency/Employer with the bidding documents. Similarly, the Contractor may be requested to provide drawings with its bid or for prior review by the Procuring agency/Employer during contract execution.

Drawings

(Insert reference to the drawing of the Construction works to be carried out under this contract)



Supplementary Information

(Insert any other supplement information related to the procurement of works)

Bill of Quantities

(Note for the Procuring Agencies: For information related to the development of the BoQs, please consult General Instructions Issued by the Authority for preparation of BoQs available on Authority Website).

Sample Bill of Quantities

A. Preamble

1. The Bill of Quantities shall be read in conjunction with the Instructions to Bidders, General and Particular Conditions of Contract, Technical Specifications, and Drawings.
2. The quantities given in the Bill of Quantities are estimated and provisional, and are given to provide a common basis for bidding. The basis of payment will be the actual quantities of work ordered and carried out, as measured by the Contractor and verified by the Engineer and valued at the rates and prices bid in the priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix within the terms of the Contract.
3. The rates and prices bid in the priced Bill of Quantities shall, except insofar as it is otherwise provided under the Contract, include all Constructional Plant, labour, supervision, materials, erection, maintenance, insurance, profit, taxes, and duties, together with all general risks, liabilities, and obligations set out or implied in the Contract.
4. A rate or price shall be entered against each item in the priced Bill of Quantities, whether quantities are stated or not. The cost of Items against which the Contractor has failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.
5. The whole cost of complying with the provisions of the Contract shall be included in the Items provided in the priced Bill of Quantities, 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 Work.
6. General directions and descriptions of work and materials are not necessarily repeated nor summarized in the Bill of Quantities. References to the relevant sections of the Contract documentation shall be made before entering prices against each item in the priced Bill of Quantities.
7. Provisional Sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with Sub-Clauses 13.4 and 13.5 of the General Conditions.
8. The method of measurement of completed work for payment shall be in accordance with *[insert the name of a standard reference guide, or full details of the methods to be used]*.

B. Work Items

1. The Bill of Quantities usually contains the following part Bills, which have been grouped according to the nature or timing of the work:

Bill No. 1—General Items;
Bill No. 2—Earthworks;
Bill No. 3—Culverts and Bridges;
Bill No. 4—etc., as required;
Daywork Schedule; and
Summary Bill of Quantities.

2. If ITB 16.1 applies, Bidders shall price the Bill of Quantities in the applicable currency or currencies (Local or foreign as the case may be).

[Note to the Procuring agency/Employer: The tables in BOQ must be prepared in accordance with the currency alternative retained in BDS – ITB 16.1.]

Bill of Quantities

CIVIL WORKS

S.NO	DESCRIPTION/SPECIFICATION	QTY	UNIT	RATE	AMOUNT
	DISMANTLING WORKS (where required)				
1	Dismantling and removing of existing masonry walls, opening in walls, electrical fixtures &fittings, plumbing fitting / fixtures, M.s grills and any other material etc. Handed over to Bank Authority etc complete in all respects as per drawings.	1	Job		
1-a	**DISMANTELING R.C.C WALL (IF ANY)**				
	Dismantling of R.C.C Wall of strong room and locker room including labor, equipments, scaffolding, throw all dismantled material out of municipal limit with transportation. Dismantled steel and Heavy duty doors handed over to branch. Complete in all respect.	150	Sft		
2	**SHIFTING/RELOCATING OF EXISTING DEAD STOCK ITEMS/ OLD RECORD,CASH SAFE ETC.**				
i-	Relocating of existing Dead Stock items i-e ,furniture, wooden cabinets, Computers of existing premises during Major Renovation work etc. complete in all respect or as directed by Engineer incharge.	1	Job		
ii-	Shifting /Relocating of existing old record/current record /stationary /ledger books or any other items of existing premises during Major Renovation work or to its new location after completion of Major Renovation work etc. complete in all respect or as directed by Engineer incharge.	1	Job		
iii-	Shifting /Relocating of existing Dead Stock items i-e, Cash safes, fire proof Almirah's, ATM machine, Lockers, M.S Almirah's /Shelves/cash cages etc. from existing to its new location after completion of Major Renovation work etc complete in all respect using chain cupy, rolling G.I pipes specially dedicated labour for this job to avoid any damages or as directed by Engineer incharge.	1	Job		
3	**REINFORCEMENT CEMENT CONCRETE 3000 PSI**				

	Provide, mix, place and vibrate reinforcement cement concrete in the volumetrix mix. 1:2:4 using one part of op cement to 2- part of 50 % lawrancepur and 50 % chenab sand and 4-parts of sargodha crush nominal size 3/4" and down mesh with min. cube crushing strength of 3000 psi at 28 days finishing the necked surface and curing etc., including water tight finishing the necked surfaces and curing etc., from work including its sub-sequent removal, complete in all respects as per drawings, specifications and as directed by the Consultant/Engineer.				
	I) R.C.C Walls .	175	Cft		
	II) Beam / Lintels/ Shelves etc.	30	Cft		
4	**STEEL REINFORCEMENT**				
	P/F Grade 60 steel reinforcement deformed bars at any floor with minimum yield strength of 60000 psi as per ASTM standards A-615, including cost of binding wire of 16-SWG, chairs. (Wastage of bars, Over laps etc. is to be Contractors accounts).	1000	kgs		
	STANDARD STRONG ROOM DOOR				

5	Supply and installation i/c transportation of standard strong room / locker room door of size 7' x 4' x 11", the main frame should be of 9mm thickness angle or U-channel and 6mm thickness main shutter a composite of outer 6mm and inner 3mm. The space between outer and inner sheet should be filled with fire proof material, tale and alum crystals. The outer 6mm plate is reinforced with 3mm thick anti-torch material plate in the locking regions. The lock area should be protected with 1/8x27x30 inch copper sheet. Thickness of door slab is 2". Locking box wall made of wide 4" M.S sheet plate covered with 3mm BS sheet two brass locks with triple control locking system. Hinges made from 2-1/2" dia solid steel bars 9" in length & 12" long 4" wide flat bars with all bearings. Locking system triple control 2 way locking system. Made of 2.5" x 2.5" x 6mm angle iron 2-1/2" long 1-1/2" steel shooting bolts fixed on it with total no 11 bolts 6 at front & 5 at rear. Grill door, main frame and 08 Nos. supporting strips should be of ½" M.S Plates with 6/8" solid rounds bars 13-14 at brass locks with master control keys operation with grill door i/c exact alignment, plumb, welding. Placement of strong room door in vertical position in the opening of the strong room with chain kopi and welding of the angle bars with steel bars of the strong room bars. (From Banks Approved Vender)	1	Each		
6	**BRICK MASONARY**				
	Providing and laying brick masonry/ Solid Block with 1:4 cement sand mortar in super structure, including raking out joints, scaffolding, curing, drilling for walls/ Ramps where required complete in all respects as per drawings, specifications and as directed by the Consultant/Engineer.				
	9" (228 mm) Thick or Above	450	Cft		
	6" (150 mm) Thick or Above	30	Cft		
	4" or 4-1/2" (114 mm) Thick	0	Sft		
7	**PLASTER WORK**				

	Providing and applying Plaster (thickness and cement / sand ratio as indicate in sub items below) including making edges and corners, curing, scaffolding etc, complete in all respects as per drawings, specifications and as directed by the Consultant/Engineer.				
	12mm Thick in (1:4) on walls	1300	Sft		
	19mm Thick in 1:3 on stairs soffit / ceiling	170	Sft		
8	**P.C.C (1:4:8) UNDER FLOOR**				
	Providing and laying under floor cement concrete of the nominal mixes by volume as indicated, using 1-1/2" down guage stone ballast as coarse aggregate, including formwork and its removal, compacting, curing etc, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	40	Cft		
9	**P.C.C FLOORING**				
	Providing and laying of PCC 1:2:4 under floor using one part ordinary portland cement, four parts of best quality sand and eight parts of crush stone including leveling, compacting, curing and surface finishing a srequired, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.				
	50mm Thick (Rough Finish)	1100	Sft		
	75mm Thick (Smooth Finish)	100	Sft		
10	**PORCELAIN TILES**				
	Providing and laying floors of Porcelain tiles 1200mm X 600mm (grit white) 11mm thick of Roka ceram tile imported made (Chaina or equavilent including base mortar 1-1/2" thick c.c and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Engineer.	650	Sft		
	Providing and laying floors of Porcelain tiles 1200mm X 600mm (Conoliaen Brown) 11mm thick.				

11	Providing and laying floors of Porcelain tiles 1200mm X 600mm (Conoliaen Brown) 11mm thick of takceram tile imported made (China or equavilent including base mortar 1-1/2" thick c.c and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Engineer.	100	Sft		
12	**GRANITE SKIRTING**				
	Providing and laying 19mm thick Pre-polished Cherry Pink / Camel Brown Granite skirting 100mm high of including base mortar and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	0	Rft		
13	**CONOLIAN BROWN TILE SKIRTING**				
	Providing and laying 11mm thick of Conoliaen Brown tile in Skirting 100mm high of takceram tile imported made (Chaina or equavilent) including base mortar 1-1/2" thick c.c and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Engineer.	250	Rft		
14	**GRANITE ON STAIR AND MAIN ENTRANCE PODIUM**				
	Providing and laying 19mm thick pre-polished Cherry Pink Granite / Camel Brown Granite on stair threshold floor, wall etc, including base mortar and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawing, specifications and as directed by the Consultan	90	Sft		
15	**GRANITE THRESHOLD**				
	Providing and laying 19mm thick pre-polished Cherry Pink Granite / Camel Brown Granite on threshold, including base mortar and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	0	Sft		
	CONOLIAN BROWN TILE THRESHOLD				

16	Providing and laying on Threshold of Porcelain tiles 1200mm X 600mm (Conoliaen Brown) 11mm thick of takceram tile imported made (Chaina or equavilent including base mortar 1-1/2" thick c.c and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Engineer.	40	Sft		
17	**GLASS DOORS**				
	Providing and fixing Tempered **frame less** glass door using 12mm clear glass , imported concealed floor door closers GCC made, door locks,cand approved handles on both sides, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	65	Sft		
	Wooden Frame Glass Door				
18	Providing and fixing Tempered glass door using 12mm clear glass including top and bottom Solid oak wood H section size 6" x 1.5" finished with NC lacqure polish made of Germany , imported concealed floor door closers GCC made, door locks,cand approved handles on both sides, complete in all respects as per drawing, specifications and as directed by the Consultant/ Engineer.	85	Sft		
19	**CARPET TILES**				
	Providing and laying of Carpet Tiles size 500mm x 500mm of approved quality, pattern, (UAE / MILLEKEN or equivalent) make solution dyed fiber including wastage, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	0	Sft		
20	**PORCELAIN TILES ON TOILET WALLS / Floor**				
	Providing and laying floors of UAE/ Malysian Porcelain tiles size 600mm x 300mm (as approved or equivalent on walls including base mortar and matching colours, cement slurry for fixing of tiles, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	275	Sft		
21	**VANITY COUNTER**				

	Providing and fixing 19mm thick pre-polished approved Cherry pink granite on bath and kitchen counters including base mortar with matching colour cement slurry for fixing, grouting and chamfering of edges, complete in all respects as per drawing, specifications and as directed by the Consultant/ Engineer.	20	Sft		
	WOODEN DOORS				
22	Supply of WOODEN DOOR (WD- 1A), made with 38mm thick sandwich chipboard **(tactile sheet 4024)** of approved design with 19mm thick soft wood vertical rail both sides covered with approved, 9mm thick mahagni wood edging, finish with clear NC lacquer polish, including door frame of **16 SWG GI sheet with red oxide coat** covered with approved laminate/door boarder and hardwares i-e hinges, imported door lock and door stopper etc, complete with hard ware. And complete with all respect as directed by Engineer Incharge.	65	Sft		
	GLASS PARTITION				
23	Providing and fixing of Glass partition consisting of 12mm thick imported clear tempered glass with frosting paper in pattern as shown on drawings, with approved aluminum H section/ solid oak wooden section 6"x2" thick frame finished with lacqure polish approved shade as frame on top and bottom and all necessary joinery details complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	0	Sft		
24	Removing and re-fixing of Glass partition consisting of 12mm thick glass partition including with frosting paper in pattern as shown on drawings, with approved aluminum H section/ solid oak wooden section 6"x2" thick frame finished with lacqure polish approved shade as frame on top and bottom and all necessary joinery details complete in all respects as per drawing, specifications and as directed by the Consultant/ Engineer.	0	Sft		
25	**FRONT GLAZZING CURTAIN WALL**				

	Providing and fixing of Glass Partition consisting of 8mm thick imported tinted tempered glass (Color shade approved bt WH/HOD) with approved 2mm thick aluminum section (curtain wall) of chawala or equavilent as frame on top and bottom and all necessary joinery details complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	100	Sft		
26	**OAK VENEER WOODEN PARTITON WALL /COLUMN CLADDINGFULL HEIGHT.**				
	Providing , fabricating and fixing in position 3" thick MDF wooden partition with 5mm thick oak ply pasted both sides and finish with best quality lacquer polish, wooden partition/ Column Cladding consisting of partal wood frame of size 2" x 1 1/2 " @ 2" C/C both ways and 1/2" thick imported MDF board on both faces including vertical partial wooden supports the cost of all srews ,rowel bolts, nails, glue etc . All wood should be termite proof complete in all respect. (Note. Straight dimensions of measurement will be taken at the time of billing.)	0	Sft		
27	**BULK HEAD /MDF PARTITION WALL**				
	Providing and making bulk head/ partition wall using 2" x 2" partal wooden frame @ 2' c/c horizontal and vertical with 11mm thick imported MDF Sheet both sides etc complete in all respectas per drawing, specifications and as directed by the Engineer.	0	Sft		
28	**INTERNALPAINT WORKS**				
	Providing and applying Paint on internal/ External walls of ICI or Berger including rubbing with sand stone, filling the uneven surfaces with putty, rubbing with sand paper and preparation of surface perfect in all respects, applying one coat of primer on prepared surface of plastered and finish paint coats as indicated in sub items, complete in all respects as per drawings.				
	Plastic Emulsion Paint ash white (on Internal walls)	1000	Sft		
	Weather shield paint on external walls (approved by the Engineer)	200	Sft		

29	Providing and applying Three coats of ICI deluxe distemper paint for roof/ ceiling after scraping, sand papering, plain surface complete with all material labour, equipment scaffolding etc As per entire satisfaction of Regional Engineer/ Engineer Incharge.	200	Sft		
	Wooden CABINETS (Record Room)				
30	P/fixing of wooden filling cabinets low and full height at any height **made with 16mm MDF laminated 7419 with edging made of laminated 7419 veneer properly fixed** and Internal carcass in 16mm thick lamination chipboard # 7056 , includindg approved handles, hings and shelf approved drawing and design. Complete in all respect. **(Size upto 4'x8' approx.)**	2	No.		
30-i	**KITCHEN CABINETS**				
	P/fixing of wooden filling cabinets low and full height at any height **made with 16mm MDF laminated 7419 with edging made of laminated 7419 veneer properly fixed** and Internal carcass in 16mm thick lamination chipboard # 7056 , includindg approved handles, hings and shelf approved drawing and design. Complete in all respect. **(Size upto 2.5'x6' approx.)**	1	No.		
31	**GYPSUM SHEET FALSE CEILING**				
	Providing and fixing 12mm thick gypsum sheet Fale ceiling with ICI paint including hanging system, making opening for lights or diffuser complete in all respects as per drawing, specifications and as directed by the Engineer, (Note. Straight dimensions of measurement will be taken at the time of billing.)	600	Sft		
32	**FALSE CEILING**				
	Providing and fixing 7.5mm thick Lamination gypsum tile 600mm x 600mm False including hanging system (Groove), making opening for lights or diffuser complete in all respects as per drawing, specifications and as directed by the Engineer, (Note. Straight	400	Sft		

	dimensions of measurement will be taken at the time of billing.)				
	CORNICE				
33	Providing and fixing 11mm thick and 75mm high Laminated tactile sheet No.4024 Al-Noor make / MDF Cornice architrave on wall and applying of approved paint, including joinery detail complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	120	Rft		
	ROLLER BLINDS				
34	Providing and fixing imported synthetic fiber roller Blinds according to the instructions of the manufacturer, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	100	Sft		
	WOODEN GLASS RAILING				
35	Providing and fixing of wooden Railing 50mm top of wood with 12mm thick tempered glass 36" high with G.C.C Fittings fixed all necessary joinery details and applying of approved shade of polish etc complete in all respects as per drawing, specifications and as directed by the Engineer.	0	Rft		
	S.S RAILING				
36	Providing and fixing of Stainless steel pipe grade 304 non-magnatic as Railing of 50mm dia Top and 40mm stainless vertical pipe as blustrade, 12mm dia stainless steel horizontal pipe 3 nos including all necessary joinery details and applying of approved paint complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	25	Rft		
	Front Elevation Tiles				

37	Providing and laying floors of Porcelain tiles 1200mm X 600mm (grit white) 11mm thick of Roka ceram tile imported made or equivalent including base mortar 1-1/2" thick c.c and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Engineer.	0	Sft		
	FRONT GLAZZING				
38	Providing and fixing of Glass on front elevation consisting of 12mm thick imported clear tempered glass with frosting paper in pattern as shown on drawings, with approved aluminum H Section as frame on top and bottom and all necessary joinery details. Complete in all respects as per drawings.	0	Sft		
	Graffito paint / Rock Wall				
39	P/A Graffito paint/ Rock wall best quality of approved color on front elevation and design by engineer. Including scaffolding, labor, material etc. Complete in all respect.	400	Sft		
	Wooden Texured Tile				
40	P/L wooden textured porcelain tile 300mm x 1200mm made of malaysian tile approved imported porcelain tile flooring or equivalent of desired color and shade over existing flooring using dry bond mortar, including joint filling with approved matching color chemical, cutting tiles where required etc, complete in all respect.	135	Sft		
	WOODEN LAMINATED FLOOR				
41	Providing and fixing impored Wooden laminated floor of approved colour and quality make Malysian 4 rating, 8mm thick with water proof lining, including all necessary joinery details and underlay, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.	0	Sft		
42	**GRANITE ON STAIR / FLOOR**				

	Providing and laying 19mm thick pre-plished approved Cherry Pink / Camel Brown granite on floor, including base mortar and matching colour, cement skurry for fixing and grouting, complete in all respects as per drawing, specifications and as directed by the Consultant / Engineer.		Sft		
	ALUMINUM WINDOWS /V.L				
43	Providing and fixing full glazed Anodized Aluminum Bonze windows/ Ventilator made of Pakistan cable or equivelent (Sliding/ Fixed) of approved manufacturer using Deluxe quality 2mm thick 4" wide extruded section, glazed with distortion free 6mm thick imported tinted glass with fly screen having best quality mesh and aluminum section including all hardware, handles , PVC/ruber gasket and sealent complete in all respect	50	Sft		
	SAFETY GRILL				
44	Providing/ fabricating & fixing mild steel protective grills to windows made up from steel section of 16mm x 16mm square bar at 6" c/c vertically and 8" c/c horizantally and M.S Flat 1 ½" X 3/8" frame (as per sketch) including 3 coats of approved shade of ICI Burger Enamel paint 3 copats over a coat of red lead oxide etc. complete as directed by Engineer Incharge.	100	Sft		
	G.I. SHUTTER				
45	Providing fabricating & fixing at any floor, steel roller fence shutters made of standard M.S Channel ¾"x1/8" M. including roller of C-Iron rail 2-1/2" x1 ½"x ½" with all hangers, bearing box, tracks, guide channel pull handles locking arrangement internal and external, and making good all cut work etc finished with 3 coats of enamel paint to requisite shade over red lead primer, complete in all respect as per specification or as directed by the Engineer Incharge.	0	Sft		
	collapsible doors				

46	Providing fabricating & fixing at any floor, steel grill collapsible doors with louver made of standard M.S Channel ¾"x1/8" M.S Flat ¾"x1/4" including roller of T-Iron rail 1 ½" x1 ½"x ½" with all hangers, bearing box, tracks, guide channel pull handles locking arrangement, and vertical louvers making good all cut work etc finished with 3 coats of enamel paint to requisite shade over red lead primer, complete in all respect as per specification or as directed by the Engineer Incharge.	90	Sft		
47	**STEEL DOOR FOR ATM, GUARD ROOM & EMERGENCY EXIT**				
	Providing and fixing of M.S steel sheet 14SWG on both sides and M.S pipe frame 16SWG frame at inner side of leaf, door frane of M.S angle Iron+M.S dtrip, applying of approved enamel paint and all necessary joinery details, complete in all respect.	35	Sft		
48	**WALL / COLUMN CLADDING**				
	Providing and fixing of wall cladding with 17mm thick approved laminated Tactile sheet # 4024 made by Al-Noor or equivalent with partal wood frame and having vertical stripes 1 1/2 " wide X 3/4"thick 2 1/2 " C/C at both ends of wall up to 24" each side. complete in all respect as per specification or as directed by the Engineer Incharge.(Note. Straight dimensions of measurement will be taken at the time of billing.)	120	Sft		
49	**CASH COUNTER**				

	Teller Counter made of MDF lassani sheet best quality imported. Working top made of MDF Sheet thickness 1-1/2" standard pressed pasted with approved laminated Tactile sheet # 4024 made by Al-Noor or equivalent, front and customer top made of corian approved shade and design, customer top having stainless steel tray/ corian approved shade. Including 12mm clear glass with stainless steel clips supported in 2" thick vertical post laminated with imported stainless steel laminated sheet approved design and shade . wooden hanging beam with wooden strips in top and bottom as per drawing, three coats of matt finish paint on end supports . counter sepration partion made of laminated 1-1/2" thick approved color. **complete in all respect as per approved sample on head office.** Size(mm): W:1200 x D:1813 x H:2440 Exclusive Drawer Pedestal.	8	Rft		
	wooden drawer				
50	Providing wooden drawer unit with white formica (size 18"X 17" X 22") having 3 drawers and imported handle running on imported rail with central locking arrangement etc complete as per entire satisfaction of Engineer Incharge.	2	No.		
	ROOF SCREEDING				
51	P/Applying water proofing on roof top with best quality water proofing agents made of AL-noor Epoxy/ECO proofing CWP or equivalent over 2-1/2" thick avg: cement concrete layer mix ratio of 1:2:4 with laveling and proper finishing with curing to control seepage / ingrence in concrete / cementiouse etc. complete in all respect.	1224	Sft		
	TERMITE PROOFING				
52	P/A Termite proofing and rat killer spry or chemical best quality imported approved before application inside warehouse etc. Complete in all respect.	1	job		
	Hydraulic door closer				
53	P/F of hydraulic door closer best quality imported etc. Complete in all respect.	2	Each		

	Door Machine for 12mm Thick glass door				
54	P/F of Imported Door machine (New Star) Or Equivalent at floor base supporting Glass door of main enterance, Operation Manager chamber as per entire satisfaction of Engineer .	2	Each		
	TUFF TILES				
55	Providing and laying of Tough Tiles size 1 ft X 1ft X 2 Inch thick, reinforced with wire mesh in approved colour over 2" thick p.c.c avg: and grouting in cement complete in all respect.	0	Sft		
	WOODEN FALSE CEILING				
56	P/F of wooden False Ceiling at required level with MDF lassani sheet imported quality, partal wooden frame internal side of false ceiling size (2"x1-1/2") & (3"x1-1/2") with supports and MS angle supports with appropriate size and ceiling surface finish with approved design by Executive Engineer, including Lacquire polish ICI made in Germany or with 17mm thick approved laminated Tactile sheet # 4024 made by Al-Noor or equivalent with partal wood frame including labor, material and transportation etc. Complete in all respect. (Note. Straight dimensions of measurement will be taken at the time of billing.)	200	Sft		
	Wooden Hanging Beam				
58	Fabricating & Fixing Wooden hanging beam for glass partitions using 2" x 2" partal wooden frame @ 2' c/c horizontal and vertical with 11mm thick imported MDF Sheet both sides and 03 coats of paint approved shade etc complete in all respect as per drawing, specifications and as directed by the Engineer.	12	Rft		
	Logo / Theme Wall				
59	Logo wall at Reception made of chipboard with oak veneer pressed under 100 -150 kg/cm2 of air pressure and 60 C0 of temperature with softwood framing inside. Including complete joinery details. Complete in all respects as per drawing and specifications. Size (mm): W: 2590 x T: 75 x H: 2440	1	job		
	Roof Marble Additional Floor				

60	P/L 1/2" thick boticena marble approved quality at roof top with 2" thick c.c with cement slurry, including marblish griding and polish with machine finally finish with mension polish best quality imported complete in all respect.	0	Sft		
	Alucobond (Optional)				
61	Aluminum Composite Material (ACM) consists of two sheets of smooth 0.02″ aluminum thermobonded to a polyethylene core in a continuous process. pre-finished with a premium Kynar500 PVDF resin-based coil coating that is in a spectrum of attractive standard approved colors etc, as per entirer specification of Engineer Incharge.	0	Sft		
	Main Hole				
62	Construction of Main Holes made with block masonry size 2'-0" x 2'-0" x 2ft deep including excavation lying plaster inside provision of holes to connect pipe line with curing etc. complete with P/F main hole cover made of cast iron or pre-cast concrete.	0	Each		
	Water Proofing Toilet Area / Basement				
63	Water Proofing in Floor to stop seepage with cutting floor, grouting using Eco-shield Epoxy PU Sealant Different places in basement etc. complete in all respect.	65	Sft		
	BITUMEN Roof Tratment				
64	Providing and Laying **water proof with bitumen flit/ jute in a sold mop coat using** and cement plaster speard sand etc i/c repairing the roof using Ultra bond etc. as per entirer specification of Engineer Incharge.	0	Sft		
	Aluminum louver shutter				
65	P/Fixing Aluminum Louvers shutters below wash basin & sink with Aluminum frame 2mm thick 4" wide extruded section including fixing Aluminum louver shutter with handle, locks etc. complete in all respect as directed by the Engineer Incharge	0	Sft		
	CONCRETE PAVER				

66	Providing and laying of pavers size 4"x8" having 3" thick best quality made of envicrete/ hub crete or equivalent with sand cusion approved colour over 2" thick p.c.c avg: and grouting in cement complete in all respect.	0	Sft		
	Wooden Pelmet				
67	P/F of wooden pelmet made of MDF lassani 1'-6" wide and 4" high with partal wooden frame internal structure size 2"x1-1/2" covered with MDF lassani 1/2" thick with holes light holes and apply three coats of mattfinish paint etc. Complete in all respect etc.	25	Rft		
68	P/F of wooden False Ceiling approved design at required level with MDF lassani sheet imported quality, partal wooden frame internal structure side of false ceiling size (2"x1-1/2") C/C 2'-00 covered with MDF lassani sheet best quality having three coats of matt finish paint approved shade with light holes etc copmlete in all respect.		Rft		
69	P/F of wooden Oak wall panelling of back side wall of cash counter, Staff area as per design made of MDF lassani 1/2" thick imported quality having partal wooden frame internal structure size 2"x1-1/2"@ 2' c/c covered with oak wooden ply 5mm thick finished lacqure polish made ICI delux approved shade and design etc Complete in all respect or as directed by Engineer.	50	Sft		
	LOW HEIGHT WOODEN/GLASS PARTITION				
70	P/F of glass partition consisting on 12mm thick imported clear tempered glass with stainless steel U clips full size over wooden paritition 3" thick as per drawing and design partition 3"x3" thick wooden frame in parameters of partition made of partal wooden frame with vertical posts hold in false ceiling at both ends, partition both faces covered with veenered oak ply finished lacqure polish and best quality fabric with fiber / flex as per design and all necessary joinery details. Complete in all respct.	60	Sft		
	FORMICA FINISHED FLUSH DOOR				

71	P/Fixing 11/2" thick wooden flush dooor with solid core face , High quality hinges,door stopper, tower bolt, door lock best quality etc complete in all respect.		Sft		
	ROOF Concrete Screeding				
72	P/Applying water proofing on roof top 3" thick cement concrete layer mix ratio of 1:2:4 with laveling/ slope and proper finishing with curing to control seepage / ingrence in concrete / cementiouse etc. complete in all respect.	0	Sft		
	EXCAVATION OF ALL TYPE SOIL				
73	Excavation in all types of soil and up to any depth including removal of excavated material from site at desired location, job complete in all respects.	300	cft		
	Earth Filling				
74	Providing / filling earth from out side and leveling the plot and compact sweet earth with viberator and watering, each layer having 6" thickness. Complete in all respect as per entire satisfcation.	80	P.Cft		
	Stone Soling				
75	Providng and Laying Stone soling 6" thick including compaction, watering as in foundation complete in all respect	40	cft		
	Burnt Brick Ballast				
76	P/L Brcick ballast of 1st class burnt bricks for floor raising including compaction, levelling upto required thickness complete in all respects	0	cft		
	Glass Partition 12mm thick with GCC Fittings				
77	Providing and fixing of Glass Partition consisting of 12mm thick imported clear tempered glass with imported GCC fittings of required design and including frost paper approved design and all hardware, job complete in all respects.	300	Sft		
	Glass Partition 12mm thick with Wooden frame				
78	Providing and fixing of Glass Partition consisting of 12mm thick imported clear tempered glass with wooden frame (6"x1.5") solid oak wood H-section with imported NC lacquer polish German including all hardware, job complete in all respects.	0	sft		

	Dumpa False Ceiling				
79	Providing & Fixing aluminium perforated 0.6mm thick imported Dumpa false ceiling size 600mx600mm including hanging system making opening for lights or diffuser, complete in all respects. (Kitchen/Washrooms area)	65	Sft		
	Brick Roof Insulation				
80	Roof insulation with 9''x4.5''x1.5'' brick tiles grouting with cement/sand mortar including bitumen coating of approved standards, laying of heavy thickness polythene sheet , mud filling 3-4'' thickness with proper slope and making required no. of khuras for proper drainage job complete in all respects.	0	sft		
	IMPORTED FROST PAPER				
81	P/F imported glass paper at required places, job complete in all respects	100	Sft		
	NBP LOGO'S				
82	P/F NBP Glass logos of approved standards & design	4	No		
	Stainless Steel Planters				
83	Providing SS planters Non- Magnatic of approved dia, size and standards job complete in all respects as directed by Engineer Incharge.	2	Nos.		
	Stainless Steel Trash Bin				
84	Providing SS Trash bin Non Magnatic of approved size and shape, complete in all respects	2	Nos.		
	Receiption Counter				
86	Receiption counter made of of MDF with oak veneer pressed under 100-150 kg/ cm2 of air pressure and 60 degree of temmpreture and backing veneer underneath with solid partal wood framing and solid & seasoned oak wood lipping. NC lacquer polish finish including three drawer, railing on drawer runner, having handle, nails, screws glue etc. Customer top and skirting in approved corian. Complete in all respect. Size W:2590x D:762x H: 990	0	Each		
87	**Wooden Rafter**				

87-i	P/Fixing wooden Rafters in 1/2'' thick lassani & laying oak wood ply 4'' x 6'' under lassani ceiling finished with matt finish paint with rafters finished with approved shade of lacquer polish best quality imported etc complete in all respect ,In Enterance lobby.	100	Sft		
87-ii	P/Fixing wooden Rafters vertical posts up to ceiling in waiting area/staff area, rafters made in 1/2'' thick lassani box with partal wooden framing & laying oak wood ply size 3'' x 6'' with laying lacqure polish finish or rafters and back sheet made with laminated tactile sheet etc complete in all respect.	50	Rft		
	REPAIR EXISTING WOODEN FALSE CEILING/DOORS				
88	Repairing of existing wooden false ceiling at first floor made of solid deodar wooden panel of size 36'' x 36'' ceiling surface AND WOODEN DOORS required to finishes with lacqure polish including filling , sand papering /scrapping etc as approved ICI made in Germany etc complete in all respect.	0	Sft		
	ENEMAL PAINT ON M.S GRILL / DOORS				
89	Providing and applying Paint on internal/ External walls of ICI or Berger including rubbing with sand stone, filling the uneven surfaces with putty, rubbing with sand paper and preparation of surface perfect in all respects, applying one coat of primer on prepared surface of plastered and finish paint coats as indicated in sub items, complete in all respects as per drawings.	50	Sft		
	REPAIR OF EXISTING WOODEN DOORS @F/FLOOR				
90	Repair of existing wooden doors at first floor including door frame of **16 SWG GI sheet with red oxide coat covered** with approved laminate/door boarder and hardwares i-e hinges, imported door lock and door stopper, Aluminum kick plates 4'' high L-Shape etc, complete with hard ware. And complete with all respect as per design.	0	Sft		
91	Connecting Sewerage line of Branch to Main Sewerage Line of Municipal including excavation of any kind of soil, dismantling/making opening of main sewerage line with proper jointing with	0	job		

92	Providing /Laying Artificial Grass 40mm thick (approved sample & design from Engineer) at different location of Building Including proper jointing with solution/glue ,laying /pasting with glue ,cutting etc complete in all respect	0	Sft		
93	Providing and applying pvc vinyl flooring Imported make approved size and shade from Bank Engineer Incharge	0	Sft		
	WPC WALL PANELLING				
94 (N.S)	Providing & Fixing of 5mm grove WPC fluted paneling in ,dimension 9.5 feet x 6 inch wide approved quality designed & color complete in all respects as per instruction of Engineer incharge.	200	sft		
	3D DRAWINGS				
95 (N.S)	The Vendor is bound to submit 3D drawings/layout of interior & exterior design (as per Bank's approved standardized specifications of corporate branch/office theme) proposed renovation before execution of works of both floors i-e Ground & Basement floor for approval of the competent authorities.	1	job		
	Poly carbonate sheet				
96 N.S	P/F of Poly carbonate Sheet 4mm thick Imported best quality approved shade with S. S 3" dia pipe vertical Grade 304 non-magnetic round post with foundation mix ratio of 1:2:4 having size of 1-'00x1'-00 and 2'-00 depth of footing, and 1.5"x1.5" S.S Square pipe frame Non magnetic (2.5' x 2.5')C/C including all necessary joinery details and S.S welding Complete in all respect as per entire satisfaction OF ENGINEER INCHARGE	0	Sft		
COST OF CIVIL WORKS				**Rs.**	

PLUMBING WORKS

S.NO	DESCRIPTION/SPECIFICATION	QTY	UNIT	RATE	AMOUNT
	SECTION-01, SUPPLY & INSTALLATION OF PLUMBING FIXTURES				
	Supply and Installation of plumbing fixtures & faucets complete in all respects including all accessories, support, hangers, etc. ready to use as per specifications of consultant.				
1.1	European style W.C. floor mounted type, with seat cover, flush tank, cover plate floor mounted brackets with fixing accessories.				
i.	Type - EWC	1	Nos.		
ii.	P/F ORISA type W.C Manufactured by Master / PORTA Ceramic or equivalent approved quality with integral tread 19" clear opening as measured between flushing rims, C.I. Trap 4'' dia Gallons capacity low level flushing cistern of same manufacturers making good in cement concrete (1:2:4) complete.	1	Nos.		
1.2	European style W.C. wall hung type, with seat cover, flush tank, cover plate floor mounted brackets with fixing accessories.				
i.	Type - EWC-WH	0	Nos.		
1.3	Toilet Hand Spray with flexible chain & telephone type shower Including tee stop cock etc. complete in all respect.				
i.	Type - TS	0	Nos.		
1.4	Wash basin (WB) including bottle trap, waste, stop cocks, etc.				
i.	Type - WB	1	Nos.		
ii.	Type - WB - V (Vanity)	1	Nos.		
iii.	Type-WB- Wall Hung type(for PWD's wash room)	0	Nos.		
1.5	Wash basin hot and cold water mixer, etc.				
i.	Type - WB	1	Nos.		
ii.	Type - WB - V (Vanity)	1	Nos.		
iii.	Double Bib Cock for Wash Room with flexible chain S.S with muslim type shower.	1	Nos.		

1.6	Stainless steel kitchen sink including stop cocks, P-trap / Bottle trap, waste pipe etc complete in all respects.				
i	SK - 1, 40" x 20" single bowl and single drainer.	0	Nos.		
ii	SK - 2, 18" x 20" single bowl and single drainer.	1	Nos.		
1.7	Sink hot and cold water mixer etc.				
i.	For SK - I	1	Nos.		
1.8	Toilet accessories complete set.				
i.	Soap Dispenser	1	Nos.		
ii.	Towel Rod	1	Nos.		
iii.	Paper Holder	1	Nos.		
iv.	Coat Hooks	1	Nos.		
v.	Hand Dryer	1	Nos.		
vi.	P/F Looking Mirror best quality balgium made fixed with clips complete in all respect and size as per site requirement	6	Sft		
1.9 N.S	P/F Stainless Steel Handles at Wall and floor support pipes having 1.5 " dia fixed with Rawal bolt, as per approved design by Engineer Incharge **(For PWD)**	1	Set		
	SECTION-02 WATER SUPPLY SYSTEM				
	Supply, installation, testing and commissioning of complete pipe work for cold and hot water system including all accessories required to complete systems ready to operate as per specification, drawings & instruction of Consultant.				
2.1	Polypropylene Random PP-R pipes PN 20 and fittings with fusion jointing along with all types of unions, tees, bends, sockets, clamps hangers, supports, sleeves, masking plates,chiseling, making holes making good, excavation, bedding backfilling as required complete in all respect.				
i.	Dia. OD 25 mm **(also for A.C Drainage)**	80	Rft		
ii.	Dia. OD 32 mm **(also for A.C Drainage)**	40	Rft		
iii.	Dia. OD 40 mm	200	Rft		
iv.	Dia. OD 50 mm	0	Rft		
v.	Dia. OD 63 mm	0	Rft		

2.2	Same as above item 2.1 but polypropylene Random PP-R (PN-25) reinforced with Aluminum foil for hot water.				
i.	Dia. OD 25 mm		Rft		
ii.	Dia. OD 32 mm		Rft		
iii.	Dia. OD 40 mm		Rft		
2.3	Expanded rubber foam insulation 1/2" thick for following pipes sizes complete with PVC tape wrapping protection				
i.	Dia. OD 25 mm		Rft		
ii.	Dia. OD 32 mm		Rft		
iii.	Dia. OD 40 mm		Rft		
2.4	Providing & fixing joining testing G.I. pipe lines for water supply as per BS 1387 medium quality IIL. Including specials sockets tee, elbow, bedn, reducer plug and union etc) supported on walls suspended from roof slab, including protective coating as per drawing and specification including color coding complete in all respect.				
i.	Dia. 1-1/2"		Rft		
ii.	Dia. 1-1/4"		Rft		
iii.	Dia. 2" (also for Locker room air vent Z- design)	6	Rft		
iv.	Dia.3"		Rft		
2.5	Brass body gate valves / ball valves with unions.				
i.	Size 3/4"	2	Nos.		
ii.	Size 1"	0	Nos.		
iii.	Size 1-1/4"	1	Nos.		
iv.	Size 1-1/2"	0	Nos.		
v.	Size 2"		Nos.		
vi.	Size 3" (CI body)		Nos.		
2.6	Brass body check valve				
i.	Size 3"		Nos.		
2.7	C.I. Cover with frame for under ground tank & over head tank.				
i.	Round Dia 21" (weight 27 kg)	0	Nos.		
2.8	Goose neck for O/H tank				
i.	Dia 4"		Nos.		

2.9	Supply and Installation of hot water storage heater (Electric) suitable for 60 psi working pressure including thermostate, inlet/outlet connection . Pressure relief valve.				
i.	HWE-10 (10 Gal. storage Capacity)	0	Nos.		
ii.	HWE-20 (20 Gal. storage Capacity)	1	Nos.		
2.10	Water transer pum with electric motor including C.C foundation, inlet outlet connections , valve, unions , flexible rubber connector, pressure gauge, electrical connection with all fixing accessories, water proof electrical connection with all fixing accessories, water proof electrical panel with pump starter automatic filling control system for (U/G and O/H) tanks low and high level , auto stop with overflow, complete in all respects ready to opereate.				
i.	WP-01 42 gpm 50 feet head	0	Nos.		
ii	P/F 3 ply Water tank having minimum 500 gallons capacity approved company with all accossries including transporation, fixing at site, connection with pipes all things complete etc. as directed by Engineer.	0	Nos.		
	SECTION-03 SOIL, WASTEVENT AND RAIN WATER DRAINAGE SYSTEM				
	Supply, fixing, testing and commissioning of equipment, pipe work required to complete the soil, waste, vent and rain water systems in all respects with accessories ready to operate as per specifications, drawings instructions of consultant.				
3.1	UPVC pipes of approved make along with specials, fittings bends wye, tees sockets, sleeves, masking plates, chiseling, making hole excavation, backfilling making good where as required jointing with rubber ring seal.				
i.	Dia 1-1/2"	0	Rft		
ii.	Dia 2"		Rft		
iii.	Dia 3"	60	Rft		
iv.	Dia 4"	60	Rft		

3.2	Floor trap including S.S grating floor trap, inlet outlet connection complete in all respects.				
i.	FT- with 4" P - trap	0	Nos		
3.3	Cleanout for soil, waste pipes of approved make				
i.	For 2" di. Pipe. With SS floor cover plate	0	Nos		
ii.	For 4" di. Pipe. With SS floor cover plate	3	Nos.		
3.5	UPVC rain water grating of approved design with dome type grating including requisite number of holes in wall plinth or floor for pipe connection and making good the same as necessary to the structure complete including gasket and clamp complete.				
i.	RWG - 4" size	0	Nos.		
3.6	UPVC cowl for vent pipe of the following dia including all accessories complete.				
i.	size 3"	2	Nos.		
ii.	size 4"	0	Nos.		
	SECTION-04 EXTERNAL SEWER & MANHOLES				
	Supply, fixing, testing and commissioning of equipment, pipe work required to complete the sewerage disposal services in all respects with accessories ready to operate as per specifications, drawings instructions of consultant.				
4.1	UPVC pipe class "D" for Sewer drainage with push fit rubber joints including excavation in any type of soi, dewatering if required bedding, back filling with selected material, removing of extra materials.				
i.	Dia 6" size	60	Rft		
ii.	Dia 8" size	0	Rft		
4.2	Construction of Gully Trap with material including, excavation, 4" size UPVC P-trap CC base CI cover with frame, CC benching water proof internal plaster inlet/outlet connections etc.				
i.	Type GT, size 10" x 10 "	2	Nos		

4.3	Construction of manholes with material including, excavation, base top RCC slab CI cover with frame, CC benching water proof internal plaster inlet/outlet connections etc.				
i.	size 18" x 18 "	2	Nos		
ii.	size 24" x 24 "	0	Nos.		
4.4	Construction of RCC septic tank (15' x 10' x 6' water depth) with material including, excavation, base top slab bedding, GI steps, CI double covers, internal CC water proof plasters, uPVC tees, CC benching, inlet/outlet connection etc, complete in all respects.	0	Nos.		
	SECTION-05 SUNDRIES				
	Contractor will priced the sundries items for all plumbing & Sanitary (P&S) services as per specifications, drawings and instruction of consultant.				
5.1	Submittals, samples, shop drawings, inspection, As built drawings operation and maintenance manuals and the like as required by specification. Testing and commissioning entire P&S installation as per Engineer's approval.	1	Nos		
COST OF PLUMBING WORKS Rs.					

ELECTRICAL WORKS

Item No.	Description		Unit	Quantity	Unit Rate	Amount
PART A	**WIRING WORKS**					
A-1	**ELECTRICAL WIRING**					
	Supply, laying, connection and testing of following wiring types; in heavy duty PVC Conduit recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling or in Dura duct if exposed on walls, with all necessary fixing accessories, conduit/duct accessories, pull boxes, steel pull wires complete in all respects, required as per site conditions. with make/brand of material being specified in Annexure A. (PVC insulated Copper - 300/500 Volt Grade Wires to be used)					
A-1-1	**(a)**	**Circuit Wiring (For Switchboard/Light Plug etc.)**				
		From DB to Switch Board or 2/3 pin Light Plug (5/10/13A) to be wired with 2x2.5 sq.mm S/C wires and 1 X 2.5 sq.mm S/C wire of Green/Yellow Colour as Circuit Protective Conductor (CPC) in 25 mm dia. heavy duty PVC conduit Each circuit shall have independent CPC. Maximum wiring of 2 light circuits can be pulled through 25 mm dia. PVC conduit.	Nos.	10		
	(b)	**Switch Board to Switch Board OR Switch Board to Light plug etc. Circuit Wiring**				
		Same as item No. A-1-1 (a) but from point to point i.e. Switchboard to Switchboard/Light Plug or Light Plug to Light Plug. (Side by Side or Back to Back Wiring points will not be payable and will be considered to be included in item No. A-1-1 (a)	Nos.	8		

	(c)	**Strong & Locker Rooms Wiring Circuit**				
		Same as item No A-1-1 (a) but including 40/.076 Cable with 20 A Switch Socket Outlet (SSO), back box etc. for connection to Switchboard in Strong & Locker Rooms complete with connections in all respects.	Nos.	1		
A-1-2	**(a)**	**Point Wiring (Light/Fan etc.)**				
		From Switchboard to 1st Point (Light/Fan) with 1 x 1.5 sq.mm S/C wire from Piano Switch and guange plate , 1 x 2.5 sq.mm wire common neutral including i/c P/F 10A Piano Switch in 20 mm dia. heavy duty PVC conduit, recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling with all necessary fixing accessories, conduit accessories, 75 mm high PVC junction boxes, pull boxes, steel pull wires, connectors, M.S. sheet steel switch box 16 SWG with earth terminal with 2 coats of powder coating of orange colour, M.S. box shall be of the same size as that of 1, 2 or 3 upto 6 gangs flush type plate switches complete in all respects, required as per site conditions. (In case of point wiring at Ceiling, 2 X 1.5 sq.mm wires in Flexible Conduit from junction box equiped with PVC gland to light/fan fixture, will also have to be provided). Maximum wiring of 6 points (light/fan) can be pulled through 20 mm dia. PVC conduit.	Nos.	24		
	(b)	**Point to Point Wiring (Light/Fan etc.)**				

		Same as item No. A-1-2 (a) but from Point to Point and without including cost of Switch and M.S. sheet steel switch box 16 SW. (Maximum of 05 points can be connected with 1st Point)	Nos.	90		
A-1-3	**(a)**	**Wiring Circuit for 1 x 13/15/16 A Simplex/Duplex - Switch Socket Outlet (SSO) installed at Wall/Workstation/Floor Box etc. or any other purpose.**				
	(i)	From DB to SSO with 2 x 2.5 sq.mm S/C wire + 1 x 2.5 sq.mm S/C wire of Green/Yellow Colour as Circuit Protective Conductor (CPC) in 25 mm dia. heavy duty PVC conduit, recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling with all necessary fixing accessories, conduit accessories, pull boxes, steel pull wires complete in all respects, required as per site conditions. Each circuit shall have independent CPC. (Maximum wiring of 3 circuits can be pulled through 25 mm dia. PVC conduit).	Nos.	8		
	(ii)	Same as item No. A-1-3 (a) (i), but from Point to Point I.e. 1st SSO to 2nd SSO and onwards. (Side by Side or Back to Back Wiring points will not be payable and will be considered to be included in item No. A-1-3 (a) (i) (Maximum of 03 SSO can be connected with 1st SSO).	Nos.	4		
	(b)	**Wiring Circuit for 1 x 20 A Switch Socket Outlet (SSO) for AC connection or any other purpose**				

		From DB to SSO with 2 x 4.0 sq.mm S/C wire + 1 x 2.5 sq.mm S/C wire of Green/Yellow Colour as Circuit Protective Conductor (CPC) in 25 mm dia. heavy duty PVC conduit, recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling with all necessary fixing accessories, conduit accessories, pull boxes, steel pull wires complete in all respects, required as per site conditions. Each circuit shall have independent CPC. (Maximum wiring of 2 circuits can be pulled through 25 mm dia. PVC conduit).	Nos.	6		
	(c)	**Wiring Circuit for 1 x 30/32 A Switch Socket Outlet (SSO) for AC connection or any other purpose**				
	(i)	From DB to SSO with 2 x 6.0 sq.mm S/C wire + 1 x 2.5 sq.mm S/C wire of Green/Yellow Colour as Circuit Protective Conductor (CPC) in 25 mm dia. heavy duty PVC conduit, recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling with all necessary fixing accessories, conduit accessories, pull boxes, steel pull wires complete in all respects, required as per site conditions. Each circuit shall have independent CPC. (Maximum wiring of 1 circuit can be pulled through 25 mm dia. PVC conduit).	Nos.			

	(ii)	Same as item No. A-1-3 (b) but from Point to Point I.e. 1st SSO to 2nd SSO. (Side by Side or Back to Back Wiring points will not be payable and will be considered to be included in item No. A-1-3 (c) (Maximum of 01 SSO can be connected with 1st SSO). This can be used for Heater connection as well.	Nos.	4		
A-1-5	**(a)**	**Wiring for Industrial Sockets for UPS Connections**				
	(i)	From UPS DB to Branch UPS I/O Connections (two connections) with 1 x 6.0 sq.mm 3 Core wire in 25 mm dia. heavy duty PVC conduit or PVC Dura duct (appropriate size), with all necessary fixing accessories, complete in all respects, required as per site conditions.	Rft.	10		
	(ii)	From ATM DB/Branch UPS DB/Branch UPS to ATM UPS I/O Connections (two connections) with 1 x 4.0 sq.mm 3 Core PVC/PVC insulated wire in 20 mm dia. heavy duty PVC conduit or PVC Dura duct (appropriate size), with all necessary fixing accessories, complete in all respects, required as per site conditions.	Rft.	10		
	(b)	**Wiring from Main DB to UPS DB or any other purpose.**				

		Wiring with 1 x 6.0 sq.mm 3 Core PVC/PVC insulated wire in 25 mm dia. heavy duty PVC conduit or PVC Dura duct (appropriate size), with all necessary fixing accessories, complete in all respects, required as per site conditions.	Rft.	10		
A-2	**DATA / VOICE / TV WIRING**					
	Supply, laying, connection and testing of following wiring types; with make/brand of material being specified in Annexure A.					
A-2-1	**(a)**	**Data points/outlets**				
		Wiring for each Data point from Communication Rack (Patch Panel) to each Data point on wall or in M.S floor outlet box with 4 pair Cat. 6E 23 AWG cable in 20 mm dia. heavy duty PVC conduit recessed in walls, columns, slabs, floors or above false ceiling with all necessary fixing accessories as required as per site condition, complete in all respects.	Nos.	8		
	(b)	**Voice points/outlets**				
		Wiring for each Voice point from Telephone Junction Box to each telephone point on wall or in M.S floor outlet box or in Data Cabinet/Communication (Wall mounted or Floor Standing) with 4 pair Cat. 6E 23 AWG cable in 20 mm dia. heavy duty PVC conduit recessed in walls, columns, slabs, floors or above false ceiling with all necessary fixing accessories as required as per site condition, complete in all respects.	Nos.	6		
A-2-2		**Main Telephone Cable**				

		Supply, installation and connection of 10 pair telephone cable to be connected from Utility MDF to Telephone Junction Box (TJB) in 25 mm dia PVC conduit including cost of identification tags, all necessary material / accessories complete in all respects.Actual length of cables to be installed shall be practically measured at site by the Contractor, duly checked by Engineer Incharge.	Rft.	220		
A-2-3		**TV Point Wiring**				
		Wiring for wall mounted TV outlets wired with RG-6 / RG-7 cable or as directed by the Engineer from TV Cable Splitter/distribution to each TV point, including 20 mm dia. heavy duty PVC conduit, recessed in walls, floors, column or as required as per site conditions, all PVC conduit accessories, pull boxes, steel wires etc. complete in all respects.	Nos.	1		
PART B	**MAIN / SUB MAIN CABLES**					
B-1	**ELECTRICAL LT CABLING**					
	P/L, connection, testing and commissioning of PVC insulated PVC sheathed non armoured copper conductor power cable 600 / 1000 Volt grade manufactured by any one of the manufacturers as mentioned in Annexure A. The cable would be recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling with all necessary fixing accessories either in already laid PVC Conduit/Dura duct or otherwise openely laid complete in all respects, required as per site conditions. and approval of Engineer Incharge					

	including cost of all necessary materials, connections of cables and identification tags at both ends, cables lugs properly crimped at both ends for the following sizes. Actual length of cables to be laid shall be practically measured at site by the Contractor, duly authenticated by the Electrical Engineer / Engineer Incharge / Supervisor before placing the order with the manufacturer, however, approximate length of cables are shown herewith. Payments shall be made as per actual length laid.					
	(a)	4 Core 10 sq.mm	Rft.			
	(b)	4 Core 16 sq.mm	Rft.			
	(d)	4 Core 16 sq.mm	Rft.	80		
	(e)	4 Core 35 sq.mm	Rft.			
	(f)	1 Core 6 sq.mm Green/Yellow Colour as CPC	Rft.	80		
	(g)	1 Core 10 sq.mm Green/Yellow Colour as CPC	Rft.			
PART C	**FITTINGS, FIXTURES & ACCESSORIES**					
	Supply, Installation, testing and commissioning of following fittings/fixtures as per specified brand/make given in Annexure "A" recessed in or on wall / ceiling / column etc. complete in all respects, duly approved by Engineer Incharge prior to installation.					
C-1	**LIGHTS**					
	(The temperature / Colour Index to be got confirmed from Site Engineer before installation)					
	(a)	Ceiling mounted LED Panel Light - 36/40/48W - 610 x 610 mm (Warm White/Warm/DayLight) recessed in False Ceiling	Nos.	24		
	(b)	Same as C-1 (a) but surface mounted	Nos.	1		

	(c)	Ceiling mounted LED Down Light - 18/20W - 20 mm dia (Warm White/Warm/DayLight) recessed in False Ceiling	Nos.	50		
	(d)	Same as C-1 (c) but Surface mounted	Nos.	1		
	(e)	Ceiling mounted LED Down Light - 10/12W - 15 mm dia (Warm White/Warm/DayLight) recessed in false Ceiling	Nos.			
	(f)	Same as C-1 (e) but Surface mounted	Nos.			
	(g)	Ceiling mounted LED Spot Light - 7/8W - 7-8 mm dia (Warm White/Warm/DayLight) recessed in False Ceiling	Nos.	9		
C-2	**FANS**					
	(a)	False Ceiling Fan 14/16 " sweep, Size(2'X2')	Nos.	8		
	(b)	Ceiling Fan 56" sweep, complete with capacitor, hanging rod, canopy, blades, ceiling hook, dimmers nuts and bolts etc.	Nos.	2		
	(c)	Wall Bracket Fan 18" sweep - Plastic body louvre type	Nos.	4		
	(d)	Same as C-2 (c) but Metal Body.	Nos.			
	(e)	Exhaust Fan 10" sweep, Plastic body, louvre type.	Nos.	2		
	(f)	Same as C-2 (e) but 12" sweep.	Nos.			
C-3	**POWER SOCKETS**					
C-3-1		**Switch Socket Outlet**				
		Following SSO complete with back box i.e. M.S. box, made of 16 SWG sheet steel with earth terminal having 2 coats of powder coating of orange colour, M.S. box shall be of the same size as that of SSO.				

	(a)	5 A - 2 Pin Round type SSO (for General Use)	Nos.	4		
	(b)	10/13 - 3 Pin round type SSO (for General Use)	Nos.	4		
	(c)	13A Duplex SSO - 3 Pin Flat type / Universal type (for UPS Power)	Nos.	8		
	(d)	Same as item No. C-3-1 (b) but Simplex SSO (for Normal Power)	Nos.	2		
	(e)	15/16A Simplex SSO - Round Pin or Multi type (for AC or General Purpose)	Nos.	6		
	(f)	Same as item No. C-3-1 (e) but 20 A Rating	Nos.	1		
C-3-2		**Industrial Sockets**				
		Following Industrial Socket Unit (Male & Female Complete Set) complete with back box i.e. M.S. box, made of 16 SWG sheet steel with earth terminal having 2 coats of powder coating of orange colour.				
	(a)	32 A, 3 Pin	Nos.	2		
	(b)	Same as item No. C-3-2 (a) but 16 A Rating	Nos.			
C-4	**CABLE CONTAINMENT**					
C-4-1		**P.V.C. Conduit / Dura Duct**				

		Supply and installation of following sizes of heavy duty PVC conduits recessed in walls, columns, slabs, floors or fixed at Ceiling above false ceiling or in Dura duct if exposed on walls, with all necessary fixing accessories, conduit/duct accessories, such as junction box, bend, socket, saddle, screws etc. complete in all respects as per site requirement and as per brand/make of material specified in Annexure "A" (These PVC Conduits & Duraducts will be used if missed or not included in any of the item's description of this BOQ)				
	(a)	20 mm dia PVC Conduit	Rft.	50		
	(e)	50 mm dia PVC Conduit.	Rft.	50		
C-4-2	**Floor Box**					
		Fabrication, supply and installation of Floor Box i.e. M.S Box made of mild steel 16 SWG duly painted initially with Red Oxide and finally with approved Colour of appropriate size but not less than 10" x 10" x 4-1/2" deep with openable hinged cover 2.5mm thick, all necessary materials / arrangements for fixation of sockets, holes for passage of outgoing cables, rubber, groumet, earthing terminal, and partition made of backlite. Boxes shall be installed flush with floor and should be suitable for installation of following number of Simplex SSOs or Face Plates. (The cost of				

		SSOs or Face Plates not be included)				
	(a)	Four Nos. Simplex SSOs or Face Plates.		5		
	(c)	Same as item No. C-4-2 (a) but for Six - SSOs/Face Plates		1		
C-4-3		**TECHNOLOGICAL BOX**				
		Fabrication, supply and installation of Technological Box i.e. M.S Box made of M.S 16 SWG duly painted initially with Red Oxide and finally with approved Colour of appropriate size suitable for fixation of following number of Switch Socket Outlets / Face Plates etc. having holes for passage of outgoing cables, rubber, groumet, earthing terminal, and partition made of backlite. (The cost of SSOs or Face Plates not be included)				
	(a)	Four Nos. Simplex SSOs or Face Plates.	Nos.	2		
	(b)	Same as item No. C-4-3 (a) but for Five - SSOs/Face Plates	Nos.	1		
C-4-4		**PULL BOX**				
		Fabrication, supply and installation of Pull Box i.e. M.S Box made of 16 SWG sheet having heavy duty SS Top Cover of 16 SWG Sheet of following size, complete in all respects as per site requirements.				
	(a)	300 mm x 300 mm x 62 mm	Nos.			
C-5	**DATA / VOICE FIXTURES**					
C-5-1		**Face Plates with I/Os**				

		Following Face Plates white/off white finish, complete with shuttered Click-ins, labels and all accessories including back box i.e. M.S. box, made of 16 SWG sheet steel having 2 coats of powder coating of orange colour. M.S. box shall be of the same size as that of Face Plate.				
	(a)	Dual Face Plate with I/Os (1 x RJ45 and 1 x RJ11)	Nos.	8		
	(b)	Same as item No. C-5-1 (a) but with I/Os (2 x RJ45)	Nos.	1		
	(c)	Same as item No. C-5-1 (a) but with I/Os (2 x RJ11)	Nos.	1		
	(e)	Same as item No. C-5-1 (d) but with 1 x RJ11 I/O	Nos.	1		
	(f)	Simplex Face Plate with RG-6 / RG-7 Connector for TV Cable	Nos.	1		
C-5-2		**Supply of Patch / Drop Cords**				
		Factory tested (imported) Cords of Cat6 - 23 AWG Cable of following sizes				
	(a)	01 meter Patch Cord	Nos.	8		
	(b)	03 meter Drop Cord	Nos.	8		
C-5-3		**Racks and Panels**				
	(a)	**Rack for Data Communication**				
		Supply and Installation of - Communication Rack made of M.S Frame, Glass Door, Pull Handle, supported by				

	perforated sides / M.S Cover of following size:				
ii	15U Wall Mounted	Nos.	1		
(b)	**Thermostatic type Exhaust/Cooling Fans**				
	Supply and Installation of Thermostatic type Exhaust/Cooling Fans in Communication Rack, with proper connections, complete in all respects	Nos.	1		
(c)	**PDU**				
	Supply of PDU with 04 x 13 A Flat Pin or International Type Switch Sockets for Communication Rack	Nos.	1		
(d)	**Front Cable Manager**				
	Supply and Installation of Front Cable Manager in Communication Rack with proper labelling / tagging / harnessing.	Nos.	1		
(e)	**Patch Panel**				
	Supply and Installation of 24 Port - Patch Panel - in Communication Rack with proper labelling / tagging / harnessing.				
(ii)	Loaded (With 24 I/Os)	Nos.	1		
(f)	**RJ-45 I/Os for Patch Panel**	Nos.			
(g)	**Telephone Junction Box (TJB)**				
	Supply, installation and commissioning of Telephone Junction Box vermin and dust proof, made of M.S 18 SWG sheet with door, handle, anti-rust paint and 2 coats of enamelled paint, locking arrangement, all fixing accessories for following pairs telephone terminal strips (KRONE Strip) with tagging/marking arrangements including cost				

		of all necessary material to connect incoming and outgoing telephone cables, complete in all respect				
		1 x 10 Pair	Nos.	1		
PART D	**DISTRIBUTION BOARDS AND INTERNAL COMPONENTS**					
D-1	**DISTRIBUTION BOARDS (DBs)**					
	Fabrication, Supply and installation of DBs from the Manufacturer's Names specified in Annexure "A" at designated walls concealed or opened, made up of M.S Sheet of 16 SWG, with flexible earthing straps, degreased and de-rusted, zinc phosphated, finished with electrostatic powder coating of in approved colour, , with hinged door, lockable handle, all auxilliaries, internal wiring, combs, designation labels on breakers, earthing bar, numbering beads on the control wires, suitable for System Voltage of 415 V, 50 Hz, 3/1 Phase and earthing with 01 or 02 neutral bus bars of pure electrolytic Copper, including appropriate size Cable termination lugs and brass cable glands for incoming and outgoing cables, wiring from breakers, indication lamps (Voltmeter type with voltage reading) and fuses, with M.S Sheet cover beneath front door, gaskets shall also be provided, where necessary, complete in all respects as per Site requirement and approval of Bank's Engineer Incharge.					
	(a)	**Size 18" x 24"**	Nos.	1		
	(e)	**Size 24" x36"**	Nos.	1		
	(g)		Nos.			
D-2	**INTERNAL COMPONENTS OF DBs**					
	Providing, installation, testing and commissioning of following					

	Components as per brands/makes specified in Annexure "A" in already installed or to be installed DBs with proper connections and tagging, complete in all respects, as per Site requirements and prior approval of Bank's Engineer Incharge.					
D-2-1	**Miniature Circuit Breakers (MCBs) Rail Type, C Type, 6 K - RC**					
	(a)	**Single Pole (SP)**				
	(i)	6/10 A	Nos.	10		
	(ii)	16/20/32 A	Nos.	8		
	b	**Double pole**				
		16/32 A	Nos.	1		
	(c)	**Three Pole (TP) -**				
	(i)	63 A	Nos.	1		
D-2-2	**Moulded Case Circuit Breakers (MCCBs)TP, C Type, RC - 10 to 18 KA**					
	(b)	75/100 A	Nos.	1		
	(c)	150/200A		1		
D-2-3	**Four Position Phase Selector Switch - (0-1-2-3-4)**					
	(a)	32 A	Nos.	1		
	(b)	40/50 A	Nos.	0		
D-2-4	**Change Over Switch 1-0-2**					
	(a)	**Double Pole (DP)**				
	(ii)	32 A	Nos.	1		
	(b)	**Four Pole (FP)**				
	(iii)	63 A	Nos.			
E2	**BURGLAR ALARM SYSTEM**					
E 1	**WIRING**					
	Supply, lying, connection and testing of following size of cables(as mentioned in annexure) in PVC pipe conduit recssed in wall,columns, slabs, floors, or fixed at ceiling above fasle ceiling or in dura duct with all necessary acceessoires complete in all respect as per site conditions in consultation with & recommendation of any Bank's approved Security company for different security sensing componets , devices,					

	sirens, smoke detectors etc. complete in all respect.					
	a	1x5 pair cable	Rft	300		
	b	1x2 pair	Rft	300		
E 2	**DEVICES / COMPONENTS ETC.**					
	P/F & connections of undernoted security sensing components, devices and siren etc. with the consultation & recommendations of one of the Bank's approved Security Company, complete with testing & commissioning in all respects.					
	(a)	Alarm Panel DSC with Keypad	Nos.	1		
	(b)	PCB - DSC	Nos.	1		
	(c)	Keypad Extra (DSC)	Nos.	1		
	(d)	Battery 12Volts 6/7 Ah	Nos.	2		
	(e)	Regulated Power Supply	Nos.	1		
	(f)	Magnetic Contact (Flush)	Nos.	2		
	(g)	Magnetic Contact (Surface)	Nos.	2		
	(h)	Audible Warning Device (Siren)	Nos.	2		
	(i)	Foot Panic switch	Nos.	2		
	(j)	Panic Switch (Fixed)	Nos.	4		
	(k)	Passive Infrared Detector (PIR)	Nos.	2		
	(l)	Auto Telephone Switch (ATS)	Nos.	1		
	(m)	Smoke Detectors	Nos.	4		
	(n)	Heat Detector	Nos.	4		
PART F	**EARTHING SYSTEM**					
F-2	**COPPER PLATE OR ROD TYPE**					
	P/M Earth system with 10' long ¾" dia copper bar as required complete with connections with 2 x 10 mmsq. bare flexible copper conductor or 2 x 8 SWG solid copper conductor in 1"dia PVC conduit (holes at every 1") upto permanent water table,			1		

	terminated on ECPs, and construction of earth pit with suitable watering arrangement complete as per site requirement OR equivalent method i.e by excavation of dig of appropriate size, with copper plate (1-1/2' x 1-1/2' x 1/4"), earth material (salt, coal 15 Kg each & nitric acid 4 liter), appropriate size PVC conduit with tee etc and construction of earth pit and Fixing of 02 Nos. Earth Connecting Points (ECP) respectively with holes for fixing of Copper Conductor. The two cable then taken out from pit and terminated in the DB as directed by Engineer Incharge.					
PART G	**MISCELLANEOUS ITEMS**					
G-1	**FIRE EXTINUISHERS**					
	Providing & placement / fixing of under noted Fire Extinguishers at selected/identified locations by the Engineer Incharge.					
	a	Dry Chemical Powder (DCP) portable type 06Kg	Each	2		
	b	Dry Chemical Powder (DCP) Ball type 03Kg along with wall mounted bracket.	Each	2		
G-2	**COPPER PIPE & CONTROL CABLE**					
	a	Providing & Lying of following size of copper pipe (22 Gauge) including Insulation, complete in all respects.				
	i	3/8" and 5/8" (combine)	Rft	100		
	b	Providing & Lying of 4 core PVC/PVC control cable(Size 10/0.0076), from indoor unit to out door unit complete with connection.	Rft	100		
G-3		**LIGHTS**				
		P/F of LED lights 4' Osaka /Philips or equivalent make with installation	Each	4		

		Job				
		P/f of LED miior lights 2' Osaka /Philips or equivalent make with installation	Each	2		
		Providing and installation of rope light warm/white as per site requirement as advised by concerned engineer	Rft	150		
		CCTV WIRING				
	i	Providing & Lying Cat-6 Cable 23 AWG (as mentioned in attached annexure) for CCTV Camera with splitter Complete PVC pipe/duct as per site requirement	Each	6		
COST OF ELECTRICAL WORKS					**Rs.**	

FURNITURE WORKS

S.NO	DESCRIPTION/SPECIFICATION	QTY	UNIT	RATE (Rs)	AMOUNT (Rs)
1	**BRANCH MANAGER TABLE (BMT-1)** Table Size: L 6'-0" X D 3'-0" X H 2'-6". Return Table size: L 6'-0" X D 1'-6" X H 2'-0" Supply of Branch Manager Table made of chipboard with formica # 7419 (Formite) pressed unde 100-150 Kg/Cm2 of air pressure and 60 C of temperature and backing formica underneath, with approved color leatherite writing pad on top. Having solid and seasoned Oak wood toothing joint between top & Sides with NC lacqure polish finish. Top fixed with return (Side) table with stainless steel spacers, including return table with two drawers. Drawers run on imported roller. Complete in all respect as per Drawing & specification	1.00	Each		
2	**OFFICER TABLE (T-30)** Size: L 4'-6" X D 6'-0" X H 2'-6" Supply of Office Wooden Table. Table top made of Chipboard with Formica #7419 (Farmite) pressed under 100-150 Kg/Cm2 of air pressure and 60 degree of temperature on front side and backing Formica underneath witk solid Oak wood edging in N.C lacquer polish finish. Including non-megnetic stainless steel vanity panel with supported S.S brackets and 'H' shape pillar both sides with silver sparkle deco paint. Completed in all respect	1.00	Each		

3	**CREDENZA** Size (5'-0" X 1'-6" X 2'-6") Supply of Credenza made of Chipboard with formica # 7419 (Formite) with approved Oak Veneer pressed under 100-150 Kg/ Cm2 of air pressure and 60 C of tempressure and backing veneer on other side with Oak wood toothing. Finish with clear NC lacquer polish, Having storage and drawers with imported roller runner,hinges, complete in all respect as per specification and drawing.	2.00	Each		
4	**DRAWER PEDESTAL (DP-1)** Size (1'-8" X 1'-6" X 2'-2") Suppy of Drawer Pedestal made of Chipboard with formica # 7419 (Formite) pressed under 100-150 Kg/Cm2 air pressur and 60 C of temperature and backing formica underneath. Drawer pedestal having three drawer on imported roller runners including lokcs, pull and footing / glide. Complete in all respect as per specification and drawings.	3.00	Each		
5	**CPU TROLLEY (CPU-1)** Size (Standard Size) Supply of CPU Trolley made of mild steel sheet with deco black paint finish. Complete in all respect and drawing	4.00	Each		
6	**OFFICER REVOLVING CHAIR (LOW BACK) C-1** Supply of Officer Revolving Chair with polish Oak wood arms made in 4 pieces joinery (all joints made in epoxy and two sided screws), seat and back in one piece 12 mm thick Malaysian imported commercial ply pasted over different size of foam (denisty 1.52 pound per cft), covered with approved Fabric,seat and back reclining, having five spoke nylon base with twin caster wheel, adjustable height with hydralic base, complete in all respect as per specification & drawings.	2.00	Each		

7	**MANAGER REVOLVING CHAIR (HIGH Back) C-2** Supply of Officer Revolving Chair with polish Oak wood arms made in 4 pieces joinery (all joints made in epoxy and two sided screws), seat and back in one piece 12 mm thick Malaysian imported commercial ply pasted over different size of foam (denisty 1.52 pound per cft), covered with approved Fabric, seat and back reclining, having five spoke nylon base with twin caster wheel, adjustable height with hydralic base, complete in all respect as per specification & drawings.	2.00	Each		
8	**OFFICER VISITOR'S CHAIR (VC- 9)** Supply of officer Visitor's Chair, structure made of solid & seasoned Oak wood all joints made in epoxy and two sided screw, seat and back upholstered with foam and approved leatherite. Wood parts finished with NC lacquer polish. Complete in all respect as per specification and drawings.	4.00	Each		
9	**THREE SEAT SOFA (S-10)** Supply of Three seat sofa, base made of solid & seasoned Oak Wood with NC lacquer finish, internal structure made of Acacia wood. Seat and back uphoistered with good quality foam and approved Fabric. Complete in all respect as per drawing and Specification.	1.00	Each		
10	**TWO SEAT SOFA (S-10)** Supply of Two seat sofa, base made of solid & seasoned Oak Wood with NC lacquer finish, internal structure made of Acacia wood. Seat and back uphoistered with good qulaity foam and approved Fabric. Complete in all respect as per drawing and Specification.	2.00	Each		
	Trash Bin				
11	Supply of **Trash Bin** made of mild steel sheet with deco black paint finish. Complete in all respects as per specifications and drawings.	2.00	No		
	Planter	-			

12	Supply of **Planter** (400mm Ø), made with 16 swg mild steel perforated sheet finish with silver sparkle deco paint with 25mm wide chrome plated strips, 9mm mild steel chrome plated spacers. Complete in all respect as per specifications.	2.00	No		
13	**CENTER TABLE (CT-5A-A8)** Size: W 3'-6" X D2'-0" X H 1'-6" Supply of Side Table, sides made with 50 mm thick Chipboard with Oak veneer pressed on both sides under 100-150 Kg/Cm2 of air pressure and 60 C of temperature, with approved colour leather on top & solid and seasoned Oak wood toothing joint between top & sides. Finish with NC lacquer polish. COmplete in all respect as per specification and drawings.	1.00	Each		
14	**SIDE TABLE (CT-5A-A9)** Size: W 1'-6" X D1'-6" X H 1'-6" Supply of Side Table, sides made with 50 mm thick Chipboard with Oak veneer pressed on both sides under 100-150 Kg/Cm2 of air pressure and 60 C of temperature, with approved colour leather on top & solid and seasoned Oak wood toothing joint between top & sides. Finish with NC lacquer polish. COmplete in all respect as per specification and drawings.	1.00	Each		
	FOLDING WHEELCHAIR FOR PWD's				

15	Size (Total Width : 64cm, Seat Width : 46cm, Seat Height: 49cm,Total W.C Height:87cm, Seat Depth : 40cm, Max.Load 100 Kg, Gross Weight of chair 19.20kg). Supply of Folding wheelchair of approved brand for disable person's having single cross bar, chromed frame, fixed armrest,PVC Pad, footrest with flip-up plate with leg straight, front wheel diameter 20cm, rear wheel diameter 61cm, with locking brakes on rear wheels, leatherite material for Seat having large pocket on the back seat of approved black color etc complete in all respect .	1.00	No		
	Note: All furniture items as per approved sample/design available at NBP G-5/1 building Islamabad.		**TOTAL**		

AIR CONDITIONING WORKS

Sr. No	Description	Unit	Qty.	Rate	Amount
1.5TON AC WALL MOUNTED UNIT					
1	Supply and installation of single phase 220/240 V, 50C/S **Split wall mounted Unit Inverter (Cool only) capacity 12000BTU (01Ton)**, comprises of evaporating & condensing units with rotary/ reciprocating compressor along with 22 gauge 10 Rft. Copper pipe and insulation, hole sealing with white cement & L-type power quoted angle iron frame size 1-1/2" x 1-1/2" x 1/8" thick, handling charges, (loading, unloading, transportation etc.)i/c evacuation, nitrogen pressure, testing gas charging with standard suction and discharge pressure and amperes, control wiring, rawal bolts, drain piping, testing commissioning complete in all respect. (Compressor rating T3) 03 years warranty	**Each**	3		
2	Supply and installation of single phase 220/240 V, 50C/S **Unit Inverter (Heat & Cool) AC unit capacity 18000BTU**, comprises of evaporating & condensing units with rotary/ reciprocating compressor along with 22 gauge 10 Rft. Copper pipe and insulation, hole sealing with white cement & L-type power quoted angle iron frame size 1-1/2" x 1-1/2" x 1/8" thick, handling charges, (loading, unloading, transportation etc.)i/c evacuation, nitrogen pressure, testing gas charging with standard suction and discharge pressure and amperes, control wiring, rawal bolts, drain piping, testing commissioning complete in all respect. (Comressor rating T3) 03 years warranty.The specifications of quoted AC must be filled in criteria-1	Each	1		

3	Supply, Laying and connecting Copper Piping of 22 Gauge (Muller Brand or Equivalent) with Aero flex Insulation and Three Core – 110/.076 Control Wire (Pakistan/Pioneer Cable or Equivalent); including all necessary fittings and accessories; as per site requirement.	Rft.	80.00		
COST OF AIR CONDITIONING WORKS Rs.					

SIGN BOARD WORKS

S.NO	DESCRIPTION/SPECIFICATION	QTY	UNIT	RATE	AMOUNT
1	Fabrication & Installation of new flex Substrate Sign Board in accordance to scope of Works/process flow, Technical Specifications, Warranties and after Sales Services as given in Schedules A, B, C & D respectively in subsequent sections. The Board should contain the name of the Bank "National Bank of Pakistan" and the name of the Branch with 3 D logo of the Bank as given in Schedule E. The Design, sample & dimension of signboard to be approved by the Bank's Engineer prior to installation.	118	Sqft.		
2	P/F NBP standardized panaflex backlit type ATM signboard double sided of size 2'x3' made of M.S sheet, angle iron frame etc. with internal wiring, connections and electrical components like tube rods, chokes, starters etc. complete with fitting accessories, transportation in all respects.	Job	1		
Rs.	**COST OF SIGN BOARD WORKS**				

(ANNEXURE "A")

(List of approved Brands/ Manufacturers)

S. #	DESCRIPTION	MAKE
1	Cement	Lucky
		Falcon
		DG Cement
2	Steel	Amreli
		Aghas
3	12mm Glass Partition / Doors	Ghani/Tariq
4	Aluminum Sanctions for Doors / Partition / Windows	Pakistan cables
		Chawala
		Prime
5	Paint	ICI
		Burger
		Gobbies
		Nelson
6	False Ceiling Sheet 2x2 / 4x8	Elephant
		United
7	PVC / PPRA pipe / UPVC	Alpha pine
		Galco
		Steelex
		Jaddha
		Pak Arab
		AGM
8	Roof Screeding	Sika
9	Termite Proofing	Agenda
10	ORISA / European WC	Porta
		Marachi
11	Hand Wash Basin / Vanity	Porta
		Marachi
12	Sanitary Fittings	Master
		Faisal
		Sonex
13	12mm Glass Doors Floor Machine	New Star
		Khas

14	Hydraulic Door Closer	New Star Khas
15	Strong Room Door	MEK Hussain safe

Note: Material if installed other than manufacturers listed above will not be entertained/paid.

(ANNEXURE "B")

(List of approved Brands/ Manufacturers)

S. #	DESCRIPTION	MAKE
1	PVC Pipes & Accessories	Galco
		Jeddah
2	PVC Channel Patti / Dura Duct	Adamjee
		Jeddah
3	MS Back Box/Pull Box/ Technological Box etc.	Local Made
4	Floor Box	Clopal
		Schneider
		Local made
5	Switch Socket Outlets (SSOs) / Switches	Clipsal
		Orange
		Bosch
6	Industrial Sockets	Clipsal
7	DATA/ Voice Face Plates, RJ45/RJ11 I/Os / Connectors	3M
		Schneider
8	Factory tested Patch / Drop Cords	3M
		Schneider
9	Data Cabinet / Communication Rack	Local Made
10	Patch Panel	3M
		Schneider
11	Front Cable Manager	Local Made
12	Telephone Junction Box	Local made
13	Telephone Tag Block	Krone
14	Telephone Cable 10 Pair	Pony
15	Cat 6E, 23 AWG Cable	3M
		Schneider
16	Electrical Wires / Cables	Pakistan Cables
		Newage Cables
		Fast Cables
		Pioneer Cables
		AGE Cables
17	Burglar Alarm Cables	Million cables
		Pakistan Cables

18	Lights (all types)	Philips
		E-Delux
		Osaka
		Opple
19	Fans (all types)	Pak
		GFC
		Voldam
		Royal
20	Distribution Board	Universal
		Engineers & Engineers
		Prem Engineering
21	Circuit Breakers	ABB
		MG
		Terasaki
22	Change Over Switch	OPAS
		Kraus & Naimer
		Gave
23	Phase Selector Switch	OPAS
		Kraus & Naimer
		Gave
24	Control Fuse	DF
		ETI
25	Earth Copper Plate / Rod	Local made

Note: Material if installed other than manufacturers listed above will not be entertained/paid.

Daywork Schedule **Note: N/A**

[Note to the Procuring agency/Employer:

(i) A "Daywork Schedule" is commonly found in contracts where the likely incidence of unforeseen work cannot be covered by definitive descriptions and approximate quantities in the Bill of Quantities. The preferred alternative is to value the additional work in accordance with the Conditions of Contract. A Daywork Schedule normally has the disadvantage of not being competitive among bidders, who may therefore load the rates assigned to some or all the items. If a Daywork Schedule is to be included at all in the bidding documents, it is preferable to include nominal quantities against the items most likely to be used, and to carry the sum of the extended amounts forward into the Bid Summary in order to make the basic Schedule of Daywork Rates competitive.

(ii) The total amount assigned to such competitive daywork is normally 3–5 percent of the estimated base Contract Price and is regarded as a Provisional Sum for contingencies to be expended under the direction and at the discretion of the Engineer.

General

1. Reference should be made to Sub-Clause 13.5 of the General Conditions. Work shall not be executed on a daywork basis except by written order of the Engineer. Bidders shall enter basic rates for daywork items in the Schedules, which rates shall apply to any quantity of daywork ordered by the Engineer. Nominal quantities have been indicated against each item of daywork, and the extended total for Daywork shall be carried forward as a Provisional Sum to the Summary Total Bid Amount. Unless otherwise adjusted, payments for daywork shall be subject to price adjustment in accordance with the provisions in the Conditions of Contract.

Daywork Labour

2. In calculating payments due to the Contractor for the execution of daywork, the hours for labour will be reckoned from the time of arrival of the labour at the job site to execute the particular item of daywork to the time of return to the original place of departure, but excluding meal breaks and rest periods. Only the time of classes of labour directly doing work ordered by the Engineer and for which they are competent to perform will be measured. The time of gangers (charge hands) actually doing work with the gangs will also be measured but not the time of foremen or other supervisory personnel.

3. The Contractor shall be entitled to payment in respect of the total time that labour is employed on daywork, calculated at the basic rates entered by the Contractor in the **Schedule of Daywork Rates: 1. Labour,** together with an additional percentage payment on basic rates representing the Contractor's profit, overheads, etc., as described below:

(a) The basic rates for labour shall cover all direct costs to the Contractor, including (but not limited to) the amount of wages paid to such labour, transportation time, overtime, subsistence allowances, and any sums paid to or on behalf of such labour for social benefits in accordance with law of the land. The basic rates will be payable in PKR only.

(b) The additional percentage payment to be quoted by the bidder and applied to costs incurred under (a) above shall be deemed to cover the Contractor's profit, overheads, superintendence, liabilities, and insurances and allowances to labour, timekeeping, and clerical and office work, the use of consumable stores, water, lighting, and power; the use and repair of stagings, scaffolding, workshops, and stores, portable power tools, manual plant, and tools; supervision by the Contractor's staff, foremen, and other supervisory personnel; and charges incidental to the foregoing. Payments under this item shall be made in the Pakistani Rupee:

[***Note to the Procuring agency/Employer**:*

This method of indicating profit and overheads separately facilitates the addition of further items of daywork, if needed, the basic costs of which can then be checked more easily. An alternative is to make Daywork rates all-inclusive of the Contractor's overhead and profit, etc., in which case this paragraph and the relevant Daywork Schedule should be modified accordingly.

Daywork Materials

4. The Contractor shall be entitled to payment in respect of materials used for daywork (except for materials for which the cost is included in the percentage addition to labour costs as detailed heretofore), at the basic rates entered by the Contractor in the **Schedule of Daywork Rates: 2. Materials,** together with an additional percentage payment on the basic rates to cover overhead charges and profit, as follows:

   (a) the basic rates for materials shall be calculated on the basis of the invoiced price, freight, insurance, handling expenses, damage, losses, etc., and shall provide for delivery to store for stockpiling at the Site. The basic rates shall be quoted in the currency specified in the BDS.

   (b) the additional percentage payment shall also be made in the currency specified in BDS:

   (c) the cost of hauling materials for use on work ordered to be carried out as daywork from the store or stockpile on the Site to the place where it is to be used will be paid in accordance with the terms for Labour and Construction in this schedule.

Daywork Contractor's Equipment

5. The Contractor shall be entitled to payments in respect of Contractor's Equipment already on Site and employed on daywork at the basic rental rates entered by the Contractor in the **Schedule of Daywork Rates, Contractor's Equipment.** Said rates shall be deemed to include due and complete

allowance for depreciation, interest, indemnity, and insurance, repairs, maintenance, supplies, fuel, lubricants, and other consumables, and all overhead, profit, and administrative costs related to the use of such equipment.

[***Note to the Procuring agency/Employer****: This is an example of wording to include overhead and profit, etc., in the daywork rates. A separate percentage addition could be used as for labour and materials*.] The cost of drivers, operators, and assistants will be paid for separately as described under the section on Daywork Labour. *An alternative, sometimes adopted for administrative convenience, is to include the cost of drivers, operators, and assistants in the basic rates for Contractor's Equipment. The last sentence of this paragraph 5 should then be modified accordingly.]*

6. In calculating the payment due to the Contractor for Contractor's Equipment employed on daywork, only the actual number of working hours will be eligible for payment, except that where applicable and agreed with the Engineer, the travelling time from the part of the Site where the Contractor's Equipment was located when ordered by the Engineer to be employed on daywork and the time for return journey thereto shall be included for payment.

   (a) The basic rental rates for Contractor's Equipment employed on daywork shall be stated in the currency specified in the BDS and the payment to the Contractor will be made in the currency specified in BDS.

Schedule of Daywork Rates: 1. Labour

Item no.	*Description*	*Unit*	*Nominal quantity*	*Rate*	*Extended amount*
	Subtotal				
D122	Allow ____ percent of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 3 (b) above.				
	Total for Daywork: Labour (carried forward to Daywork Summary, p. ___)				_____

Schedule of Daywork Rates: 2. Materials

Item no.	*Description*	*Unit*	*Nominal quantity*	*Rate*	*Extended amount*
	Subtotal				
	Allow ____ percent of Subtotal for Contractor's overhead, profit, etc., in accordance with paragraph 4 (b) above.				
	Total for Daywork: Materials (carried forward to Daywork Summary, p. ___)				_____

Schedule of Daywork Rates: 3. Contractor's Equipment

Item no.	*Description*	*Nominal quantity (hours)*	*Basic hourly rental rate*	*Extended amount*
	Allow _ percent[1] of Subtotal for Contractor's overhead, profit, etc., in accordance with BDS.			
Total for Daywork: Contractor's Equipment (carried forward to Daywork Summary, p. _)				

[1] To be entered by the bidder.

Daywork Summary

	Amount ( )
1. Total for Daywork: Labour	
2. Total for Daywork: Materials	
3. Total for Daywork: Contractor's Equipment	
Total for Daywork (Provisional Sum) (carried forward to Bid Summary, p. ___)	_____

Summary of Specified Provisional Sums

Bill no.	*Item no.*	*Description*	*Amount*
1			
2			
3			
4			
		[*To be entered by the Procuring agency/Employer; Delete if not applicable:]* provisional sums for additional ES outcomes.	
etc.			
Total for Specified Provisional Sums (carried forward to Grand Summary (B), p. _____)			

Grand Summary

Contract Name: _____

Contract No.: _____

1	Cost of Civil Work	Rs.	
2	Cost of Plumbing Work	Rs	
3	Cost of Electrical Work	Rs.	
4	Cost of Furniture Work	Rs.	
5	Cost of Air Conditioning Work	Rs.	
6	Cost of Sign Board Work	Rs.	
	TOTAL COST	**Rs.**	

Amount in Words

_____

_____

THE QUOTED RATES / AMOUNT SHALL BE INCLUSIVE OF ALL APPLICABLE FEDERAL/PROVINCIAL GOVT. TAXES/DUTIES AND CHARGES FOR INLAND TRANSPORTATION AND OTHER RELATED SERVICES ETC.

Contractor's
Signature

_____

(Seal & Signature

SPECIFICATION OF MATERIALS

1. SAMPLES & TESTS

i. Samples:-

In addition to the special provision made hereafter as to sampling and testing of material by particular methods; the Chief Engineer may call for samples of all materials together with details of their sources and workmanship proposed to be employed in the execution of the work, and such samples shall be furnished by the contractor without delay and without charges. Approved samples will be kept by the Chief Engineer who may reject at any time all materials or workmanship not corresponding in quality and character with the approved samples. The contractor shall provide without extra charges, suitable labeled containers for the storage of samples.

ii. Test:-

The Chief Engineer may send inspectors to the manufacturer's premises to test materials or supervise their manufacture, should the Chief Engineer decide not to send an inspector to the manufacturers, certificates of test, proof sheets, etc. showing that the materials have been tested in accordance with the requirements of this specification relating thereto. Notwithstanding any tests that may have been carried out before materials leave the manufacturer's premises, not the production of manufacturer's certificates of tests, proof sheets etc. materials may also be tested after delivery to site, and the Chief Engineer shall be at liberty to reject after delivery or after incorporation in the permanent works, only material found to be unsuitable or not in accordance with the specifications.

iii. Additional Tests:-

In addition to the tests required under either clauses hereof, the Chief Engineer shall have power to order independent test of materials to be carried out by some agency appointed by him at such place as he may determine, and the result to tests shall be binding upon all parties no claim by the contractor being admissible in respect of or as a consequence thereof.

iv. Standard Specifications:-

Except where otherwise specified or authorized by the Chief Engineer, all materials shall conform to the latest addition of the appropriate British standard specifications (hereinafter abbreviated to BSS) published by the British standard institute, or to any other standard specification of whatever origin, that may be approved by the Chief Engineer.

v. Work Test Rules:-

All test of concrete work shall be conducted in advance with British Standard Code of practice No. CP 110 (1972) or other equivalent approved by the Chief Engineer.

2. CEMENT:

i. General:-

Normal Portland cement complying with BS No. 12(1948) shall be arranged by the Bank for the entire works, from an approved manufacturer, contractors shall satisfy themselves regarding the quality and condition of the cement prior to accepting delivery, after which they shall be held completely responsible for the same.

ii. Protection & Storage at site:-

All cement kept on the site shall be stored in an approved manner to prevent deterioration and contamination. It shall be stored at the contractor's cost in a rain proof shed on a if dry floor which shall be raised above the general ground level so as to protect the cement against moisture from air on from any other source. Any precautions which may be necessary for effecting delivery during rainy weather shall be taken. Different brands of cement shall be stores separately and different brands shall not be mixed for any single pour.

iii. Consumption:-

No cement shall be kept stored for more the two months and care takes to see that cement bags are consumed in sequence with the batches delivered on site.

3. AGGREGATE:-

i. Prior Approval of Aggregate:-

The type and source of all aggregate shall be approved by the Chief Engineer before the materials are delivered to the site.

ii. Aggregate General:-

Aggregate for all concrete work shall unless otherwise specified or directed by the Chief Engineer. They will consist of natural sands and gravel, crusted stone or other approved sound materials and shall be hard, strong and durable, free from clay films, and other adhering coatings, and conform to the dimensions and grading's specified for the several parts of the works. Aggregate shall be stored at the work in such a manner as to avoid contamination and shall if ordered by the Chief Engineer, be washed before use. Clean fresh water shall be used for this purpose, and no extra charges paid for the same.

iii. Coarse Aggregate:-

Coarse aggregate shall be graded crushed stone from an approved quarry. The aggregate shall be screened and graded down to sizes as recommended in the various mixes. The pieces of aggregate shall be roughly cubical. Flat, this pie9es shall not be permitted to be used. Aggregate shall be dense and as far as practically possible of uniform specific gravity. Where ever so specified shingle shall be crushed or uncrushed gravel or crushed stone. The pieces shall be angular, roughly cubical, and shall have granular or crystalline (not glassy) non-powdery surface. Fire-cable, flaky and laminated pieces shall not be permitted to be used.

4. REINFORCEMENT:-

i. All finished steel bars shall be well and cleanly rolled, reinforcement shall be free from cracks, surface flows, laminations, rough, judged and imperfect edge and all other defects and shall be finished in a workmanlike manner.

ii. Steel reinforcement shall .be plain round hot rolled milled steel bars or high yield bonds bars complying with BS 785, Cold worked bars shall be square or round bars which have been twisted when cold and shall comply with BS 1144.

	Tensile Strength Lbs/ per Sq Inch	Yield Stress Lbs/ Per Sq. Inch
Plain round Mild steel Bars BS 788 part 1 1967	63,000	36,000

Hard drawn Mild steel Deformed Bars for the Reinforcement of Concrete conforming to ASTM A 615-76A 1977 or equivalent.	90,000	60,000

iii. Reinforcement shall be of Rolled Mild, steel bars. The contractor shall arrange for weighment of steel at his cost to satisfy himself. Prior to use, the Contractor shall be responsible to see that reinforcement is free from pitting, loose rust, mill scale, paint, oil, grease, adhering earth or any other material that may impair the bond between the concrete and reinforcement or that may cause corrosion of the reinforcement or disintegration of the concrete.

iv. Restless annealed tying wire 18 SWG shall be obtained from approved manufacturers and shall as regards strength, comply with the requirements specified. Binding wire to specifications shall be provided by the contractors at their own cost.

v. Supply and storage. All stacking and storing of bars is the contractor's liability and a contingent to the quotations.

vi. Weight of all the bars shall be taken off from the standard weight tables irrespective of re-rolling margins, and other such factors. Contractor's bill shall be paid on the basis of these weight is direct proportion to the steel as measured used in the works. No claims will be entertained on account of such re-rolling margins, wastage etc.

5. FILLING MATERIALS:

Materials for filling shall be uniform in character throughout and free from substances that by decay or otherwise may cause the formation of bellow or cavities or otherwise affect the stability of the filling.

Earth filling shall be of selected materials obtained from the excavation or other approved sources. NO soft chalk or clay or earth with a predominating clay contact shall be used. Hard Caro shall be of selected hard clean gravel, broken brick, broken concrete, broken or crushed stone, quarry was or similarly approved material, concrete for filling shall be to the proportions described.

6. LIME:

i. Lime shall be of good quality high calcium lime containing from 95% upwards of calcium oxide. The impurities insoluble in acids should not exceed 3% for the quicklime or 1% for the kiln, kept thoroughly dry and prepared within 24 hours of its removal from the kiln.

ii. Storage of lime

Generally all approved lime shall be stored as specified for cement in Clause B2 hereof, care being taken that where lime is not stored in paper bags it shall be stored so that as small an area as possible, is exposed to the air, and all lime storage arrangements shall be to the approval of the Chief Engineer.

7. TIMBER:

i. **Timber general:-**

All timber for temporary or permanent work shall be of the best quality, sound, straight, well-seasoned, free from sap; clefts, radial cracks, cup shakes, large, loose or deed knots, or other imperfections and shall show a clean surface when cut.

Contractor shall be liable to bring to site the total quantity of timber cut to sizes with tolerances required for incorporation in the work on acceptance of the contract. Timber shall be stacked in such a manner as, to allow natural seasoning to take place for as long a period as possible.

ii. **Inspection:**

All timber shall be subjected to inspection on the site, piece by piece, and shall be to the approval of the Chief Engineer who may reject such timber as is considered by him to be below specification and in the case of timber specified to be creosoted or termite proofed, may reject such timber either before or after creosoting treatment. The contractor shall provide all necessary labour for handling the timber during inspection free of charge.

iii. **Wrought faces and allowance on joiner' work:**

All joiners' work shall be wrought and finished with a clean, even smooth face, the thickness given to include 3/ 32" for each wrought face in soft wood and 1/6" in hard wood.

8. GLASS:

i. **General:**

All glasses shall be obtained from an approved manufacturer and shall be free from blemishes of all kinds and descriptions, whether surface or internal, Claims shall not be entertained regarding poor quality of locally manufactured glass. The contractor shall have to select good pieces or make alternate arrangement for supply of the same.

ii. **Plate glass**

Plate glass shall be provided where Specified or directed in the following grades.

3 mm flat drawn or clear frosted sheet glass.

5 mm clear sheet glass.

¼" thick `Georgian' rough cast wired glass.

¼" thick polished plate glass.

Tinted / solar glass as specified in bill of quantities and in confirmation with latest B.S specification will be used with prior approval of Chief Engineer.

9. WIRE GAUGE:

Gauge for fly-proofing shall be of the quality uniformly woven webbing of 144 meshes per square inch. The wire for the gauge shall be best quality 22 SWG aluminum wire.

10. PAINTS AND. PROTECTIVE MATERIALS

i. **Knotting:-**

Knotting shall be uniform dispersion of lac or suitable resin (natural or synthetic) in a suitable solvent.

ii. **White lead paint:-**

White lead' paint shall be made from pure white lead in accordance with BS 239, mixed with fine boiled linseed oil, turpentine, driers and pigments, and stained free from skins and all extraneous matter before being pigmented and if so used, the quantity shall not exceed 8% (eight percent) of the paint mixed ready for the brush. No other ingredient' except the colouring matter will be allowed, and the colour shall be produced by using the latest possible. amount of colouring matter. The proportion of the ingredients for the various coats shall be subject to the approval

of the Chief Engineer.

iii. **Red lead paint:**

Read lead paint shall be made from non-setting red lead in accordance with BS 217 thoroughly ground and well and freely mixed with approximately 15% of boiled linseed oil of give a paint with good covering power and adhesion shall be determined by tests to be made by the contractor to the satisfaction of the Chief Engineer. The Chief Engineer may select samples of the paint for analysis after a sufficient quantity for the work about to be painted has been mixed only red lead paint as manufactured by Messrs. Burger Paints has been deemed to satisfy the above standard.

iv. **Linseed oil putty:**

Putty for stopping and glazing shall consist of whiting thoroughly ground with linseed oil mixed with 5% of red lead of form a smooth paste, and shall comply with BS 544.

v. **Varnishes:**

The materials is required to be cleared and transparent and when applied shall on drying give a glossy coating free from runs and specks. The composition of the varnish shall conform to the requirements of BS .274.

vi. **a. White wash:**

White wash shall be made from pure fat lime: brought to the work in an un-shakes condition. Water shall be added to this lime in a tub until the mixtures is of the consistency of cream, and shall be allowed to rest for a period of 48 hours. The mixture shall then be stained through an approved cloth strainer and to each cubic feet of the mixture obtained shall be added 4 ounces of gum boiled with 12 ounces of rice and a suitable quantity of "Blue".

b. Colour wash:

Colour wash where not an approved proprietary branch shall be made from pure selected fat lime as described above for white wash, to which shall be added and intimately mixed the necessary pigment to produce to tint specified. The pigments shall be to the approval of the Engineer Incharge.

vii. **Oil bound washable distemper:**

Oil bound washable distemper shall comply with BS 1053. Type 1, and shall be obtained from an approved manufacturer, prior approval from Chief Engineer to be obtained.

viii. **Emulsion paints:-**

Robbialac Emulsion / LC.I Dulex paints shall be used.

ix. **Proprietary brands:-**

Where the contractor proposes to use proprietary brands of materials in the works described as 'Paint work' except for emulsion paint, he shall state, when submitting his tender, the brand grade and manufacturer of the materials on which he has based his rates. All proprietary brands of materials shall be stored mixed, applied and treated strictly in accordance with the manufacturer's instructions.

x. **Creosote:-**

Creosote shall be pure tar distillate of the best quality as obtained and sold under the trade name of ' SOLIGNUM' that is creosote paint for the preservation of timber. The SOLIGNUM to be used

shall be clear SOLIGNUM so as to mar the timber.

SECTION-1

A. EXCAVATOR

Clause 1: GENERAL

It is presumed that the contractor has familiarized himself with the soil condition at site before tendering for the work.

The contractor shall take levels of all the areas and check layouts and alignments if already established at site. The approval of this check shall be obtained from the Engineer Incharge and after such check the contractor shall be responsible for all errors and discrepancies in the work.

All excavation of every description and or whatever substances encountered shall be performed to the dimensions and elevations indicated on the drawings for each building and structure and shall include trenching for utility and drawing system occurring within the enclosing fields or appurtenances of building an 1 structures, Suitable materials shall be rated from unsuitable materials during excavation operations, Excavated material conforming to the specifications for material to be used for embankments, fills backfilling, grading, top soiling, or rock slope protection, required for the project under the contract shall be considered as suitable. No materials shall be wasted or used for the convenience of the Contractor unless so authorized.

Clause 2: ANTIQUITIES. AND TREASURE- TROVES

An ancient carving, relics of antiquity coins or other curios which may be discovered or excavated during the progress of the work are to remain the property of the owner and are to be handed over to the owner.

Clause 3: SHORING

The contractor shall provide all necessary sheeting, timbering and shoring to excavations to insure the safety of the workmen, and freedom from damage to any adjacent paving, structures and utilities. The contractor shall be responsible for any injury to the permanent work any consequent damage caused by the removal for shoring or other supports from excavations. Where support is ordered by the Engineer Incharge to be left in, it will be measured and paid for, unless in the opinion of the Engineer Incharge, it is required to be lift in by reason of the Contractor's negligence or lack of foresight.

Clause 4: DISPOSAL OF EXCAVATED MATERIAL

1. Suitable excavated material shall be placed in the proper section of the permanent work required under these specifications, suitable excavated material in excess of that required for he work under this specification shall be used in other portion of the permanent site work required for the project under contract. Suitable material that can not be placed readily in the permanent work shall be separately stockpiled. Material in excess of that required for the permanent work under the contract, as decided by the Engineer Incharge and any unsuitable material shall be disposed of by the contractor to the satisfaction of local and municipal authorities, Excess suitable material may be ordered to be stockpiled within site for future use by owner.
2. Stockpiles shall be kept in a neat, well drained, workable condition at all times.

Suitable excavated materials shall be separately stock- piled at approved location in the immediate vicinity of the work, so selected as not to interfere with the work being performed under the contract.

3. Waste material shall be disposed of in the spoil areas approved by the Engineer incharge and local or municipal authorities. The material shall be spread and graded to drain so as to avoid the forming of pounding areas. No compaction will be required other than the controlled movement of hauling and spreading equipment.

Clause 5: DRAINAGE & DEWATERING DURING EXCAVATION

Excavation shall be performed in the dry. The excavation and the area and immediately surrounding each excavation for a distance of 25 feet, including slopes and ditches, shall be continually and effectively drained away from the excavation. The excavation for inlet, outlet and diversion ditches and the furnishing and operating of dewatering equipment, as necessary, shall be performed under this specification. Water from the excavation shall not enter the new drains or other construction work. The responsibility for removing water shall rest with the contractor and no claims for expenses incurred will be entertained. Suitable precautions shall be taken to prevent erosion from under-cutting previously concreted footings and slabs. Excavation shall be kept free from ponding until the permanent work in the excavation has been completed and accepted and the excavation have been completely backfilled.

Clause 6: EXCAVATION FOR BUILDING

The foundations, footings, etc. shall be taken out to the exact width and depth shown in the drawing or as directed by the Engineer Incharge. The bottom of the trench shall be in perfect level both longitudinally and transversely. The sides shall be left plumb, where the nature of the soil does not permit the sides being left plumb, they may be sloped down in accordance with the instructions of the Engineer Incharge. The foundations after being excavated shall be inspected and passed by excavated shall inspected and passed by the Engineer Incharge before any work is commenced or the contractor will be liable to have this work removed for inspection. Unless otherwise specified, the contractor shall at his cost do all shoring, pumping, bailing out dredging and keeping the excavation free from water while the exaction or any other item or work is in progress in such a manner as directed by the Engineer Incharge. Excavated material shall be kept at a sufficient distance from the trench to prevent the excavated material from falling back into the trench and for placing and removing shorting and form. Where unsuitable material underlies the floor areas below the specified stripped depth or building foundations same shall be immediately reported to the Engineer Incharge, and instructions obtained from the correction treatment to be performed. The same shall be instruction obtained from the corrective treatment to be performed. The same shall be inspected and passed by the Engineer Incharge before any further work is commenced, or the contractor will be liable to have this work removed for inspection at his own cost. Care shall be taken not to disturb the bottom of the excavation, and excavation, to final grade shall not be made until just before concrete is to be placed. Unauthorized width of excavation for footings for foundations shall be filled with concrete of the strength specified for foundations and footing at no expense to the owner. The bottom of

foundation trenches should be slightly watered well rammed.

Clause 7: BACKFILLING OF FOUNDATIONS, TRENCHES, DUCTS, SUB-FLOOR ETC.

Backfilling shall be performed after the permanent work in the excavation has been inspected and approved. Shoring etc shall be removed in a manner to avoid damage or disturbance to the work and the excavation shall be free of forms and cleaned of trash. Backfill material shall consist of the excavation or borrow of sand, gravel or other material approved by the Engineer Incharge and shall be free of trash, lumber or other debris. Backfill shall be placed in layers not more than 6 inches thick and each layer shall be rammed or rolled to an approved degree of compaction. Backfill shall not be placed on surfaces that are muddy. Backfill shall be brought to final grade unless otherwise shown or specified and shall be brought up evently on each side of each wall. Care shall be exercised to avoid any wedging action or eccentric action upon or against the structure and to avoid any disturbance or damage to the work. Each layer shall be uniformly spread, moistened or dried when required to the proper moisture content for the required degree of compaction, and uniformly compacted by hand or machine tempers or by other suitable equipment. Filling in the plinth shall be in excess of the depth required actually to be filled. This excess earth shall be removed to make room for the flooring.

Clause 8: MODE OF MEASUREMENTS

The measurements of excavation shall be taken as the area of the bottom of foundation trench multiplied by the depth of the foundation to the exact dimensions shown on the drawing. The area of the bottom of the foundation trench shall be the area of the wall, column duct or trench footing and shall not include the extra excavation required for formwork shoring etc. where required no payment will be made for unauthorized width and depth. The rate for excavation shall cover.

1. Excavation of foundation trenches to the exact dimensions shown on the drawing including formwork shoring strutting where required in all type of strata seen by the contractor before submitting tender. No claims regarding the variations in the strata from place to place on the same site will be entertained. Unless otherwise specified in the schedule of quantities the tendered rate will be for all type of soil including mud, silt etc.
2. Lifting and placing excavated material to any lift and distance.
3. Backfilling the sides of foundation trenches, filling under plinth if required, laid in courses, watered and rammed as specified.
4. Disposal of surplus earth as specified.
5. Provision of drainage as specified.

The cost of material, labor, shorting, supply of all appliances at sites and all operations to be performed in accordance with the instructions of the Engineer Incharge. Schedule of quantities and as specified above.

B. CONCRETOR

Clause 1: SCOPE:

The section of the specification covers requirements for material and work man-ship for cement concrete for the following items:-

1. In situ reinforced cement concrete:
    - 1.1 Quality controlled cement concrete of specified strength.
    - 1.2 1:2:4 cement concrete specified by proportion.
2. Mass Concrete
    - 2.1 1:4:8 binding concrete under floor and foundations.

Clause 2: APPLICABLE PUBLICATIONS:

The following British publications of the issues current at the date of the contract from a part of this specifications of the extent indicated by the reference thereto:

British Standards:

B.S.882	Concrete aggregates from natural sources.
B.S.12	Portland cement (Ordinary and rapid hardening)
B.S.15	Mild steel for General structural purposes.
B.S.785	Rolled steel bars an hard draw wire for concrete reinforcement.
B.S.1221	Steel fabric for concrete reinforcement.
B.S.1144	Cold twisted steel bars for concrete reinforcement.
B.S.1881	Methods of testing concrete.
B.S.C.P. 114	The structural use of reinforced concrete in buildings.

Clause 3: GENERAL

Full cooperation shall be given to other specialist contractors install embedded items. Suitable templates or instructions, or both, will be provided for setting items not items not placed on the forms. Embedded items shall have been inspected and tests for concrete or other materials or for mechanical operations shall have be in completed and approved before concrete is placed.

Clause 4: MATERIALS:

a. Coarse Aggregates:

Aggregate shall be crusted stone aggregate from an approved quarry ranging in size from ¾” down to 3/16" and shall comply with the requirements of B.S 882. Aggregate which in the opinion of the Engineer Incharge are not clean, or have become mixed due to defective storage shall be removed from the site immediately.

Sample of graded coarse aggregate weighing 14 lbs; Which it is proposed to be used, shall be submitted to Engineer Incharge for approval immediately after the contract has commenced, and at least five weeks before concreting is to start. The contractor shall

perform sieve analysis for each consignment to the satisfaction of the Engineer Incharge and the percentage passing each individual sieve shall not very by more than 5% either way from that found for the approved sample, unless otherwise approved by the Engineer Incharge and subject to such changes in concrete proportions may be necessary. For “Quality Controlled Concrete" so as to prevent mixing and contamination of fine and coarse, graded aggregates shall be stored separately on site on a concrete slab 3 inches thick properly subdivided the approval of the Engineer Incharge and which must be removed completion of the contract.

b. Fine Aggregates:

Sand or fine aggregate shall be clean, coarse, sharp and obtained from approved source and shall conform to B.S. 882. It shall be free from all dirt, earth organic and other injurious matter, The contractor will be required to screen and / or wash the sand to remove any foreign matter in it. The sand should be graded down from Tyler Sieve No. 4(3/16 inch) to Tyler Sieve NO. 100 in an approved manner. The sand shall be of such cleanness that when a handful of it is shaken in a glass tumbler with clean water and allowed the stand for one hour the precipitate of mud in the sand shall not exceed 2% by volume, and if more than 2% the sand shall be washed.

c. Cement:

The cement to be used for making reinforced concrete and mortars shall be ordinary Portland cement, white Portland cement or rapid hardening Portland cement, as specified herein, and as shown on the drawings or as directed. These cements shall not be used in combination. Only one brand of any type of cement shall be used for exposed concrete surfaces of any structure. Cement reclaimed from cleaning bags or leaking containers shall not be used. All Portland cements shall comply with the requirements of B.S. 12. Cement shall be stored in a damp\proof shed and shall be used in the order of its delivery. Any cement, which has deteriorated or become contaminated shall not be used and shall be removed immediately from the site by the contractor at his own expense.

Samples weighing in pounds shall be dispatched carriage paid in sealed tins to testing laboratories designated by the Engineer Incharge for testing as and when directed. The contractor shall bear the cost of all tests.

Reinforcement:

1. All finished steel bars shall be well and cleanly rolled. Reinforcement shall be free from cracks, surface flaws, Emanations, rough, jagged and imperfect edge and all other defects and shall be finished in a workmanlike manner.
2. Steel reinforcement shall be plain round hot rolled mild-steel bars or high yield bond bars complying with BS 785. Cold worked bars shall be square or round bars which have been twisted when cold and shall comply with BS 1144.

	Tensile Strength Lbs/ Sq. Inch.	Yield Stress Lbs/ Per Sq. Inch
Plain round Mild steel Bars BS 788 part 11967	63,000/-	36,00

Hard drawn Mild steel deformed bars for the reinforcement of concrete conforming to ASTM A 615-76a (1977) or equivalent.	90,000	60,000

3. Reinforcement shall be of rolled mild steel bars. The contractor shall arrange for weighment of steel at his cost to satisfy himself. Prior to use, the contractor shall be responsible to see that reinforcement is free from pitting Loose, rust, mill scale, paint, oil, grease, adhering earth or any other material that may impair the bond between the concrete and the reinforcement or that may cause corrosion of the reinforcement or disintegration of the concrete.
4. Rust less annealed tying wire 18 SWG shall be obtained from approved manufacturers and shall as regard strength, comply with the requirements specified. Binding wire to specifications shall be provided by the Contractor at their own cost.
5. Supply and storage: All stacking and storing of bars is the Contractor's liability and a contingent to the quotations.
6. Weight of all the bars shall be taken off from the standard weight tables irrespective of re-rolling margin and other such factors. Contractor's bills shall be paid on the basis of these weights in direct proportion to the steel a measured used in the works. No claims will be entertained on account of such re-rolling margins, wastage etc.

d. Forms:

Form shall be of wood, metal, structural hardboard or other approved material that will not adversely affect the surface of the concrete and that will produce or facilitate obtaining the specified surface finish of the concrete.

Wooden form work should be free from loose, knots and should be well seasoned. Unsound or very soft timber should not be used as distortion at bolted connections may occur. Lining for shuttering to produce smooth surfaces may of water proofed building paper, grain less wood, plywood, sheet metal or similar materials.

Metal forms, if used, shall be of an approved type that will produce surfaces equal to those specified for wood forms.

e. Forms Ties:

Forms ties shall be factory fabricated, removable or snap\off metal ties of approved design, fixed or adjustable in length and shall be free of devices that will leave a hole larger than 1 inch in diameter in the surface of the concrete. The portion of the tie remaining in the concrete after the removal of the exterior parts shall not project beyond the surface of the concrete and shall be at least inch back from any surface that will be exposed to view of painted in the finished work:

Clause 5. 1:4:8 BLINDING CONCIRETE UNDER FOUNDATIONS & SUBFLOOR

a. General:

Concrete layer shall be laid under all foundations, and floors on grade to a thickness

shown on the drawings or as directed by the Engineer Incharge, but no layer of blinding concrete shall be laid wherever suitable in this clause shall conform with requirements of Clause 2-4 as and where applicable. The mix shall be 1-part cement to 4 parts fine aggregate and 8 parts coarse aggregate by volume. Coarse aggregate for this clause of Concrete shall be 1 ½" maximum size brick aggregate of stone aggregate as specified in bill of quantities.

Brick ballast shall be broken to the gauge specified, from will burnt bricks or their bats, or from dense over-burnt bricks. No under-burnt bricks or bats, not Jhama that has become spongy or porous in the process of burning, shall be broken up for ballast. The ballast shall be free from dirt, leaves, straw, earth sand or other foreign matter, and it shall be stacked in the manner and place designated by the Engineer Incharge. 1 ½ " gauge ballast shall be such as to all pass through a ring of 1 ½" internal diameter and not more than 20% shall be more than 2" in greatest length. If Engineer Incharge consider that an in duly large proportion of fine stuff has been supplied it shall be screened through ¾" x ¾" square mesh and if more than 15% pass through the screen, the Contractor shall screen the ballast so that not more than 15% pass through this screen.

The stone aggregate shall consist of good hard tough broken stone, gravel or shingle of gauge specified and from an approved. It shall be free from dirt, clay, leaves or any organic matter or admixture of soft or decayed stone. 1 ½" size aggregate shall be screened to pass wholly through a screen of 1 ½" x 1 ½" and to be all retained on one of 3/16" square mesh, and shall be uniformly graded in between so that not more than 60% and not less than 30% shall be retained on a screen of ¾" x ¾" square mesh.

The stone aggregate shall consist to good hard tough broken stone, gravel or shingle or gauge specified and from an approved. It shall be free from dirt, clay, leaves or any organic matter or admixture of soft or decayed stone. 1 ½" size aggregate shall be screened to pass wholly through a screen of 1 ½ " x 1 ½ " and to be all retained on one of 3/16" square mesh and shall be uniformly graded in between so that not more than 30% shall be retained on a screen of ¾" x ¾" square mesh.

b. Proportions:

The units of measures shall be one bag of bag of cement and when bag of 1.2 cubic feet is used the standard proportioning shall be:

Cement	One part (1.2 Cft.)
Sand	Four parts (4.8 Cft)
Coarse Aggregate	Eight parts (9.6 Cft)

When a bag of 1 Cft. Is used the standard proportioning shall be:

Cement	One part, (1 Cft.)
Sand	Four parts (4 Cft)
Coarse Aggregate	Eight parts (8 Cft)

c. Mixing

The mixing shall be done in mechanical mixers. Hand mixing will not be permitted under any circumstances. The proportion of the ingredients having been specified as above, boxed or internal dimensions mentioned below shall be fabricated:

1. For fine aggregate two boxed of size feet 4-4/5 inches by 1 foot by one-foot high.
2. Four boxes of the size specified for fine aggregate.

For a bag of 1 CFT. The dimensions of boxes will be as under:

1. For fine aggregate 2 boxes of size 2 feet by 1 foot by 1 foot by 1-foot high.
2. For coarse aggregate four boxes of the size specified for fine aggregate,

The cement content of each mix shall be by bags, and fine aggregate will be into a heap and a cement bag emptied on top. The cement and fine aggregate will be thoroughly incorporated with each other in a dry state by being turned over and over backwards and forward several times until the mixture is of uniform colour.

The mixture of cement and fine aggregate will be placed on the coarse aggregate and thoroughly incorporated with it by being turned over and over backwards and forwards several times until every part of the ballast is surrounded with dry mortar.

The minimum quantity of water as directed by Engineer Incharge will be added slowly and mixture turned over and over again until it is` uniformly mixed. The mass will be of the required consistency and mortar should show no inclination to separate from coarse aggregate. Machine mixing will be done as specified under quality controlled concrete. The contractor will be required to mark a can of 4 Gallons in 8 parts showing half gallon each. The Engineer Incharge will specify the amount of water to be strictly adhered to till any change is specified by the Engineer Incharge.

d. Laying

The concrete must always be used when quite fresh. It shall be laid gently and uniformly in layers not exceeding 6 inches in thickness. The concrete shall not be heaped in the position and allowed to floor by gravity. Each layer shall be thoroughly rammed and the concrete of the succeeding layer shall be immediately deposited over it. All the layer forming the required depth of concrete shall be deposited and consolidated within half an hour of the mixing of concrete so as not to disturb it after the initial set has commenced. The concrete will be consolidated with iron rammers until a listel of the mortar creams upto the surface. It is necessary to ensure that too much mortar does not come to the surface, only such quantity of mortar shall be allowed to work up as will just cover the surface.

e. Curing:

The concrete shall be kept wet for at least 10 days. The finished concrete must be cured by sprinkling water for at least two days after laying before commencing work over it. Even after commencement of masonry wok curing of raw masonry shall be thorough

enough to provide curing to the concrete as well. The back filling of the foundation shall be done immediately after the masonry wok has started and the earth filled back shall be kept damp to provide curing for the concrete. When reinforcement work is to be laid on this, curing shall not be stopped, but it shall continue at least for 10 days during the laying of reinforcement.

Clause 6: QUALITY CONTROLLED CONCRETE:

Production and testing of concrete under this clause shall be under charge of a fully qualified and competent quality control Engineer. If at any time, the Engineer Incharge is not satisfied with the supervision of work till satisfactory arrangement is made. The concrete under this clause shall conform with the requirements of clause 2-4 of this section. The mix of the concrete to be used in the work shall be determined on the basis of Quality Controlled Concrete as laid down in this section of the specification and shall be designed by the required minimum crushing strength at the age of 28 days. Vibrated concrete shall be compared by the vibration in a manner complying with the requirements of this specification, to ensure a dense and homogeneous nature for every part of the work and, when cured, shall have the required strength and resistance to weathering.

1. The crushing strength of the 6 in, test cubes shall be taken as a measure of the quality of the work as placed, and the cubes shall be cast and supplied in the manner indicated in this specifications.
2. Frequent test shall be made of the water content and bulking of the aggregate, and an appropriate allowance shall be made in the gauging or the weighing machine.
3. The quantity of water introduce into the mixes shall be regulated and arranged, to the approval of the Engineer Incharge so as to ensure a constant water, cement ratio. This shall be the minimum required to produce concrete in formity with the specification requirements.
4. All material shall be measured separately by weight. The weight of cement per unit weight of aggregate shall be the minimum necessary to achieve the specified strength consistent with workability, but in no case shall the ratio of the weight of dry aggregate to weight of cement exceed the ratio indicated in (vii) this clause.
5. Where the density of the aggregate varies from 100 lb/cu ft.., the proportion indicated in (vii) may be adjusted accordingly.
6. The determination of the mix to be used between the limits indicated, and also the control of the work, shall conform to the preliminary and work Test procedures asset out in this specification.
7. Notwithstanding anything otherwise specified, the contractor will not use aggregate cement ration / higher than as specified below for various mix designations and for all coarse aggregate.

a. Test Cubes:

The contractor shall, at his own expense, supply test cubes from 6-inch iron moulds, as

required by the preliminary and works Test procedure.

The test cubes, generally shall be made in accordance with B.s 1881 except that where the concreting work is being vibrated, the cubes shall also be vibrated in an agreed manner which most nearly reflects the quality of the concrete as placed. The cubes shall be removed from the moulds 24 hours after casting marked and dated, and immediately stored in water at the controlled temperature of 58-66 F or with special permission, in damp and as directed until required for testing.

The cubes shall be tested on prescribed days under the direction of Engineer Incharge. If a Government Laboratory is available conveniently, the Contractor can send the cubes for testing to such Laboratory on approval of the Engineer Incharge, in lieu of providing a cube crushing machine. If the cubes are to be sent away to a Laboratory from site of work then the cubes shall be packed in damp sand, in stout wooden boxes and dispatched for testing as directed so as to reach the Laboratory in time for testing at the age of concrete specified. Three cubes of each set of six shall be dispatched in time for testing at 7 days and remaining three for testing at 28 days. For cubes at 7 days the equivalent crushing strength at 28 days shall be assessed at 50% above the 7 days' value.

The cost of testing all test cubes required for the preliminary Test and work test procedure will be met by the Contractor but shall the results of the works Test Cubes, as specified, be unsatisfactory, the concrete work shall be stopped and not proceeded with until instructed. The executed work involved shall be liable to rejection and if so directed, shall be liable to rejection and if so directed, shall be cut out and re=executed or otherwise rectified, at the Contractor's expense.

A record of all tests on the aggregate, cement and test cubes shall be kept at the site identifying the tests with the parts of the work to which they relate and a copy of such test reports shall be supplied to the Engineer Incharge within two days of performing the test.

b. Preliminary Test Procedure:

At least 5 weeks prior to the commencement of the concreting work, the contractor shall carry out preliminary tests to determine the concrete mix which satisfied the requirements of their specification. Sufficient time shall be allowed for experimenting with a number of alternative mixes, and for the results of the crushing tests of the proposed mix to be available, prior to the commencement of the work.

1. Preliminary test cubes shall be taken from the proposed mix at the following times and conditions: On each of three consecutive days, six cubes, from identical concrete batches, three of which from each set of six shall be tested at age 7 days and three at age 28 days.
2. The minimum crushing strength of all eighteen preliminary test cubes shall not be less than 33-1/3% above the required minimum strength at age 28 days of the concrete in production, or the equivalent value in the case of cubes crushed at age-7 days. The cubes strength is tabulated as under

Quantity of Concrete Poured per day	Total work cubes Per mix of concrete			Minimum Crushing at	
500 Cft. Of concrete of less		7 days		28 days	
		1:2:4	1:1 ½ :3	1:2:4	1:1: ½ :3
	4	2000 Ls/ PSI	2500 Lbs / PSI	3000 Lbs/ PSI	3750 Lbs/ PSI
For every 500 Cft. of concrete or portion thereof over and above first 500 Cft.					

i. Prior to the commencement of the work the Contractor shall submit a statement of the mix he proposes to use, which must be based of the satisfactory results of these preliminary tests.

3. Whenever the source or quality of cement of cement and aggregate are changed or whenever it is proposed to change the mix this Preliminary Test Procedure shall be repeated.

c. Workability

The amount of water added to the mix shall be the minimum necessary to produce a workable concrete. The concrete shall be of such consistency that it can be readily worked into the corner and angles of the forms and around the reinforcement, without permitting the materials to segregate, or free water to collect at the surface. On striking the forms it shall present a fair face free from honeycombing, surface crazing or excessive dusting. In a slump test the maximum slump shall not exceed 2". Test shall also be made to conform to the satisfaction of Engineer Incharge workability of the proposed mix, consistent with the requirements of this specification. The contractor shall supply at his own expense, a suitable mould of approximately 8 Cft. capacity and representative of the proportions of the work. It shall be filled with concrete of the same mix and batch from which the preliminary test cubes are made, and shall be compacted in the same manner as is proposed for the constructional work, the mould being struck as soon as possible. The appearance of the concrete shall be carefully observed and used as a guide during the actual construction.

d. Work Test Procedure:-

The minimum crushing strength of the works test cubes shall be not less than the required minimum crushing strength of the concrete in production at age 28 days or the equivalent value in the case of cubes crushed at age 7 days. They shall be taken from the concrete work in progress at the time and conditions specified in the next paragraph.

On each of the first four days of concreting, six cubes shall be taken and cast, three of

which shall be tested at age 7 days and three at age 28 days. Where the crushing strength of these works test cubes is less than the required minimum, the mix Proportions shall be modified to bring the concrete upto the required strength.

After the first four days, at least two sets of six cubes shall be cast for testing each week, them of each set to be tested at age 7 days and three at age 28 days.

e. Control Equipment: -

The contractor shall provide the following test equipment's and a suitable separate hut in which to have them.

1. A cube testing machine.
2. Two sets of 4 cast iron 6 inch cube moulds with two 4 lbs. 15 inches long tamping bar with ramming face one inch square.
3. Suitable graduated measuring tubes for measuring the moisture content of fine aggregates.
4. A set of British Standard Graded sieves.
5. Maximum and minimum thermometers.
6. Suitable weighing scales
7. A water tank with thermostatically controlled heating suitable for curing test cubes.
8. One standard cone for slump test.

Clause 7: 1:2:4 CEMENT CONCRETE BY PROPORTION:

a. General:

The concrete specified in this clause shall conform with the requirements of clause 2-4 as and when applicable. The mix shall be 1-part cement to 2 parts fine aggregate and 4 parts coarse aggregate by volume. Coarse aggregate for this class of concrete shall be crushed stone or natural gravel from approved quarries as specified in bill of quantities, ranging in size from ¾ inch down to 3/16-inch gauge well graded. The aggregate shall be free from injurious Amounts of soft friable or elongated or laminated pieces and shall also be free from clay or loamy admixture or any vegetable after being screened shall be graded in the following manner.

S.S. Sieve No.	Tyloro Sieve No.	Percentage Passing on Sieve	By weight Retained Sieve	Total Retained Sieve	Fineness Modulus -----
¾"	¾"	90-100	10-0	10-0	6-9 to 6.35
3/8"	3/8"	30.56	70.45	80.45	
3/16"	¼"	0.10	20.45	100.90	

b. Proportioning:

The unit of measure shall be one bag of cement and when a bag of 1:2 cubes feet (1 Cwt)

is used the standard proportioning shall be:

Cement	One part (1.2 Cft)
Sand	Two parts (2.4 Cft)
Coarse Aggregate	Four parts .14.8 Cft)

When a bag of 1 Cft (94 lbs) is used the standard proportioning shall be:

Cement	One part (1.0 Cft)
Sand	Two parts (2.0 Cft)
Coarse Aggregate	Four parts (4.0 Cft)

For volumetric batching of sand and coarse aggregate, boxes of following internal dimensions shall be fabricated for a cement bag of 1.2 Cft (1. Cwt)

1. For sand 2 feet 4-4/5 inches by one foot by one-foot high.
2. For coarse aggregate 2 feet 4-4/5 inches by 2 feet by one-foot high.

For a cement bag of 1 Cft. the dimensions of boxes will be as under:

1. For sand 2 feet by one foot by one-foot high.
2. For coarse aggregate 2 feet by two feet by one-foot high.

c. Mixing

The mixing shall be done in mechanical mixers as specified in clause "Mixing and placing" of this Section of specifications. Mixing shall be done in single bag batches of cement, unless otherwise specified by Engineer Incharge.

d. Slump Test:

The Engineer Incharge shall test the consistency of the mixture in the following manner:

Frustum of a metal cone 12 inches in height with a bottom diameter of 8 inches and a top diameter of 4 inches shall be completely filled with concrete and shall be tamped with a ½" diameter rod in the following manner:-

1. Cone filled to 1/4th depth and then tamped 25 times with a 5/8"dia rod. Tamping shall be done with strokes of medium strength.
2. Cone filled to ½ depth and then tapped 25 times with a ½"dia rod.
3. Cone filled to ¾ depth and then tapped 25 times with a ½"dia rod.
4. Cone filled in full depth and the tapped 25 times with a ½"dia rod.

The frustum of the cone shall then be immediately removed and the settlement or slump measured.

The slump is not to exceed 2 to 4 inches. The Engineer Incharge, however may at their discretion direct a particular slump to be maintained throughout the execution of the work which would be guided by site conditions such as degree of contractor's control over production of concrete and type of labour and supervisory staff employed by them

for placing of concrete and vibrations thereof.

Clause 8: CONCRETE PREPARATION

a. Mixing and Placing

The equipment shall be capable of combining the aggregates, cement and water, with in the specified time, and unless otherwise authorize by the Engineer Incharge, the concrete shall be mixed in a batch mixer of approved type, which will ensure a uniform distribution of the material throughout, the mass, as well as being capable of discharging the mixture without segregation. The equipment at the mixing plant shall be so constructed that all the materials, including the water, entering the drum can be accurate proportioned and controlled. The entire batch shall be discharged before recharging. The volume of the mixed material per batch shall not exceed the manufacturer's rated capacity of the mixer.

1. Each batch shall remain in the mixer for a mixing period of not less than 2 minutes which shall be measured from the time when all the solid material is in the mixing drum. All the mixing water must have been introduced before one fourth of the mixing period elapses.
2. In case of power failure, hand mixing shall be allowed to carry the work upto a suitable stage of concreting to be approved by the Engineer Incharge. When hand mixing is authorized it shall be done a water tight platform with edging boards, and in such a manner as to ensure uniform distribution of the materials throughout the mass. It shall be turned 3 timed dry, and 3 times wet, and mixing shall continue until a homogeneous mixture is obtained.
3. The remixing of concrete which has partially hardened, with or without additional cement, aggregate or water will not be permitted. Mixture machine and platforms shall be cleaned on every cessation of work

b. Work in Cold weather:

If it is necessary to continue concreting in sold weather the precautions specified in the following paragraphs must be taken.

When the air temperature is 36 degree F. and falling or when night frost may reasonably be expected, the mixing water, sand and aggregate shall be heated by an approved means so as to ensure the concrete having a temperature of not less than 40 degree F. at the time of deposition.

1. In addition, the newly deposited concrete shall be thoroughly protected and kept at a temperature of not less than 40 F until it has thoroughly hardened. This shall be done by using tarpaulins or other suitable means, to the satisfaction of the
2. Engineer Incharge. Where such protective covering can not be used, where it is considered such protection is not sufficient, suitable heating facilities shall be provided. Subject to the approval of the Engineer Incharge admixture of calcium chloride may be introduced, in the proportion of 1 ½% by weight of the cement,

provided that it is added in the form of a solution in the mixing water, or alternatively, special cold weather cement may be used. No frozen materials or material containing ice shall be used, and concrete which has become damaged by frost shall be cut out and replaced with new concrete, properly bonded as described in "Construction Joints".

c. Transporting, Depositing, placing and compacting:

1. Transporting and placing of concrete shall be arranged so that segregation is limited, and contamination and lose of cement prevented, Barrow used shall be cleaned on every cessation of work. Cutting of concrete will be permitted only be approved methods, and subject to the consent of the Engineer Incharge. Concrete shall not generally be dropped of thrown into place from a height greater than 4 ft. Pumping of concrete will not be permitted without the prior approval of Engineer Incharge.
2. Depositing of concrete, immediately after mixing and being run to the work shall be in a position as nearly as possible to its final before setting so as to reduce flowing and redistribution to a minimum and it shall not be disturbed subsequently, care should be taken to prevent displacing the reinforcement and embedded fixtures. Where depositing on hard core or other absorbent material, such surfaces shall be suitably and sufficient wetted before hand.
3. In placing, the concrete shall be efficiently tamped, sworded and compacted during the operation of placing. It shall be thoroughly worked around reinforcement, steel work, and embedded fixtures and into the corners of the forms so that no voids or honeycombing occur, and no reinforcement or embedded fixtures are displaced. Excessive taming shall be avoided to prevent segregation. Forms or walls and thin section of considerable height shall be provided with openings and other device that will permit the concrete to be placed in a manner that will prevent segregation, and accumulations of hardened concrete on the forms or metal reinforcement above the level of the concrete. A record shall be kept by the contractor of the time and date of placing concrete in each part of the work.
4. Compacting, whether by hand or by mechanical vibration, shall continue until a dense homogeneous mass, free from voids is obtained which on stricking the forms, presents a fair face which is free from honeycombing, crack or excessive dusting. Any concrete which is honeycombed or otherwise unsatisfactory shall be cut out and re-executed, or otherwise rectified, to the satisfaction of the Engineer Incharge accumulations of water on the surface of the concrete, due to water gain, segregation, or other causes, during placing and compacting will not be permitted and presentations shall be obtained by adjustments in the mix if necessary.
5. Rock foundation placement:
6. Rock surfaces upon which concrete is to be placed shall be approximately level, clean, free from oil and other objectionable coating, water, mud, debris, damaged rock, and loose semidetached or unsound fragments, and shall be sufficiently rough to assure satisfactory bond with the concrete. Faults or seems shall be cleaned to firm rock on the sides, and to a depth satisfactory to the Engineer Incharge. Immediately before

concrete is placed, rock surfaces shall be cleaned by high velocity air water jets, and blasting or other means satisfactory to the Engineer Incharge.

d. Vibrations of Concrete:

Columns, beams, walls and suspended slabs s all cases be compacted by means of Internal vibrators, but surface and external vibrators may be used, either in conjunction with them or alone, as approved. Before commencing work the contractor shall indicate to the Engineer Incharge for approval, the number and type of vibrators and the manner in which he proposes to employ them. He shall state the characteristics of the machines and undertake such trails, at his own expense, as the Engineer Incharge may direct and shall employ an adequate number of vibrators, of suitable characteristics, so spaced that their effective ranges overlap, and with properly trained personnel to operate them. Compaction shall not be attempted of a thicker layer than that for which a machine is designed and wherever possible the process of placing shutters and raising vibrators shall be continuous. Vibrations shall be continued until the concrete reaches a state of optimum compaction, when air bubbles cease to break the surface and all loose stone are absorbed into the mass and the surface is free from pockets and is moist and glistening.

1. Internal vibrators shall not touch the shutters and shall not be used to push the concrete along the forms. An ample supply of concrete shall always be available in front of the needless. Where layer are thick, as with concrete columns, the needless when vibrating each lift shall also penetrate the previous layer to a depth of 4 to 6 in.
2. External vibrators shall be securely clamped to the shutter frames or stiffeners (as in columns) or against the shutter face with chain and vice.
3. Surface vibrators shall only be used where the reinforcement can be laid progressively in horizontal layers or where the disposition and density will permit proper compaction. Vibration shall be continued until the mortar can be clearly seen appearing at the edge of the plate. The Vibrator must not be allowed to remain stationary, and the rate of travel must be adjusted to ensure adequate compaction of the concrete. Immediately following vibration the surfaces of slab shall be leveled and smoothed with wooden floats or screens, but this final surface working must be kept to a minimum. Surface vibrators are permitted for road, floor and roof slabs.

e. Construction joints:

The type and location of construction joints shall as shown of the drawing or as separately agreed with the contractor. Concreting shall be carried continuously upto joints, and the sequence of pouring shall be carried out as directed or agreed with the Engineer Incharge concrete shall be deposited continuously or in layer of such thickness that no concrete will be deposited on concrete which has hardened sufficiently to cause the formation of seams and planes of seams and planes of weakness within the section. All construction joints in watertight structures shall be provided with P.V.C. water stops.

1. Stop ends at construction joints shall be vertical with grooved faces and must be stripped within 24 hours of the concrete being placed. The surfaces must immediately be wire brushed or jetted with water at high pressure to remove all laitance and to

expose the aggregated all to the Engineer Incharge. Failure to do this will involve the contractor in chipping the surfaces to a depth of ½ inch. All over and washing clean, at his own expense, to the satisfaction of the Engineer Incharge.

2. Horizontal surface shall be kept reasonably level and shall be similar treated within 24 hours of the concrete being placed. Failure to do will again involved the contractor on chipping to a depth of ½ inch over. Keys shall be formed in the surface as shown on drawing or as agreed with the Engineer Incharge.
3. Immediately prior to placing concrete on top of a completed horizontal surface this surfaces shall be well wetted and brushed with cement slut well worked in and then coated with ½ inch thickness of sand and cements mortar; the proportions being the same as the sand and cement in the concrete mixtures. Immediately after the application of mortar the new concrete shall be deposited and well rammed in position.

f. Expansion and contraction joints:

Expansion and contraction joints shall be formed in the positions and to dimensions and details shown on the drawings and as directed.

g. Connection and openings:

Bolts for holding pipes and fittings shall be concreted in or boxed out for the work proceeds. Opening shall be left as indicated of the drawings directed.

Clause 9: FORMWORK AND TEMPORARY SUPPORTS:

a. Formwork:

The contractor shall be required to submit drawings of the proposed method of formwork, details of scaffolding and positions of hoists, within four being given the order for the work. The formwork shall overlap the previous lift to minimize lipping which must not exceed 1/8 in, at any point and must in any case beddreassed off smoothly. Tolerances on dimensions and vertically shall be as shown on the drawings or as directed by the Engineer Incharge,

1. Formwork shall be so constructed as to safely support the fluid concrete and all construction load, without appreciable movement or deflection. It shall be sufficiently tight to prevent loss of liquids cement from the concrete and so constructed that it can be removed without under vibration or shock.
2. Where formwork is supported from existing parts of the structure, it shall be so arranged as to produce no overstress in the structure and shall, where necessary, be built up from a solid bed.
3. Formwork for the sides of beams, etc. may be so arranged that it can be struck first leaving the soffits and the supports in position.
4. The soffits of suspended beams of more than 16 ft. span shall be laid to an upward camber of ¼ in per 12 ft. of span.
5. Provision shall be made in the formwork for any perforation, sinking's, of the

inclusion of building in parts as required. Approval must be obtained from the Engineer Incharge for metal formwork, millboard or other linings to forms before use.

6. Unless specified otherwise, e.g for plastering, the surface finish of all concrete cast in wrought formwork shall be "fair faced". On removal of the formwork all pin holes and honeycombing shall be made good with cement mortar immediately after striking the forms and all irregularities and excrescences shall be rubbed smooth to the satisfaction of Engineer Incharge.
7. Bolts and rods, shall preferably be used for internal ties, they shall be so arranged that when the forms are removed no metal shall be within 1 in of the surface.
8. External corners of columns, girders, beams, foundation walls projecting beyond overlaying masonry and other exposed external corners shall be leveled, rounded, or chamfered by mouldings placed in the forms unless the drawings specifically state chamfering is to omitted.

b. Cleaning and Treatment of Forms:

Immediately before the concrete is placed, the formwork be the thoroughly cleaned. All rubbish particularly chippings, shavings and saw-dust shall be removed from the interior of the forms.

1. The surface of the form work which will be in contact with the concrete shall be well wetted of treated with a composition approved by the Engineer Incharge care should be taken that such approved composition shall be kept out of contact with the reinforcement.
2. Where concrete surfaces are to be treated later with chlorinated rubber or epoxy resin based paints or compounds, the mould oil for the shutters shall be high grade, emulsifiable and contain no mineral oil.
3. Retarding fluid shall be used only where specifically approved.

c. Stripping Formwork:

All formwork shall be removed without undue vibration or shock and without damage to the concrete. Proper precautions shall be taken to allow for the decrease in the rate of hardening that occurs with all cements in cold weather.

1. The minimum times for stripping formwork shall be these given in the following table:-

Stripping of formwork to	Normal Portland cement concrete	Rapid Hardening Portland Cement concrete
	Days	Days
Walls, sides of beams, columns	2	1
Slabs	14	10
R.C. Beam Soffits	21	10

2. Notwithstanding the previous paragraph the forms may be removed when trial shows

that the concrete is sufficiently strong for corners and edges not to be damaged during stripping.

3. The soffits of beams and slabs will still need shoring and the shores may be removed subject to the following conditions.
4. At the time of casting, four test cubes a day shall be made from the concrete deposited in the location under consideration. They shall be duly marked and dated by the Engineer Incharge or his representative. These specimens will then be kept on the same site in conditions approximating as closely as possible to the work as cast. When one of the test cubes attains a strength of twice the stress to be sustained during construction, the shoring may be removed
5. The Engineer Incharge shall specify to what loads the member will be liable. Should it prove necessary to carry greater loads temporary shoring must be reinstated to the satisfaction of the Engineer Incharge.

Clause 10. REINFORCING STEEL

Reinforcement shall be fabricated to shapes and dimensions shown and shall be placed where indicated on drawing or where required to carry out the intent of the drawings and specifications. Before being placed, reinforcing steel shall be thoroughly cleaned of loose or flaky rust, mill scale, or coating, and of any other substance that would reduce or destroy the bond. Reinforcing steel reduced in sections shall not be used. After any substantial delay in the work, previously placed reinforcing steel left for future bending shall be inspected and cleaned. Reinforcing steel shall not be bent or straightened in a manner injurious to the steel. Bars with kinks or bends not shown on drawings shall not be placed. The use of heat to bend or straighten reinforcing steel will be permitted only if the entire operation is approved. In slabs, beams and girders, reinforcing steel shall be of adequate length to transmit stresses and splices in adjacent bars shall be staggered. Splices in columns piers and struts shall be lapped sufficiently to transfer the full stress by bond.

a. Design and Details:

Unless otherwise indicated, the bending of reinforcing steel shall conform to the British standard code of Practice, C.P 114. Unless otherwise indicated, construction shall conform to the following requirements:

1. Concrete covering over steel reinforcement:

   The thickness of the covering coving over steel reinforcement shall be not less than the diameter of round bars, or less than 1 ½ times the side, dimensions of square bars, and in the following specific instances not less than specified instances below in less specified otherwise on the drawings. Footing and other principal structural 3 inches between steel & members in which concrete is deposited Ground against the ground.

   Where concrete surfaces, after removal of forms, are exposed to weather or grounds:

   For bars more than 5/8 inch in diameter 2 inches

For bars 5/8 inch or less in diameter	1 ½ inches
Where surfaces are not directly exposed to weather or ground	
For slabs and walls	¾ inch
For beams, girder and tied columns	1 ½ inches
For spiral columns (covering) to be	1 ½ inches or 1 ½ times max
cast monolithically with core	size of coarse aggregate.

Exposed reinforcement bars intended for bending with future extensions shall be protected from corrosion by adequate covering.

2. Spiral reinforcement shall consist to evenly spaced continuous spirals held firmly in place and true to line by vertical spacers, using at least two for spirals 20 inches or less in diameter, three for spirals 20 to 30 inches in diameter, and four for spirals more than 30 inches in diameter or composed of spiral rods 5/8 inch or large in size. The spirals shall be of such size and so assembles as to permit handling and placing without being distorted from the designed dimensions. Anchorage of spiral reinforcement shall be provided, by 1 ½ extra turns of spiral rod or wire at each end of the spiral unit splices, when necessary shall be made in spiral rod by a lap of 1 ½ turns. The reinforcing a spiral shall extend from the floor level in any story or from the top of the footing in the basement, to the lowest horizontal reinforcement in the overhead slab, drop panel, beam, or girder, in a column with a capital the opiral shall extend to a plane at which the diameter or width of the capital is twice that of the column.
    1. Stirrup spacer bars:
    2. All stirrups, except ties, shall be held in place by two 3/8.inch spacer bars extending the full length of the portion of the beam or girder occupied by stirrups.
    3. Outside bars of slab reinforcement, both main and temperature, parallet to beams, girders, or walls, shall be placed not over one-half bar spacing from the adjacent face of each member
    4. wire-mesh reinforcement, between expansion joints in slabs shall be continuous and shall have joints lapped at least one full mesh. Lapping of sheets shall be staggered to avoid continuous lap in either direction. Reinforcement shall be supported by standard accessories for slabs above grade and by properly sized precast concrete blocks for slabs one earth.
    5. Shop drawings:

    Shop detail and placing where necessary for reinforcing steel shall be furnished for approval. This shall be produced from details as shown on drawings.

b. Supports:

With the exception of temperature reinforcement, which shall be tied to main steel approximately 9-24 inches on centers, reinforcement shall be accurately placed and securely tied at all intersections and splice with 18 gauge black annealed wire, and shall

be securely held in position during the placing of concrete by spacers, chairs, or other approved supports, Wire tie ends shall point away from the form. Unless otherwise indicated, the number, type, and spacing of supports shall be as approved by the Engineer Incharge.

For Slabs on grade (over earth drawings fill) and for footing reinforcement bars of mesh shall be supported on precast concrete blocks, spaced at intervals required by size of reinforcement the minimum height specified above the under side of slab or footing.

Clause 11. CURING:

Curing shall be accompanied by preventing lost of moisture, rapid temperature change, and mechanical injury or injury from rain or flowing water for a period of 7 days when normal portland cement has been used or 3 days when rapid hardening Portland cement has been used. Curing shall be started as soon as free water disappeared from the surface of the concrete after placing and finishing. Curing of formed under surface of beams, girders, floor slab and other similarly undersurface, shall be accomplished by moist curing with forms in place for the full curing period or if form are removed prior to the end of the curing period by other approved means. Curing may be accomplished by any of the following methods or combination thereof as approved.

a. Moist Curing:

Unformed surfaces shall be covered with burlap cotton, or other approved fabric mats, kept in intimate contract with the surface, or with stand and shall be kept continually wet. Where formed surfaces are cured in the forms, the forms shall be kept continually wet. If the forms are removed before the end of the curing period, curing shall be continued as one the unformed surfaces using suitable materials. Burlap shall be used only of surfaces that will be unexposed in the finished work and shall be in two layers.

b. Water proof paper curing:

Surfaces shall be covered with waterproof paper lapped 4 inches at edges and ends, and sealed with mastic or pressure-sensitive taps not less than 1 ½" wide, paper shall be weighed to prevent displacement, and tears or holes appearing during the curing period shall be immediately repaired by patching.

c. Polyethylene Sheeting:

Surface shall be completely covered. Where single sheet does not cover entire surface the ends and edges shall be laped not less than 4 inches and sealed with adhesive tape.

Clause 12. CONCRETE LIFTS:

a. General:

Except where limited by construction joints, by requirements noted on the drawings, or by other specification requirements, the vertical depth or height of concrete placed in one continuous operation in walls of the structure need not be limited except as follows:

1. Within a vertical depth or height of concrete placed in one continuous, operation, concrete shall be deposited in horizontal layer of uniform thickness not to exceed 12 inches in depth.

2. The rate of rise of concrete in the wall forms shall be such that deformations of the forms at any point will not exceed 1/16 inch in 10 feet in each wall face.
3. The rate of rise of concrete in the wall forms shall be such that adequate vibration during placement of the concrete can be ensured to avoid honeycomb or other non-uniform surface finish and such that no concrete surface shall have reached its initial set before additional concrete is placed upon it.
4. The concrete in high walls shall be placed through 'window' construction opening in the form or by other 'Engineer Incharge' approved means which will insure placement of the concrete at its final location and which will limit the drop of concrete in accordance with the provision of this specification.

Clause 13. HARKING CONCRETE SURFACES:

Where surface are specified or required to be plastered, they shall be hacked, until approximately 40 percent of the surface is roughened to approval. Retarding liquid, applied to the surface of the formwork, so that the surface can be roughened and keyed for plastering must not be used unless specially approved.

Clause 14. ALTERNATE BAY CONSTRUCTION:

Large areas of non-suspended flooring shall be of alternate bay construction. The areas of each bay shall not exceed 300 Sft. for reinforced floor, unless otherwise directed. No other method of laying shall be adopted unless approved by the Engineer Incharge. Edges of slabs shall be a square but unless otherwise directed and shall be thickly coated with tar before the adjoining slabs are laid.

Reinforcement shall stop 2 inch from the edges of the slabs, Long wall in general shall be cast with 1 feet closure gaps and shall be provide with water stops when below grade.

Clause 15. FALLS THICKENING AND SINKING:

Floors shall be level or to falls, and increased, in thickness to form foundations for walling and under channels, trenches etc as shown on drawings or as directed. Sinking's for mat walls, pipes of trenches, and holes for buildings in posts stanchions, fixing bolts, etc. shall be formed as shown on drawings or as directed.

Clause 16. MASS CONCRETE RETAINING WALLS:

Walls more than 30 ft. log shall have gaps not less than 11 ft, not more than 3 ft. wide well vertical rebate joints on both sides, in approximately every 30 ft. These Gaps shall not be filled in until at least 14 days after concreting the adjoining sections.

Clause 17. LOADING TEST:

If the Engineer Incharge is dissatisfied with any portion of the work, the following tests shall be carried out by the contractor as per decision of the Chief Engineer whose decision will be final and binding on the contractor. The cost of testing and any reconstruction shall be borne by the contractor.

1. The test shall not be performed before the expiry of 56 days after effective hardening of concrete and procedure followed shall be as laid down as under:

1.1 Core Test, as per method & procedure being carried out by C.D.A

1.2 PANDIT Test, as being carried out by University of Engineering & Technology, Lahore.

2. The test load shall be as directed and shall exceed 125% of the total load for which the word was designed. The total load shall include dead loads, supper-imposed load and such dead loads which are not already applied at the time of test such as floor finishes partition loads etc.

3. The test loading shall be maintained for a minimum period of 24 hours and the structure should show a recovery of at least 75% of maximum deflection within 24 hours of removal of load. If the structure does not show the recovery in the firms test, it shall be subject to a second test as specified in the above mentioned clause of CP. 114. The decision of the Engineer Incharge as to the acceptance or rejection of the work under consideration, shall be final.

Clause 18. MEASUREMENTS AND RATES:

1. All in situ concrete items shall be measured in cubic contents of finished concrete as shown on the drawings:

2. Items for reinforcing bars shall be paid by weight ascertained from their diameter and length according to the shop drawings approved by the Engineer Incharge, Bends, hooks, cranks, cranks, shall included in the quantity. No payment shall where indicated or approved by Chief Engineer shall be paid. No payment shall be made for steel or concrete chairs, spacer bars and binding bars. The rate for all items of concrete under this sub-section shall cover the cost of furnishing all materials, labour, scaffolding formwork, curing and appliances at site and performing all operations at any height in accordance with drawings finish schedule and as specified above. This rates does not include providing, bending and placing in position of reinforcing bars, but include cost of all inserts and anchorage item specified for completion this contract, cost of which has already not been covered by other sections of these specifications cost of installation and supply of inserts and anchorage items required by other specialist contractors is not included in the above rate. If this contractor is required to supply and install such items it shall be paid separately. The rate for reinforcing bars shall include the cost of providing, bending and placing in position of bars for all bar diameters at any height including cost of chairs, binding wire, furnishing all labour, material scaffolding, appliances at site and performing all operations in accordance with drawings and as specified in this section.

SUB-SECTION 2-A
PRECAST CONCRETE

Clause 1: GENERAL:

1. Precast concrete structural members shall conform to the special provisions of this subsection in addition to all applicable clause of section 2 ‘concreter'
2. Should an applicable clause in Section 2 overlap with an applicable clause of this sub-section, the more stringent clause shall prevail. The stringency of the contesting clause shall be determined by the discretion of the Engineer Incharge.

Clause 2. CONFORMITY TO BRITISH STANDARD:

The work and materials shall conform to all British standards and code of practices as specified earlier in this section under the head ‘CONCRETOR' and shall also conform to B.S. 1217 ‘Cast stone' as applicable to the work and specified.

Clause 3. MATERIALS:

1. **Aggregates:** Coarse and fine aggregates shall be of uniform colour and shall conform to the requirements of section 2, coarse aggregate shall be of size as mentioned on the drawings and approved by the Engineer Incharge.
2. **Cement:** Cement shall be grey Portland cement conforming to the requirements of section2.
3. **Reinforcement:** shall conform to the requirement of section 2.
4. Anchor, supporting angles, dowels etc. shall be heavily dipped galvanized steel?
5. **Mortar:** For setting precast concrete units shall be mixed in proportions by volume of one part Grey cement, one part hydrated lime putty and five parts of fine aggregate. Mortal for pointing shall be mixed in the proportions by volume of one part Grey cement, one part hydrated lime putty and four parts sand made up into stiff plastic batches. Setting mortar shall have the minimum amount of water added to make it flow.

Clause 4: SHOPS DRAWINGS:

Shop drawings and description of the proposed formwork shall be submitted by the contractor the Engineer Incharge for approval within two month of award of contract. The form drawings shall show complete detail of each unit to be case and eye bolts for handling shall be as directed on the drawings, the description shall cover the method of removal from the forms and the methods of handling and erecting of the units. Work shall be executed and erected in conformity with the approved shop drawings and description of work.

Clause 5: WORKMANSHIP:

1. Concrete for precast wall panels in Toilets window sills roof, planks etc. shall be 3000 PSI quality control concrete and specified in section 2.
2. Proportioning of mixes shall be determined by weight batching and the amount of water added to the mix shall be the minimum necessary to obtain sufficient

workability and produce a dense concrete without segregation of the aggregate. Coarse aggregate shall be of maximum size shown on the drawings, graded crushed aggregate.

3. Each unit shall be reinforced as indicated on the drawings and shall have additional reinforcement if required for handling or erection.
4. All anchorage items as shown of the drawings or as directed for fixing precast units shall be cast integrally with the panels at the exact locations. Care shall be exercised so that anchorage items are not dislodged during the casting and compacting operations. The precast units in which door or windows are to be installed shall have built in Anchors for fastening doors and windows to the frame.
5. Each unit shall be equipped with eye bolts, welded with, reinforcement and located so as to be concealed when the unit is erected for handling hoisting and erecting the units in a vertical position. Additional embedded and welded eye bolts shall be provided if required by the proposed method of handling and hoisting the units.
6. Casting shall be done in accurate moulds designed to withstand vibration. The surface of moulds which will form exposed surfaces of the precast units shall be coated with an approved plastic or resin to ensure smoothness of the precast concrete. The vibration shall be continuous during the process of casting. Compaction shall be thoroughly carried out by mechanical vibration such that a solid mass without a solid mass without voids is produced entirely filling the mould and surrounding all reinforcement.
7. Exposed faces of precast concrete shall be smooth and free from cavities, lines or other defects detrimental to the appearance, and shall be even in colour, Units varying in colour within the units or varying from other units will not be acceptable.
8. All precast items shall be carefully handed during precasting, handling and erection. Any units that become damaged will be liable to rejection. Units shall be well wetted and then placed in position with cement mortar. Where any additional in-situ Structural filling between units is required, the units shall be well wetted before the concrete is placed.

Clause 6: MATURING:

Precast concrete units shall be matured and cured before being handled or erected.

Clause 7: PATCHING:

In general, no patching, will be allowed, and damaged units shall be replaced at no additional cost. Mirror patching, defined as such by the Engineer Incharge will be permitted when authorized by the Engineer Incharge.

Clause 8: CLEANING:

All mortar daubs and droppings shall be removed as the work is erected. On completion of work, all exposed surfaces shall be cleaned.

Clause 9: MEASUREMENTS AND RATES:

All precast units shall be measured in cubic feet, superficial area of running feet of finished work as specified in schedule of quantities.

The rate for all items of precast concrete under this sub-section shall cover the cost of furnishing all materials, labour, scaffoldings, formwork, curing erecting, anchors, fasteners etc. and appliances at site and performing all operations at any height in accordance with drawings, schedule of quantities and as specified above.

This rates does not include providing bending binding, and placing in position of reinforcement bars but include cost of all inserts and anchorage items specified for completion of this contract, cost of which has already not been covered by other section of these specifications.

The rate for reinforcing bars shall be as specified under Section 2 'Concreter'.

SECTION-3 BRICK & STONE MASONRY

Clause 1: CONFORMITY TO BRITISH STANDARD CODE OF PRACTICE:

C.P. 121101

Except as otherwise specified, all brickwork shall be erected in conformity with C.P.121 101 "Brickwork", as applicable to the work shown on the drawing and as specified.

Clause 2: MATERIAL:

a. Brick shall be sound, well burned clay, uniform in shape, colour and shall measure 9" x 1 ½" x 2 ¼'' so that every four courses laid shall measure 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 should not absorb more than 1/6th of its weight, when soaked in water for an hour. 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. The minimum compressive strength of the gross area of the brick flat wise shall be 1250 pound with an average for five bricks not, less than 1500 pounds. Brick shall be tested for compressive strength in accordance with B.S 1257 "Method of testing clay Building Bricks"

b. Cast stores or cc jali shall be made from 1:2:4 cement concrete as specified in section "concreter" colour additive if specified shall be inert chemically and shall give shade as shown on drawings or as instructed at site.

c. Grey stone: shall be lime stone. Sound free from cracks, cavities and should be of uniform grey colour and fixture, and shall measure 3" to 4" thick, 2" long 1" wide. The sides cut truly in plumb and corners at right angles. The exposed face should be fine chiseled.

d. Mortar: shall be mixed in the proportions by volume as specified in bill of quantities.

    1. Portland cement shall conform to B.S 12.
    2. Sand and other fine aggregate shall conform to B.S. 1200, "Sands" and crushed' Natural stone for Brickwork (plain and reinforced) and for Masonry"
    3. Water shall be clean, free from any organic impurities, acids, alkalis greasy or oily substances either in solution or in suspension.

e. Wall ties: Metal wall ties shall conformed to the requirements of B.S. 243 "Metal wall Ties", where applicable. Other ties shall have stiffness. Strength and durability at least equal to the weakest ties specified in this standard. All meta1 wall ties shall be galvanized,

Clause 3. SAMPLES:

The samples of all the material used for brickwork shall be approved by Engineer Incharge & same type of material shall be used during the work in progress. If the Engineer Incharge desires to get the material tested, this will be got done by the contractor from a laboratory approved by them at his own expenses.

Clause 4: WORKMANSHIP FOR BRICKWORK:

a. Brick laying: Brick laying shall conform to the applicable requirements of C.P.121.101 notably clause 501,508 and 512. The brick work shall be done from approved bricks and shall be strictly in accordance with the drawings. The bricks shall be laid in mortar specified in schedule of quantities. Before the brick are used, they shall be soaked in water tanks (to be constructed by the contractor at his own cost), for at least four hours. The brick shall be placed in the water tanks in a manner that they do not get damaged. Bricks shall always be laid in English. bond (unless otherwise specified) with frogs upwards. Bricks shall be laid with bed and vertical joints properly filled with specified mortar. Bricks work must be truly plumb and must be checked by plumb bobs and straight edges 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 drawings to have curved or champhered surface shall be cut and chiseled finely such that when placed in position they do not present ugly look or require leveling up with extra mortar. Where work has to be left, the wall shall be left in slope and in no case the difference of height between different walls shall be more than 5' at any section of the building.

All brick work shall be bonded where it abuts other bricks work, concrete walls and concrete columns. Where bricks walls or partitions interest or abut, it is absolutely necessary to interlock the masonry of the two walls in such a way as not to leave a straight vertical joint between the two walls. In such cases the bond shall be obtained by placing a closer 41/2 inches 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 dove tail slots shall be provided at every fourth course. 3" long dove-tail slots cast in concrete members at every fourth brick course height shall be considered sufficient under these specification, unless contractor considers continues length of slots convenient for his working. 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.

Built in anchor bolts, inserts, pipe supports, hangers pipe sleeves, dowels, ties and all items shown on the drawings, or specified are required to be build 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 by the masonry. The spaces around all built in items shall be filled with masonry. Where required for latter building in, leave opening in masonry for heating and plumbing pipes, electric conduits etc. and after piping or conduits have been installed, fill around same brick work.

Do all cutting and patching of masonry required for installation of built in work supported by masonry.

The masonry shall be kept properly cured for at least 10 days where cement mortar is used. Where according to plans and sections, the masonry would require cut bricks to be

used, the same shall be done by the contractor free of cost to obtain correct thickness according to drawings.

b. Jointing Vertical joints in alternate courses must be directly one over the other, horizontal joints shall truly level. The thickness of joints shall be between 3/8" to ½" 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.

Clause 5: WORKMANSHIP FOR CAST STONE AND JALI WORK:

Stones and jali shall be precast in 1:2:4 cement concrete, to sized and shapes shown on the drawings. An approved colour additive if specified shall be added to the concrete mix to give the desired colour. The exposed to view faces of precast stone or jali shall be well rubbed and grounded to present uniform finish. The contractor shall manufacture sample pieces and obtain the approval of the Engineer Incharge and such approved samples shall be used as standard for the whole job for colour and finish. The mortar used for jointing shall be 1:3 cement sand mortar. Where mild steel reinforcement is shown in drawings or specified in bill of quantities, the same shall be provided and anchored properly.

Clause 6: WORKMANSHIP FOR STONE MASONRY:

The stone shall be sound, free from decay flaws, cracks, veins or cavities and shall be as far as possible of uniform grey colour and texture and best obtained from specified quarry.

Porous stones such as coarse, grained sand stone should not be used which being previously dry absorbs more than 5% of its weight of water after 24 hours immersion.

The facing of stone shall be of live stone grey in colour and texture 3" to 4" thick, 2' long and 1' wide cut truly to dimensions with sharp edges and corners and would be set in cement mortar 1:2. The exposed face should be fine chiseled and sides, truly cut in plumb, rubbed and smoothened so that the vertical joints when fixed side by side may become practically invisible. The horizontal joints should have V shaped groove 3/8" thick and ½ " deep at intervals as shown in drawing

Clause 7: MEASUREMENT & RATES:

Brick work will be paid in cubical contents i.e. multiplying the length and breadth of wall with height of the wall. All the openings in the masonry wall will be deducted. Cast stone and Grey stone veneering of jail work will be paid for in square ft. of the superficial area covered. All mild steel reinforcement shall be measured as specified in section "Contractor". The rate of this item shall cover:

1. The cost of material, labour, curing, scaffolding racking out joint and appliance at site and all operations in connection with the installation of masonry in accordance with the drawing, finish schedules and as specified above.
2. Cutting and patching work required for installation of built in work:
3. All assistance to other trades for built in items to the satisfaction of the Engineer

Incharge.

4. Providing and fixing wall ties for joining or stone masonry with cement concrete members and cast stone veneering or a jali with brick masonry where specified in bill of quantities, these specification, or shown on drawing.
5. All mild steel reinforcement shall be specified in section concreter.

Clause 8: MASONARY:

1. Masonry: Definition:

   All mason's work in brick work / block work shall be referred to here in as masonry.

2. **Mason General:**

   All masonry shall be constructed in bonds and dimensions shown on the drawing or as directed by the Engineer Incharge.

3. **Work to proceed uniformly:**

   Where practicable the whole masonry in any structure shall be carried out at a uniform level and where break are unavoidable the joints shall be made in 'toothed' stops. Gross walls and all junctions of walls shall be formed at the time the wall are being built.

4. **Soaking and protection**

   All materials for masonry (other than cement mortar) or cement blocks shall be thoroughly soaked in clean water in tanks or pits for not less than 15 minutes before incorporation in the work.

   All work shall be kept wet whilst it is in progress, care being exercised to avoid washing mortar out of joints. Masonry shall be protected during construction from adverse climatic effects and shall be kept moist for a period of not less than ten days after completion.

5. **Mortar:**

   Unless otherwise specified or directed, all masonry shall be constructed in 1:5 cement and sand mortar.

6. **Joints:**

   Nor four courses of masonry shall rise more than five percent above the same laid dry.

   All, masonry work shall be laid true to line and level with horizontal courses and vertical prepared. Where painting is not specified the joints in each day's work shall be struct to depth of ½" whilst the mortar is green ad such striking of joints shall be contingency of contact.

7. **Fixtures:**

Holdfasts and similar fixtures shall be built in with the surrounding masonry in their correct position in 1:3 cement and sand mortar and 1:2:4 concrete depending on the type and amount of fixing required.

8. **Quoins and jambs:**

   Quoins and jambs shall be dressed at true right angle, and corner being straight and vertical. Unless otherwise specified or directed, quoins shall be laid alternate head and stretcher wherever possible.

BOND:

The bond used shall be English or such other as may be specified, and shall be carried throughout the work. At the corners alternate courses of brick work / block work shall be laid header and stretcher wise so as to bend the two walls together.

No bats shall be permitted except where absolutely required-for-obtaining the dimensions of the different courses of four obtaining the specified bend.

CLEARING WORKS:

No mortar shall be smeared over the face on completion of the work all exposed surface shall be washed down all stains removed.

FACING WORK IN POINTED BLOCKWORKS:

All the best shaped blocks and those most uniform in colour shall be reserved for face work

All face work must be finished with a neat drawn joint and pointed to specification. All block work must be washed down on completion and all stained removed from the face. ON completion of a work, all rubbish to be removed unsightly holes or pits leveled up, and the whole surroundings of the work left clean and neat before the final bills are prepared:

SECTION-4 PAVIOR

Clause 1: CONFORMITY WITH BRITISH STANDARD CODEOF PRACTICE:

Except as otherwise specified, flooring work shall be in conformity to British standard C.P.2004. In situ flooring, as applicable to the work shown on the drawings and as specified.

Clause 2: MATERIAL

a. Cement:

Shall be standard grey Portland cement conforming to the requirements of B.S. 12 "Portland cement".

b. Sand shall conform to B.S. 1199 "BUILDING SANDS FROM NATURAL SOURCES".

c. Aggregate:

Shall be in accordance with the requirements of B.S. 1201. "Aggregate for Granolithic concrete floor finishes."

d. Reinforcement

For R.C.C sub floor shall as specified under concrete.

e. Water shall be clean, free from any organic impurities, acids, alkalies, greasy or oily substances, either in solution or in suspension.

Clause 3: SAMPLES:

All the material used under this section shall be approved by Engineer Incharge and same type of material will be used throughout the work in progress. If Engineer Incharge desired to get the material tested, this will be got done by the contractor at his own cost from a Laboratory approved by the Engineer Incharge.

Clause 4: WORKMANSHIP:

A. Cement Concrete, Topping.

Material method of mixing and laying of cement concrete floors shall be in the manner as specified for mixing of cement concrete under section "CONCRETOR". The laying shall be in accordance with British Standard Code of practice 2004. In situ flooring part 2 concrete flooring and in manner as specified under section "CONCRETOR": Surface shall be truly leveled or shall be pitched to drain where required. The concrete after laying shall be finished by tamping the concrete with special tools to force the coarse aggregate away from the surface, then screening the floating with straight edges to bring the surface to the required finish level. While the concrete is still green, but sufficiently harended to bear a man's weight without deep imprint, it shall be wood floated to a true even plane with no coarse aggregate visible, sufficient pressure shall be used on the wood floats to bring moisture to the surface. After the surface moisture has disappeared, surface shall be steel toweled to a smooth even, impervious finish, free from trowel marks. After the cement has sent enough to ring the trowel, the surface shall be given a second steel troweling to a furnished finish. The use of addition al mortar or neat cement for giving a smooth finish is definitely prohibited. The surface over which the topping to

be laid shall be divided into square or rectangular panels not exceeding 50 sq.ft or as shown on the drawings the exact size will be decided by the Engineer Incharge. The symmetrical panels shall be formed by wooden or iron screeds of 1 ½" width and of a depth equal to the thickness of the floor concrete. The top of these screeds should be at the exact level of the finished floor. Alternate panels shall be laid on alternate days. The surface shall be tested with a straight edge to detect high and low spots which shall be eliminate. The contractor must keep a straight edge not less than 8' with parallel sides as well as a 10' spirit level, for the purpose of testing the trueness of the floor being laid throughout the time the work is in progress. In no case will hammering of any type be allowed on a finished surface.

Concrete shall be left undisturbed for 24 hours after laying. During the process of laying as well as for a period of 14 days after, the concrete shall be protected by suitable covering from the weather and the extreme of temperatures and kept wet for that period. During laying the covering will be damp gunny bags, and after laying damp sand or saw dust.

b. R.C.C. Sub-Floor

Materials, method of mixing and finishing R.C.C sub floor be as specified under section concreter'. Reinforcing bars shall be placed in the slab in both directions as shown in drawings. "Expansion joints" if shown on drawings or specified in schedule of quantities shall be ½" thick filled in with approved bitumen tic filler. Alternate bay construction of section 'Concreter' shall be strictly adhered to.

Clause 5: MEASUREMENT AND RATES:

The work under this section shall be measured as product of length and breadth of the area over which floor is laid.

Rates for all items under this section shall cover the cost of furnishing all the materials, labour, scaffolding and appliances at site and performing all operations in connection with laying all the items in accordance with drawings schedule of Quantities and as specified above. The rate shall include all assistance to other trades for built in items to the satisfaction of the Engineer Incharge. Reinforcement in R.C.C floors shall be measured and paid for as under "Concreter'.

SECTION-5 PORCELAIN TILES FLOOR

Providing and laying floors of Porcelain Tiles 600mm X 600mm (Lapata) / 1200mm x 600mm (Grit White) of UAE/ Malaysia/ Qua Granite Turkey make imported tiles including average 2-1/2" thick C.C base and mortar and matching colour, cement slurry for fixing of tiles, complete in all respects as per drawings, specifications and as directed by the Consultant/Engineer.

SECTION-6 JOINER: CARPENTEURE & GLAZIER

Clause 1: CONFORMITY TO BRITISH STANDARDS:

Except as otherwise specified carpentry and joinery shall be in accordance with B.S 1186"Quality of Timber and workmanship in joinery" as applicable to work shown on the

drawings and specified.

Clause 2: MATERIAL:

1. Timber: Timber shall conform to the applicable requirements of B.S 11886 “Quality of Timber and workmanship in joinery” Part 1 Quality of Timber: Where teak wood is mentioned in the specifications schedule of items and drawings, it shall be best quality Burmah teak wood. Wood core for flush doors shall be of best quality block board. Timber shall be well seasoned felled for not less than two years before use, uniform in substances and colour, free from large or dead knots, cross grains, wind shakes, cracks or blemishes of any kind. The sap should be entirely removed. The fibers shall be straight and smooth and shall not give a dull appearance. When the timber is struck it shall not give a dull sound. Any timber rejected by the Engineer Incharge shall be removed from the site of the work immediately.
2. Bolts, Nuts & Studs etc. Bolts, "nuts and studs shall conform to the requirements of the applicable sections of B.Ş. 325 “Black Gup and Counter sunk Nuts and Washers.

   BS 916 “Bolts, screws and Nuts":

   BS 1494 "Fixing Accessories for building purposes”
3. Nails: Nails shall conform to the requirements of B.S 1202 “wire Nails and cut: Nails for building purposes"
4. Screw: Screws shall conform to the requirements of B.S. 1210 “Wood Screws”.
5. Wood preservative: Wood preservative shall be creosote or pentachlorophenol and shall conform to the applicable requirement of B.S. 1286 “Classification of wood preservatives and their method of application.
6. Glue: Glue shall conform to the applicable requirements of B.S 745” Animal Gule for wood or B.S: 1204 “Synthetic Resin (Phenolic and Amino Plastic Adhesives for construction work in wood.”
7. Plywood: Plywood shall conform to the applicable requirements of B.S 1455 “British made plywood” for workmanship and quality. Unless otherwise specified or shown or the drawings the thickness of the plywood shall be 3/4” and shall be teak veneered for all exposed faces.
8. Formica:. It shall be of approved shade or pattern.
9. Flush door: Flush doors shall conform to B.S. 459.'"Flush.door” & B.S.C.P. 151 part-I. “Flush wood door” It shall have 5 ply 6mm thick plywood face veneered on all exposed face, conforming to the applicable requirements of B.B.459.
10. Class:-
    i. General: Unless otherwise indicated glass shall be of the following weight per square foot for various sized mentioned below
       i.i Not exceeding 12" x 14" - 16 óż.

i.ii Exceeding 12” x 14” but not exceeding 24” x 21 oz.

i.iii Exceeding 24" x 24" but not exceeding 30" x 30" -26 oz.

i.iv Exceeding 3.0x 30" but not exceeding 36" x 36"-32oz.

i.v Exceeding 36”x 36" plate glass (1/2 thick).

For other sized smaller dimensions will determine the weight. Glass shall be free specks, bubbles, distortion and flaws of every kind.

ii. Obscure glass obscure glass shall not be less tan 7/32 inches thick with one side, smooth and the other side with pattern to be selected by the Engineer Incharge.

iii. Plate glass: Plate glass shall be first quality polished transparent glass conforming to the applicable requirements of B.S.952 “Glass for Glazing”. Unless otherwise indicated, plate glass shall be ¼” thick with the two surface ground smooth and polished as to give clear undistorted vision and reflection

iv. Wire glass: Wired glass shall be Georgian wire ¼” polished plate conforming to the applicable requirement of B.S. 962 "Glass for glazing”.

v. Putty: Putty shall be an elastic glazing compound suitable for interior and exterior glazing shall conform to the requirements of the B.S. 544:"Linseed Oil Futty for use wooden frames”. The putty for metal frames shall be of a type specially prepared for use with metal frames conforming to the applicable requirements of the British standard or of a make approved by the Engineer Incharge.

vi. Hardware: Hardware shall be of best quality and make of approved manufacture. Their size, material and number shall be as detailed in the tender documents.

vii. Paint: Paint shall be as specified under section "Painter and Decorator". Wood preservative shall conform to B.S 1202.

Clause 3: SAMPLES:

All samples of the material used for the work under this section shall be approved by the Engineer Incharge and same type of material shall be used throughout the work. If the Engineer Incharge desires to get the material tested, this will be got done by the contractor at his own cost. from a laboratory approved by the Engineer Incharge.

Clause 4: WORKMANSHIP:

1. General: Wood work shall be neatly and truly finished to exact dimensions and details as shown of the drawing. The plans and scantling shall be sawn slightly in excess of the actual measurements required to allow for planning. All joints shall be simple tenon and mortise joints unless otherwise specified or directed by the Engineer Incharge. All mortise and tenon joints shall fit truly and fully Holes of correct size shall be drilled before inserting screw. Driving in or starting in screws with a hammer shall not be allowed. All screws shall be dipped in oil before being inserted in the wood. If

after the wood work has been erected, any undue shrinkage or bad workmanship is discovered, the contractor shall forthwith amend the same without any extra charge. All portions of timber, built into or against or close to masonry or concrete or used as sub frame for ceiling or paneling shall be treated with wood preservative as application which is included in the rate.

2. Door and window Frame: Door and window frames shall conform to the applicable requirements of B.S. 1567 “Wood door frames and linings”. The door frame shall be of best quality Burmah Teak or of the timber specified and shall be fabricated of the exact sizes and dimensions as provided in the drawings stops shall be of best quality timber of same specifications as that for frames. Where the door frames are not to have any sills the vertical length shall be embedded in the floor at least 2" deep. No extra payment will be made for this extra length. Frames shall have a rebate to receive the leave, the rebate shall be ½” deep and of width equal to the thickness of the leaf. All the frames shall be ready before the work reaches sill level so that they can be built in as the work proceeds. The frames shall be secured to be brick work or concrete by holdfasts or expanded bolts as shown on the drawings or as approved by the Engineer Incharge. The number and sized of Hold fasts or Expanded Blots to each frame shall be 6' x 3/16” or as indicated on the drawings on in table elsewhere in these specifications.

3. Paneled Doors & Windows: Paneled doors and windows shall conform to the applicable requirements of B:S.459 “Paneled and glazed wood doors” part 1 and B.S Code of Practice 151 Part 1

   Doors shall be of well-seasoned Burmah Teak wood or of the timber specified. Panel shall be of teak veneer plywood or glass as indicated in the drawings. Stile, rails and beads shall be of well-seasoned best quality burmah teak wood. Glazing beads shall be removable on the exterior.

4. Flush Doors: Flush doors shall conform to the applicable requirements of B.S. 459 “Flush Wood Door" and B.S code of practice 151 “Door Windows” Part-I.

   Door leaf shall be of well seasoned solid core of block board, cross grained and face veneered with 5 ply 6mm thick plywood of teak on each side. Frame shall be of teak or other wood as indicated on drawings and schedule of quantities. Door leaf shall have well-seasoned hard wood edge strips of quality and design shown of drawings on all four edges of leaf. Overall thickness of door leaf shall be as shown on the drawings.

   Face veneers shall be free of saps and mineral streaks, Knots and irregularities and shall be suitable for paint and polish finish. Veneer construction shall provide for equal stress on both side to ensure absence of warp: Flush doors shall be screwed to the frames by means of hinges which shall be counter sunk in the wooden frames.

5. Toilet doors: Toilet doors shall be veneered flush type doors as specified in 'd’ above fixed as shown on the drawings & schedule of quantities. <u>These doors shall be supplied and fixed with bolt hinges, occupancy & slide bar latches, coat hook, rubber tipped bumper and paper holder in toilet compartment. Cost of the hardware shall</u>

be included in the rate for doors.

6. Glazing: The sized of glass indicates on the drawings are approximate only, and the actual sized required shall be determined by measuring the frames to receive the glass. All glass shall be factory labeled on each pane and the lable shall not be removed until finally approved by the Engineer Incharge. One field coat of paint shall be applied to windows before glazing. Glazing will fixed with best quality gold size putty, teak wood or steel moulding as directed at as shown of drawings or give in · schedule of quantities. Glass if specified to be fixed with putty shall be bedded in

   putty and face puttied. Saches shall be fixed so that they can not move until putty or glazing compound has set:

   Glass shall be protected against damage. After inspection, any label and paint sports shall be removed from the glass and glass shall be washed clean. Damaged or broken glass shall be removed and replaced before acceptance at no expense to the owner.

7. Glass handrail: It shall consist of flowered or patterned plate glass attached to aluminum mullions fixed to floor as shown on drawings.

8. Teak wood Paneling: "Teak shall be of well seasoned best quality wood. Unless otherwise indicated the planks shall be ¾" thick. Deodar wood battens shall be screwed to hard wood plugs fixed in slab or wall creosoted before fixing as specified above. Teak wood panels shall be screwed to the deodar wood under frame as shown on the drawings. Teak wood beading shall be provided wherever indicated on the drawings.

9. Wood Handrails: It shall be of well-seasoned wood. Handrail shall be accurately shaped to detail and made in as long sections as possible. Joints shall be fastened from the underside with concealed hand rail bolts. All changes in direction shall be have smooth even curve cut out of one solid piece. Handrails shall be secured to metal railing with ¼"x 2" screws at 12" centers. It shall be French polished or wax polished as under section " Painter Decorator".

   Hardware shall be chromium plated brass of local manufacture as detailed in table elsewhere in these specifications. It shall be carefully fitted and securely attached. Upon completion of the work all locks and hinges shall be oiled and all hardware shall be demonstrated to work freely in the presence of owner's representative. Keys shall be fitted into their locks and upon acceptance of the work, Key shall be tagged and delivered to the Owner.

   i. Sub-Frames for coiling, wall paneling wooden floors and cat-walks:-

   They shall be of best quality deodar wood of the size and fixed as shown in drawings. Enough of nails, screws etc. shall be used and shall be specified under materials. The timber members shall be given two coats of wood preventative before they are installed in position.

Clause 6: PAINTING:

All wooden doors, windows, paneling's etc. shall be painted, polished as specified in schedule of quantities. The specification for painting, polishing etc, shall be as given

under "Painter and Decorator”

Clause 7: MEASUREMENT AND RATE:

The measurement of wood work will be the net area, after fixing, no allowance being made for waste, overlaps, rebates or the like. All doors except toilet doors shall be paid by measuring the area of clear opening in brick work or concrete. Toilet doors will be measured for the net area of door including frame without gap at bottom. The rate for all the items under this section shall cover the cost of furnishing all materials hardware, Labour, scaffolding creosoting Paintings or polishing as specified under "Painter & decorator" and appliances at site and performing all operations in connection with the installation of carpentry, joinery, glazing, hardware in accordance with drawings, finish schedule and as specified above.

SECTION-7 STEEL ERECTOR AND METAL WORKER

Clause 1: MATERIAL:

i. Steel Channels: shall conform to the applicable requirements of B.S. 15 'Structural steel'.

ii. Steel Plates: shall conform the requirements of B.S. 14449 "Steel Plates sheet and Strips".

iii. Steel Sections" shall conform to B.S 15 "Structural Steel".

iv. Glazing: shall be as specified under " Joiner Carpenter and Glazier".

v. Wrought Iron: shall conform to, B.S 51 "Wrought iron for General Engineering puroses" and B.S. 858 Best Yorkshire wrought iron" as suited for the purpose.

vi. Metal Casement Windows and Casement Doors shall conform to B.S. 990 metal Casement windows and casement doors for domestic building or as shown of the drawings and specified in the schedule of Quantities in case of locally rolled window sections.

Clause 2:- SAMPLES:

All samples of the material used for the work under this section shall be approved by the Engineer Incharge and same type of material shall be used throughout the work in progress. If the Engineer Incharge desires to get the material tested, this will be got done by the contractor at his own cost from a Laboratory approved by the Engineer Incharge.

Clause 3:- WORKMANSHIP FOR DOORS- WINDOWS AND SHUTTERS:

a. Steel Casement Windows: ventilators and doors.

Shall be medium universal sections. Vent and frame section shall have a depth front in back of 1-5/16" and steel thickness of 3/16" conforming to requirements of B.S.990 "Metal Casement windows and Casement Doors". All sections shall be hot rolled low carbon steel shapes and shall be solid one piece sections with flanges rolled integral. Flanges forming the weathering contracts shall provide not less than ¼" contact at both inside and outside points of closures. If some sections are shown on drawings as composite section made by welding steel channels, angles and plates, these would only be accepted in lieu of one piece section under these specifications. In case it is specifically mentioned in the schedule of Quantities, that locally rolled section are to be used in manufacture of steel casement windows and doors, then the 'E' section used shall be 1" deep and 1/8" thick unless shown other wise on the drawings.

Corners of frames and vents shall be mitered, solid welded and shall be finished flush and smooth on surface that will be exposed after installations

Where composition steel sections are shown on drawings, weld shall be continuous but shall be staggered in welding in wider to avoid warping and twisting of members. Completed members shall be in one length without splices and shall be straightener so that they shall not be more than 1/16 inch from a straight plane in either direction for the full length of member. The standard of workmanship acceptable under the specification shall be equal to "Crittal Standard". Care shall be taken in handling doors,

windows etc. During transportation and at job site. These plumb, shall be stored under cover. These shall be installed only by skilled mechanics, set plumb, level, in alignment and properly braced to prevent distortion. These shall be erected in position as the building progress using proper holdfasts as shown on drawing or counter sunk bolts and screws as dictated by site requirements. Hinges for windows shall be of steel or malleable iron with non ferrous bushings or washers. Two hinges per ventilator shall be furnished, except that for ventilator exceeding 5'-6' in height three hinges shall be furnished. Ten inch long solid Bronze or moulded heavy gauge galvanized iron peg slays, one for each ventilator shall be provided. These shall be of manufacturer's standard design and shall be secured to windows with corrosion resisting bolts. All single locking handle in accordance with manufacturers, standard or as approved by the Engineer Incharge shall be furnished point locking device with steel connecting rode shall be furnished. Locking handles shall be smooth finished solid bronze. They shall be attached securely to the windows with brass or other corrosion resisting screws. Metal glazing bead if shown on the drawings shall be galvanized of minimum 18 SWG and in the size details shown on the drawings or shall be of a standard detail of manufacturer approved by the Engineer Incharge.

Three hinges of steel or malleable iron with non-ferrous bushings or washers shall be provided for each leaf of the doors. Approved type locks and other fittings shall be installed as shown on the drawings, bill of quantities and as specified elsewhere in these specifications. After installation, doors, windows and ventilators shall be protected from construction hazards that will interfere with their operation or damage their appearance or finish. They shall be cleaned on inside and outside of all mortar, plaster, paint or other foreign matter to present a neat appearance. Hardware and moving parts shall be lubricated.

b. Glazing:

Shall be as specified under section "joiner Carpenter and Glazier".

All doors, windows and ventilators shall be painted with three coats of approved paint.

c. Rolling Shutters:

Shall be of solid front made of 22 gauge G.I. sheet strips G.I. sheet strips shall be 22/1" wide and shall be machine moulded so that covers and silts represent neat appearance. The rolling rails and frames shall be of approved make and secured firmly to concrete by means of bolts and nuts. The rolled top portion shall be encased in 1/8" thick sheet casting. When installed the shutters shall be capable of easy operation and provided with approved type of handles, eyes from padlock etc. They will be painted two coats of anti-rut and three coats of approved paint.

Clause 4:- RAILING

a. Ornamental Wrought Iron/S.S Railing:

Wrought iron shall be well formed to the shape and size shown, with sharp lines, curves, angles and smooth surfaces. Balustrades shall be formed with all turns and casing and shall be secured to the top rail at intervals of 12 inches on centers or as directed. Balustrades shall be set parallel to each other to horizontal lines and to the rake of the

stairs. The balusters and posts shall be set into concrete stairs, curbs and slabs etc. As directed. The space between the balusters or posts and the opening shall be solidly filled with molten lead, trimmed flush with the finished floor, stair or curb. Wall handrails shall be supported on rail brackets, securely fastened to back plates. All ferrous surfaces, except surfaces embedded in and / or in contact with concrete or terrazzo, shall be shop primed.

b. Wooden handrails:

It shall be of Burmah teak wood and as specified under Section " Joiner' Carpenter and Glazier"

c. Aluminum Doors and Windows:

Aluminum doors- windows, ventilators, fixed frames etc. shall be provided by the manufacturer. Any breakage or damage and other defects of any sort should be rectified before erection. All the metal frames as said hereinabove are to be erected after the masonry or concrete work is complete with the hold fast etc. bending for its full depth and grounding etc, complete. Contractor should ensure direction of these metal frames to be in plumb line, level and at their required position as shown on the drawings. It will involve all cutting, painting and other operations complete.

Clause 5- STRUCTURAL STEEL WORK:

All finished steel shall be well and clearly rolled to the dimension's sections and weight as specified or required.

All members shall be sound and free from cracks, scales, blisters, surface flaws, laminations cracked edges and defects of every sort. If any structural member is later discovered to be having any such defects, the Contractor shall at his own cost replace such components to conform to the Specifications. The structure shall be shop fabricated in convenient number or pieces and these pieces shall be reunited, welded, riveted or field bolted to the architectural details and structural drawings at site prior to their being lifted in position. In no case will be Assembly be allowed on the false work.

All points will be out truly square as to butt properly together and will be made only in such positions as shown on drawings or as directed by the Engineer Incharge. All field work of fabrication riveting, bolting and welding would be in the best workmanlike manner. During erection, bending, straining or pounding with sledges shall not be allowed.

The structure will be given two coats of suitable lead primer. All connections meeting surface of structural steel work shall be covered with sufficient red lead to ensure that it squeezes out all round in riveting or bolting up. The structure will be fixed as shown on drawings by bolts and bed plates embedded in masonry or concrete. The shoe plates shall be fabricated along with and the slotted sides shall be correctly, aligned and fixed according to the position shown on the drawings. Finally it shall be coated with two coats of approved rust proof paint as pacified under 'Painter'.

Clause 6- MEASUREMENTS & RATES:

Payment for doors, windows and ventilators will be made by measuring clear opening

area in brickwork or concrete. Railing with balustrades and with brackets shall be measured by the length of handrail. Structural steel work will be measured and paid for by weight.

Rates for all the items under this section shall cover the cost of furnishing all the materials, labour, scaffolding and appliances, at site and performing all operations in connection with their installation in accordance with instructions of the Engineer-in-Charge. It is particularly mentioned that the rate for doors and windows etc. shall include supplying, fixing, including glazing, fittings such as locks, peg stays, handles etc. as specified and indicated on drawings and Bills of quantities, and painting etc as described above Bills of quantities, and painting as described above complete. It shall also include painting and polishing of balustrades and railings as described.

The rate for structural steel shall include supply, fabrication, fixing the same in position as desired and painting 2 coats of primer and 2 coats of rust proof paint as specified under "Painter & Decorator".

SECTION-8 ALUMINUM DOORS AND WINDOWS

1. **Scope:-**

The work covered under this section comprises the following:-

i. Fixing in position of aluminum doors, windows and ventilators complete with metal ware, fixtures as shown in the drawings, and specified in these specifications and the Bill of quantities. Aluminum doors and windows must be heavy section deluxe type of approved manufacturer,

ii. Fixing plate glass of specified quality to doors, windows and ventilators.

2. **Materials:-**

i. The aluminum sections for windows shall be extruded from aluminum alloy of composition H-9 (99% AI.0.5% Si) of approved equivalent. The aluminum plates and sheets shall be of the same composition. For door it shall be alloys He-9 WD (Box-section) or approved equivalent.

Mongery, fittings and locks shall be of bronze, staircase steel and aluminum as shown on the drawings or as approved by the Engineer-in-Charge,

ii. **Glazing:-**

The clear plate glass shall conform to latest revised BS 952, special type of glazing such as toughened glaze, armors plate glass, tinted glass, wired glass and colored glass shall be of approved make and of sizes specified on the drawings and specifications.

The supplier shall indicate to the Manufacturers that latest and approved method of jointing employed in the manufacture of high class work viz. Mechanical jointing, reinforced with concealed welding shall be used in the manufacture of doors and windows. The workmanship of Metal doors and windows shall conform to applicable provision of B.S.990: 1970

iii. **Fixing:-**

The fixing of doors and windows to concrete openings shall be carried out in approved method as indicated in the drawings or as directed by the Engineer-in-charge, Provision of necessary groove or rebate and holdfasts in the concrete shall be made in the formwork and no holding or drilling shall be allowed in the exposed concrete finishes. These shall be executed in position after the building structure is completed and by using proper holdfasts as shown on drawing or counter sunk bolts and screws as per site requirements.

3. **Glazing:-**

The word of fixing glazing to doors, windows, ventilators shall carried out with the type and special quality of glass specified for each door and windows and as indicated in the drawings or as directed by the Engineer-in-charge.

Plate glass shall be best quality transparent / polished glass conforming to applicable requirements of latest revised B.S.952, “Glass for Glazing” and as specified herein under:

Clear plate glass 5mm thick or as specified. The sizes of glass indicated on the drawings are approximate only, and the actual sizes required shall be determined by measuring the frames to receive the glass. All glass shall be factory labeled on each pave and the same shall not be

removed until finally approved by the Engineer-in-charge: Glass will be fixed with best quality mastic compound of approved make suitable for thick glass, tinted glass or wired glass or with special bead or molding as directed or as shown on the drawings or specified in the Bill of Quantities. Special rubber lining and weather proof brush joints for sliding surfaces shall be provided where indicated. Glass shall be protected against damage. After inspection, labels and paint spots shall be removed from the glass and glass shall be washed clear. Damaged or broken glass shall be removed and replaced before acceptance.

4. **Measurements and Payments:-**

Payment for doors, windows and skylights partition walls will be made by measuring clear opening area in the brick or concrete in Sq.ft. Rates for all items under this section shall cover the cost of furnishing all the materials, labors, scaffoldings and appliances at site and performing all operations, in connection with their installation in accordance with instructions of the Engineer. It is particularly mentioned that the rates for fixing doors and windows etc. shall be included foreign of all iron mongory fittings such as locks, peg keys, handles, push plates, kicking plates, door closers etc as specified and indicated on the drawings, including fixing of glazing glasses.

SECTION-9 PLASTER WORK

Clause-1: CONFORMITY WITH BRITISH STANDARD CODE OF PRATICE:

Except as otherwise specified plaster work shall be in conformity with B.S.C.P. 211 "Internal Plastering" and C.P 221 "External rendered finishes" as applicable to work shown on drawings and specified.

Clause-2: MATERIALS:

i Cement shall be as specified under section "Concreter".

ii Sand shall be of medium coarse grain obtained from local approved quarries subject to the approval of the Engineer-in-charge. It shall conform with B.S 1198.

iii Water shall be as specified under section "Concreter".

iv Lime shall be as specified under section "painter & Decorator".

Clause-3: SAMPLES:

All the material used for plastering, shall be approved by the Engineer-in-charge and same type of material will be used throughout the work in progress. If the Engineer-in-charge desires to get the material tested, this will be got done by the contractor at his own cost from a Laboratory approved by the Engineer-in-charge.

Clause-4: WORKMANSHIP:

a. <u>Preparation of Surface:</u>

The surfaces on which plaster is to be applied should be in case of brick walls properly racked and wetted before application of plaster. In case of concrete face to receive plaster, all surfaces shall be properly roughened by dragging wire brushes while the concrete surface is still raw or by backing if the surface had hardened so that 40% of the surface is roughened to approval. This is included in the rate of plaster.

b. <u>Plastering:</u>

Plasterwork shall be done in conformity with B.S Code of Practice 211 "Internal plastering" & B.S. Code of Practice 221 "External rendered finishes". All tools should be cleaned by scrapping and washing at the end of each day's work, or before use. Metal tools should be cleaned after each operation. All tolls should be examined and thoroughly cleaned before plastering is begun. All corners and arises shall be rounded if required while plastering and the rate of plaster is inclusive of this proviso. The plaster shall be laid to a true and plumb surface and tested frequently with plumb bob and straight edge not less than 10 feet in length. All. horizontal lines and surface shall be tested with a level and all jambs and corners with a plumb bob as the work proceeds. All moldings shall be worked true to template and shall be neat, clean, level and parallel or truly plumb as the case may be.

Wherever a thickness of more than ¾" is specified it shall be applied in 2 coats' rendering coat and final coat. The rendering coat shall be carried to full length of walls or natural breaking points. No vertical or horizontal joints, which show themselves, shall be permissible. The rendering coat shall be roughened with waving lines drawn by wire brushes when wet to provide bond for final coat. The final coat shall be applied only after the rendering coat has been properly cured. Before final coat is applied the rendering

coat shall be properly wetted. The final coat shall then be applied and finished with wooden floats to present smooth and uniform surface. All putlog holes shall be filled up in advance of the plastering as the scaffolding is being taken down. The plaster is kept wet for 10 days after completion.

c. Patching:

Plaster containing cracks, blisters, pits, etc or discoloration will not be acceptable. Such plaster shall be removed and replaced with plaster conforming to this specification and approved by Engineer-in-charge. Patching of defective work will be permitted only when approved by the Engineer-in-charge and such patching shall match existing work in texture and color with expanded metal on brick or concrete junctions.

d. Floating Coat:-

Floating coat of neat cement if specified in schedule of quantities shall be carried out as follow:

Immediately after the surface has been plastered and while the plaster is still green a floating coat of neat cement shall be applied on it and the surface rubbed smooth with steel trowel. No trowel marks are to be left of on the surface. If trowel. 1 marks are visible after the surface has been finished it may required to be dismantled and redone. No payment for the work dismantled will be made.

Clause-5: MEASUREMENT AND RATES:

Plaster shall be measured as product of length and height of walls over which it is laid. One side deduction of opening will be made if plastered both faces of the wall and no deduction of opening will be made when plaster is one side of the wall. No addition for plaster of jambs and soffits of opening will be made and paid for. Plaster on ceiling etc. will be measured as total area covered. The rates will include:-

i. Plastering surfaces and corners with the mortars specified including cost of labor and materials.

ii. Preparing, cleaning and watering the surface to be plastered.

iii. Water and protecting the plaster after completion.

iv. Provision, erection and removal of scaffolding and tools and plants like special floats, levels and plumb bob.

SECTION-10 PAINTER & DECORATOR

Clause-1: CONFORMITY WITH BRITISH STANDARD CODE OF PRATICE:

Excepts as otherwise specified, all painting shall be applied in conformity with C.P 231 "painting" as applicable to the work.

Clause-2: COLOUR SCHEDULE:

The colour and surface finish required for various materials shall be as approved by the Engineer-in-charge.

Clause-3: MATERIALS:-

i. Paint shall be high grade enameled products of known manufacturers and when approved, shall be delivered on the work in original unbroken packages bearing the makers name and brands Materials shall conform to the applicable British Standard Specifications and shall be used in accordance with the manufacturer's printed directions.
ii. Colour pigments shall be pure, non-fading pigments finely ground; at least 99 percent passing a 325-mesh sieve.
iii. Emulsion paints Robialac Berger Plastic emulsion or I.C.I. Dulex emulsion paints will be used.
iv. Distemper shall I.C.I. Vinyl emulsion or Berger Nu emulsion. It shall consist of lime proof pigment. Distemper shall be delivered on the work in original unbroken packages bearing the maker's name and brands. :
v. Snowcem Durocem weather shield shall be obtained sealed tin. It shall be delivered on the work in original and sealed packages bearing the maker's name etc.
vi. Lime shall conform to B.S. 890: “Building Lime"
vii. Wax Polish shall be mansion/ wax polish or of equal brand approved by the Engineer-in charge.
viii. Spirit Polish shall have shellac of approved quality.

Clause-4: SAMPLES AND DETAILED APPLICATION SPECIFICATIONS:

Certified data, test samples and detailed application specifications shall be submitted for approval of the Engineer-in-charge. The detailed application specifications, when approved by the Engineer-in-charge will become the approved application specifications. Any subsequent changes in the approved application specifications shall be approved by the Engineer-in-charge. Samples of the paints used for the work shall be approved by the Engineer-in-charge, and same type of Paint shall be used throughout the work in progress. If the Engineer-in-charge desires to get the material tested this will got done by the Contractor at his own cost from a Laboratory approved by the Engineer-in-charge.

Clause-5: WORKMANSHIP:

1. Preparation of Surfaces:

i. All surfaces shall be clean, dry and free from dust at the time any coating is applied. Base coats applied shall be in good condition and surfaces well covered by touching up any base or abraded sports. Base coats shall be rubbed smooth.
ii. Woodwork shall be smooth and free from raised grain or other surface imperfections.

Knots and pitch streaks shall be shellacked before painting. Nail holes, cracks and similar blemished shall be neatly puttied and sanded smooth after priming and before body or finish coats are applied.

iii. Concrete surface shall be cleaned until free of all loose and foreign material and excess mortar, using metal scrappers and wire brush if necessary. Grease and Oil spots shall be removed by suitable cleaning compound and then rinsed with clean water to remove all traces of alkali. Efflorescence (alkali salts) shall be removed by washing with 5 to 10 percent solution of muriatic acid, allowed to stand until effervescing ceases, then rinsing with clean water to remove all traces of acid. Interior concrete surfaces shall be washed with zinc sulfate solution. Treated surfaces shall be allowed to dry thoroughly before any distemper or snowcem Durocem is applied.

iv. Plasterwork shall dry a minimum of 60 days prior to distempering or snowceming. Surfaces shall be clean and free from grit, loose plaster and surface irregularities before distemper or snowcem Durocem is applied.

v. Ferrous surfaces that have not been shop coated shall be cleaned and painted with protective paint conforming to British Standard Specifications B.S 2521/4 followed by finish coats. Shop coated metal shall be protected from corrosion before and after installation by treating corroded areas immediately upon detection.

Abraded spots on shop-coated surfaces shall be wire-brushed and touched up with the same material as the shop coat

2. Touching up:

At the completion of other branches of work all finished work shall be touched up and restored where damaged or defaced and the entire work left free from blemishes at no expense to Owner.

3. Painting of Timber & Metal Surfaces:

Paint and finishing materials shall be free from skins, lumps or any foreign matter when used. Pigments and fillers shall be kept well stirred while being applied. Work that is not to be finished under this section shall be protected against spatters; stains or soiling and each type of finish shall be protected against similar defacement by other finish and shall be left clean.

Each coat of paint shall be evenly worked out and allowed to become dry before any subsequent coat is applied or rubbing done and shall be of different tint from that of preceding coat.

Finish coats shall be of the exact shades selected. The finished work shall be free from rungs and sags, defective coverage and clogging of lines or angles. Edges of Paint adjoining other materials or other closures shall be full and clean cut without over lapping. Adjacent and uncoated areas, and installations shall be protected by the use of drop clothes or other approved precautionary measures. Spray painting shall not be employed for joinery work, which must be done by brush to obtain proper penetration into joints and cracks etc. When the painting is applied by brushes, the following instructions shall be followed:-

i. Brushes shall be in conformity to the applicable requirements of B.S 2992.
ii. All coats shall be spread as evenly and smoothly as possible means of crossing and laying off, the later in the direction of the grain in case of wood work. The priming coat must be mixed thinner than subsequent coats to assist penetration on adhesion. The final coat shall be very carefully crossed and laid off so that brush marks are not visible.
iii. Brush shall be reversed at frequent intervals so that wears down evenly. A free easy stroke shall be cultivated. Short and Jerky strokes results in uneven surface. Stretching the stroke too far shall not be allowed to avoid an uneven surface.

4. <u>Distempering Concrete Surfaces:</u>

Before work of distempering is commenced the plaster surface must be sized with a priming coat consisting of size to which a little distemper has been added and which should be applied hot. Distemper shall be applied quickly and boldly with large flat brushes of approved make. The brush is to be dipped and stroked cross-wise on the surface and then immediately stroked up and down, this process shall be considered to form one coat of distemper. The distemper shall be mixed in the manner specified by the makers and each coat shall be inspected and passed by the Engineer-in-charge, before the next coat is applied. The finished surface shall be carefully stippled to remove any brush marks. The contractor shall carry out as many coats as are specified in the schedule of quantities in accordance with the above specifications. The number of coats specified should be enough for producing a uniform smooth finish and if the finish, produced by the contractor is not upto the requirements, he will be required to apply as many more coats as maybe required to produce the required uniform finish, and no payment for the extra coats applied to produce the desired uniformity will be made.

5. <u>Snowcem Durocem Painting/ weather Shield to Plastered Surfaces:</u>

No further material shall be added to the snowcem Durocem obtained in sealed tins. Where different colors may have to be mixed together to provide the desired shade, the quantities of the various colors required to give the desired shade shall be intimated by the Engineer-in-charge and this shall be mixed together by weighing (not by measuring volumes of different colors). The weighed quantities of snowcem Duroçem should be mixed as well as possible by means of trowel on a clean mixing board after which it must be sieved through 202-mesh sieve. This preparation i.e, mixing with trowel and sieving may have to be repeated two or more time until when a trowel is passed over the surface of separate colour remains.

Snowcem Durocem must be mixed in two stages. First by adding a little quantity of water to form a paste and the further quantity of water being added to get a mix of liquid consistency. In the first stage one measure of water to two similar measures of snowcem durocem be thoroughly stirred and allowed to stand for 10 minutes. A further measure of water should then be added and thoroughly mixed. This mix must be applied within one hour of the mixing. The lid of the container must be tightly replaced immediately after the material has been taken out from it. Immediately before the first coat is applied the surface shall be thoroughly saturated with water.

The snowcem Durocem should be applied with brushes conforming to British Standard 2992. The first coat of snowcem durocem shall be well scrubbed and allowed to set for a period of 24 hours after which period the next coat shall be applied. The number of coats shall be as specified in Schedule of quantities but if the contractor has not produced finished surface to the satisfaction of the engineer-in-charge he shall do more coats till a uniform smooth surface is obtained at no expense to the Owner.

6. White Washing:-

The unslaked lime shall be placed in a large vessel full of water and shall be thoroughly mixed and stirred up with pole or rod until the mixture attains the consistency of thin cream. It will then be strained through a clean and coarse cloth and two chattacks of gum boiled with six chattack of rice added for each cubic foot of lime. The white wash then being applied in the same manner as distemper. When completed the wash shall not crack or come off on finger when rubbed.

7. Colour Wash:-

It is prepared and applied in the same manner as white wash except that sufficient coloring matter shall be added to give the desired tint on drying. When completed, the surface must have uniform colour free from blotches. If the finished surface is not to the expectation of the Engineer-in-charge, Contractor shall apply extra coat at his own cost till such finish is attained.

8. Wax Polishing:-

Before wax polishing is started, the surface shall be knotted, stopped and sand papered till a complete smooth and even surface is obtained. The wax polish must be applied strictly in accordance with the specifications and instructions issued by the manufactures. It shall contain the minimum of coloring material to keep the finished surface as light as possible. The polish should be rubbed into wood until all the pores have disappeared.

9. Spirit Polishing:-

It shall be prepared by dissolving 3 ounces of shellac-dissolved cold in a pint of spirit and shall be applied on the prepared surface as specified under Wax Polishing.

Clause-6: CLEANING:-

All cloths and cotton waste that might constitute a fire hazard shall be placed in closed metal containers or destroyed at the end of each day: Upon completion of the work, all staging, scaffolding and containers shall be removed from the site or destroyed in an approved manner. Paint spots, oil or stains upon adjacent surfaces shall be removed. The contractor shall be responsible for the protection arrangement of other work while painting or distempering work is in progress.

Clause-7: MEASUREMENT AND RATES:-

The work of painting wood and metal surfaces, and wax polishing shall not be measured separately but shall be paid with the item over which it is done.

Distempering, snowcem Durocem painting, white washing or colour washing on concrete and plastered surfaces shall be paid on the basis of area over which they are done and this area shall be obtained by multiplying length or breadth by height less the area of

openings for doors and windows in the surface. This reduction for area of openings shall be one time the area of the opening if the surface is treated on both sides and no deduction of opening if surface is treated on one side only. No addition shall be made for jambs, soffits, sills, etc. where two different type of finishes are specified for two sides of the surface half the opening area shall be deducted from each type of finish. The rate for all the items under this section or paid with items in other sections shall cover the cost of furnishing all materials labor, scaffoldings and appliances at site and performing all operations in accordance with instructions of the Engineer-in-charge, Schedule of Quantities and as specified above.

SECTION – 11
ROOFER AND WATER PROOFER

Clause-1: CONFORMITY TO BRITISH STANDARDS:-

Except when otherwise specified, the work of waterproofing shall be in accordance with B.S.C.P. 14.101 "Bitumen felt roof covering" and B.S.C.P 1.201. "Mastic Asphalt roofing" as applicable to the work specified.

Clause-2: MATERIALS:

Materials shall, where applicable, be delivered to the Site in manufacturers, original unopened containers with manufacturers label having grade and name clearly marked thereon. A copy of printed instructions of manufacturers shall be supplied to the Engineer-in-charge.

1. **Cement:-** Cement shall conform to specifications as described under section "Concreter"
2. **Additive for Foam Concrete:-** Additive for Foam Concrete shall be of manufacture approved by the Engineer-in-charge.
3. **Water:-** Water shall be as described under-section "Concreter".
4. **Bitumen:-** Bitumen shall conform to B.S. 1310 having a softening point not lower than 160 F
5. **Bitumen Felt:-** Bitumen felt shall conform to B.S.747 saturated water proofing bitumen felt type 1A.
6. **Sand:-** Sand shall be as specified under section "Plaster".
7. **Gravel:-** Gravel shall be ¼" to 5/8" size and shall be dry, free of dust soil or foreign matter. All shall pass through a ¾"screen.

Clause-3: SAMPLES:-

All the materials used for the items under this section shall be approved by the Engineer- in-charge and same type of material shall be used throughout the work in progress. If the Engineer-in-charge desire to get the material tested, this will got be done by the Contractor at his own cost from a laboratory approved by the Engineer-in-charge.

Clause-4: WORKMANSHIP:-

1. **Membrane Water Proofing**

i. <u>General:-</u>

Waterproofing shall be three to five ply as specified in schedule of Quantities. Waterproofing shall not be applied when the ambient temperature is 40 degree or below. Water proofing on roofs floor slabs in toilet rooms, shower rooms and similar spaces above grade shall be turned up around the walls or partitions enclosing such areas for a height of at least 6 inches, unless other height is indicated. Where pipes, conduit, or other items pass through the areas to be water proofed, and where floor drains occur in such areas, the waterproofing shall not be installed until after the flashing around of these items has been installed. The flashing thus installed shall be lapped and mopped into the plies of the water proofing in a

manner that will ensure a waterproof joint.

ii. Preparation of Surfaces:-

Surfaces to receive waterproofing shall be clean and dry. All holes, joints, and creaks shall be pointed flush with mortar and high spots shall be cut of ground smooth. Before waterproofing is applied, the surfaces to be covered shall be carefully swept to remove all dust and foreign matter, and shall be inspected and approved.

iii. Application of Water Proofing:-

Bituminous felts shall be applied in a solid mop coat of bitumen using not less than 30 pounds of bitumen for each 100 sq.ft. of surface. The bitumen shall be heated to flow freely, but the pitch shall not be heated above 350 degree F. The felt shall be applied in the hot bitumen free from wrinkles or buckles. The entire top surface shall then be given final mopping, using not less than 70 pounds of pitch for each 100 sq.ft of surface.

iv. Reinforcement of membrane at Corners:-

Additional membranes shall be used for reinforcing at angles and at other plies where the waterproof membrane may be subjected to unusual strain. Reinforcing shall consist of two additional plies of saturated felt of fabric and alternate mopping of bitumen. Saturated bitumen felt type 1A, as per BS 747 shall be applied in the hot, bitumen free from wrinkles and buckles. Membrane shall be applied by the shingle method with each strip lapped over the preceding strip 22 inches of 24-1/2 inches, for 32 inches wide or 36 inches wide material, respectively. Turn down on walls as indicated on drawings.

v. Protective Coating:-

If a protective coat of cement concrete is specified in Schedule of quantities, it shall be of the thickness specified in Schedule of Quantities and shall be composed of 1 part cement and 2 parts sand 4 parts aggregate mixed in the manner as specified under section "CONCRETOR" and laid in panels of 6'x6" as specified under "PAVIOR". The joints shall be filled with bitumen.

2. **Foam Concrete:-**

It shall be prepared by using additive for foam concrete of approved manufacture that will ensure the weight of concrete per Cft as specified in bill of quantities. It shall be prepared, and laid to slope as per printed instructions of manufactures:

Clause-5: MEASUREMENT & RATES:

The work of water proof felts shall be measured by multiplying the clear length by width or height of the surface. The rate shall be for the finished works for the number of felt layers specified. No allowance of waste, overlaps, turn up around the walls partitions etc. shall be made. Foam concrete shall be measured in cubic feet, and flooring shall be measured in Square feet. Rates for all the items under this section shall cover the cost of furnishing all the materials, labour scaffolding and appliances at site and all operations performed in accordance with the instruction of engineer-in-charge, Schedule of

Quantities and as specified above.

SECTION - 12
EXPANSION JOINTS

Clause-1: MATERIALS:-

1. **Copper:-** Copper shall conform to the requirements of B.S 1569 “Copper sheet and strip for roofing” and shall be of 24 gauges.
2. **Wood:-** Wood shall be best quality Shisham wood to be used as hard wood conforming to the requirements of Timber as specified under section "Carpenter, Joiner and Glazier”.
3. Lead flashing shall conform to the requirements of B.S 1178 “milled lead sheet and strip for building purposes” and shall be 1/8" thick.
4. P.V.C. water Stops shall be 5-1/2” wide with central bulb and shall be equal to Hydrofoil water stops manufactured by Expedites.
5. Filler shall be non-extruding of approved type and an approved flexible bitumastic seal of the normal joints type, which will retain its plastic properties at a temperature of 120 degree F.
6. Aluminum sheet shall conform to the requirements of B.S 170 Wrought aluminum and Aluminum alloys, sheet and strip and shall be 1/8" thick.
7. Angles, Bolts, Nuts, & Nails" etc. Shall be as specified under “Carpenter joiner and Glazier” & Steel Frector & metal worker”.

Clause-2: SAMPLES:-

All the material used for all the items under this section shall be approved by the Engineer-in-charge and same type of material will be used throughout the work in progress. If the Engineer-in-charge desires to get the material tested, this will be got done by the contractor at his own cost from a laboratory approved by the Engineer-in-charge.

Clause-3 WORKMANSHIP:-

The work shall be carried out strictly as detailed in drawings and specifications and in a workmanlike manner. Special care shall be taken during construction that joints are not clogged by debris and mortar droppings during construction. Before joints are filled by the non-extruding bit mastic fill, the joints should be certified by the Engineer-in-charge to be free of all debris otherwise contractor would be required to redo the joints at his own cost. Patentee's method of welding P.V.C. water stops should be used and no other method would be accepted. Tee or L junctions of P.V.C. water stops should be made as per printed instructions of the manufacturer.

Clause-4: MEASUREMENT & RATES:-

Expansion joints shall be measured by their length. Rates for all the items under this section shall cover the cost of furnishing of all the materials, labour, scaffoldings and appliances at site and performing all operations in connection with laying all the items under this section in accordance with the instructions of the Engineer-in-charge, Schedule of Quantities and as specified above.

SECTION-13
RAIN WATER DISPOSAL

Clause-1: SCOPE:-

The work covered under this section consist of furnishing all labour, supplies, equipment and materials, and in performing the portion of the work covering "Rain Water Disposal" in accordance with the drawings and specifications.

Clause-2 PRELIMINARY:

The materials used and workmanship applied in the works shall be of highest quality and grade and conform to the British Standard specifications and the code of practice and as per directions of the owner or his authorized representative and details laid out in the drawings, specifications and the bill of quantities. All materials, fittings, fixtures etc. shall be invariably got approved before hand by the Consultants. No substitute will be accepted in place of the specific types of brands provided for in the Schedule of quantities enclosed with the tender.

Clause-3: MATERIAL:

1. **Cast Iron rain water pipes and fittings:-**

   i. Cast Iron pipes and fittings 6" dia and 4" dia shall be of medium grade and the pipes shall weight not less than 73 lbs/6ft and 48 lbs / 6ft length respectively. These shall be perfectly straight and have uniform diameters and thickness. The pipes and fittings shall be coated with bitumen form inside and outside and costing shall be hard enough not to flow at a temperature of 145 degree F.

   ii. Hangers Supports and Anchors:- These shall be of suitable and approved design and shall be so arranged as to allow the pipes to lift in case of settlement of the buildings. These shall be painted with bit mastic enamel paint, to the paint of the same quality as per the pipes supported by these hangers.

2. **Jointing and packing Material:**

   i. Lead shall be sound, free from inclusion, and shall be of the best quality available in the market.

   ii. Packing Material:- The packing shall be of pure jute, hemp of hempen spun yarn.

Clause-4: WORKMANSHIP:

1. **Examination of Pipes:**

   Each pipe shall be carefully examined before being laid and defective, of damaged pipes shall not be used. The pipes shall be gently hammered with a wooden mallet to judge their soundness before these are laid or fixed.

   Any hollow sound showing cracks shall be rejected and removed immediately from site.

2. **Preparation of Pipes:**

   The pipes before being laid shall be brushed throughout to remove any soil or stones that may have accumulated therein, the inside of the sockets and outside of spigot being

carefully cleaned.

3. **Laying and Jointing of Pipes:**

i. General requirements:- The interior of the pipes shall be thoroughly cleaned off foreign matter before being fixed into position and shall be kept clean during laying operation by plugging or other approved method.

Any section of the pipe found to be defective before and after fixing, shall be replaced with sound pipe without additional expense to the owner. Fittings at bends in the pipeline shall be firmly anchored against the vertical face of the duct and ceiling of the basement in order to prevent the fittings form being blown off the lines when under pressure.

ii. **Jointing :-** Cast iron rain water pipe and fitting joints shall be made with lead jute, and hempen spun yarn. The packing material shall be well packed into the annular space so as to prevent the entrance of lead into the pipe. The remainder of the space shall be filled with molten lead that is hot enough to show a rapid change in colour when stirred scum shall be removed before pouring. The lead shall be caulked to form a tight joint without over-straining the bell and shall have a minimum depth of one inch after caulking. Horizontal pipes shall have a min slope of 1/16 inch per foot.

Clause-5: TESTING OF PIPELINES:

All piping shall be tested by the Contractor and approved by the owner or his authorized representative before acceptance.

i. Water Test:- The entire rain water drainage system shall have all necessary opening plugged to permit the entire system to be filled with water to the level of the highest stack. The system shall hold this water for 30 minutes without showing any drop.

ii. Air Test:- If tests are made with air, a pressure of not less than 5 lbs/sq. in shall be applied with a force pump and main tainted at least 15 minutes without leakage. A mercury column gauge shall be used in making the air test.

Clause-6: MEASUREMENTS AND RATES:-

All pipe work including fittings shall be measured in running feet of finished length. No wastage of length consumed in joints shall be measured and paid for the rate for pipe work shall include the following in addition to the provision mentioned in the bill of quantities and specifications.

i. Cost of providing, fixing in position and jointing of pipe work.

ii. Making and repairing any cuts, holes and chases in walls, floors slabs etc. where necessary.

iii. Providing and fixing hangers, supports clamps or anchors for installing pipes to floors, walls and ceiling.

iv. Painting exposed to view pipe work and supports as specified.

v. Testing and clearing of pipelines. All fixtures and fittings shall be measured in

number or in Rft etc. as specified in the bill of quantities.

SECTION-14
GENERAL SPECIFICATIONS FOR DRAINAGE AND SANITARY INSTALLATION

PLUMBING WORK

A. DRAINAGE:-

1. **Scope:-**

   The work covered by this section of the specification consist of furnishing all paints, labour, equipment, appliances and materials and in performing all operations in connection with plumbing, including all items of special equipment specified herein, complete in strict accordance with the specifications, Engineer Incharge instructions and the applicable drawings and subject to the terms and conditions of the Contract.

2. **General:-**

   General arrangement of plumbing has been indicated on the drawings. Sketches and drawings sufficient to indicate proposed departure due to actual field conditions of other causes shall submitted by the contractor to the engineer-in-charge. Contractor shall carefully examine all the drawings and specifications and shall be responsible for proper fitting of all materials and equipment in each building as indicated, without substantial alterations. All work shall be so installed as to be readily accessible for operations, maintenance and repair.

3. **Gradient:-**

   Every line of grain shall be accurately laid and shall be perfectly true to line and gradient from point to point in both vertical and horizontal planes. Every main drain shall be true for manholes and any change in direction shall take place inside drain shall be true from manholes and any change in direction shall take place inside the manhole by the use of curved main channels, similar change in internal diameter in drain shall be made in manholes by the use of tapers or bends in the line of drain outside the manhole. The following gradient shall be followed normally when not shown in the drawings otherwise actual gradient as shown on the drawing will be followed.

   4” (I.D.) Pipe, a gradient of at least 1 in 40
   6” (I.D.) Pipe, a gradient of at least 1 in 60
   9” (I.D.) Pipe, a gradient of at least 1 in 90
   12” (I.D.) Pipe, a gradient of at least 1 in 120.

   Where the falls are restricted and where the drains are well designed and well laid in accordance with the clauses herein stated 1 in 30 may be used with 4” dia pipes.

4. **Bends and Junctions:-**

   No bends are to be permitted in drainpipe nuns except at manhole. All junctions shall be oblique and the contained angle to be not less than 45 degrees. Access to be normally provided at bends in drain all cases where the change of direction angle is more than 45 degrees and elsewhere if there is a rise of flow being impeded The use of quarter bends (1/4 90 degree) shall be avoided except at the foot of vent pipe at manhole.

5. **Excavation:-**

   i. **<u>TRANCHING OUT GROUND FOR PIPES AND TURNELLING:-</u>**

Excavation for drains in open trenches shall be to the line and depth indicated in the drawings or as directed by the Engineer-in-charge. Great care shall be taken to excavate only to such depths as are correct and required for regular gradient grips for joints as required shall be formed. Trench bottom shall be of sufficient width to allow adequate working space for the pipe jointer, and should in no case be less than 15 inches or the external diameter of the pipe plus 12 inches. Trenches are to be kept clear of water including all necessary pumping or dewatering as required. No extra payment shall be made for any dewatering and pumping for keeping the trenches dry.

In event of excavations being made deeper than necessary by contractor then shall be filled proper level with cement concrete 1:4:8 at the contractor's expense. If the ground is very loose, ramming shall not be allowed and in that case cement concrete 1:4:8 is to be laid before the pipes are laid in position. Before the drainpipes are laid 6" sand filling will be done where the structure of soil is not uniform earth, but pebbles. Uniform bearing materials will be from manhole to manhole.

ii. PLANKING, STRUTTING AND STAGING:-

Excavated materials shall not be deposited within 1'-6" of the edge of the trench and the sides of the excavation shall be supported by planning and strutting if necessary to ensure a proper and speedy excavation of the work no extra cost will be paid.

iii. BLASTING:-

All pipes, ducts, cables mains and other services exposed by the excavations shall be effectively protected from damage and in and approved manner as directed by the Engineer-in-charge.

6. Drain Laying:-

Each pipe shall be carefully examined on arrival; any defective pipes shall not be used and shall be segregated and marked in a conspicuous manner. Minor damage to the protective coating of iron drain pipes shall be made good by pointing with hotter. F major defects in the coating exist, the pipes shall be returned to the works for recoating Drains shall be laid in straight lines and to even gradients as shown upon the drawing or as directed. Great care shall be exercised in setting out and determining the levels of the pipes and the Contractor shall provide suitable instrument and shall setup and maintain all sights fails bending rods and bench marks etc. necessary for the purpose. All drains shall be kept free from earth, debris, superfluous cements and other obstructions during laying and until completion. Pipes shall be laid with the sockets loading up hill and shall rest on solid and even foundations for the full length of the Harrell, socket holes shall be formed in the foundations short as practicable but sufficiently deep to allow the pipe joiner enough room to work right round the pipes.

7. Concrete Cast in SITU for Manholes and Chambers:-

The specified sizes of the manholes and chambers refer to inside dimensions. Execute the cast situ work manhole and chambers with cement concrete 1:2:4 on 6 inches to 9 inches cement concrete foundation. All situ work shall be plastered with cement plaster 1:4, ¾" thick and finished smooth with cement neru.

8. Laying and Jointing R.C.C. Drain Pipes:-

The pipes used will be R.C.C. pipes class "B" made" to Director General, Supply and Development specification No.G/W/W/58 unless specified otherwise. The jointing will be done first with spun yarn rope (dipped in standard mexphalte composition for jointing) filled in the grooves provided in the pipes and the pies are pressed together. The rope will be 1-1/2 times the dia of the groove so as to be sufficient to fill the groove in the other pipe also and make allowance for tightening up. After this, the collar will be slipped on the joint and cement joint with 1:1 mortar will be made between the pipes and the collar and finished off on the outside at an angle of 45 proper tools and plants such as jacks and templates will be used for pressing together pipes and making cement joints. In other respects, the R.C.C. pipes will be treated as the S.W. pipes.

9. Testing of Rains:-

Every drain shall be tested in sections between manholes by water test; in which they are to be filled with water to a feet head of water above the top of the highest pipe.

If it is found that certain pipe joints are leaking the water must be run of and joints recalled with cement and the drain got retested.

All expenses of testing drains, including the provision of the necessary pumps, temporary bulk heads, funnels, stoppers and other things and also the supply of water for testing are to be borne by the Contractor and shall be included in his rate for laying drains.

10. **Refilling:-**

Refilling in trenches for drains, shall be commenced after the drains have been tested and approved and the concrete have been approved. The refilling on the top and round the drain shall be done with great care and in such manner as will obtain the greatest amount of compactness and solidity possible. For that purpose the earth shall greatest amount of compactness and solidity possible. For that purpose the earth shall be laid in regular layers not more than 9" thick upto the surfaces and also watered and rammed at each layer.

11. Shallow Manholes type "A":-

For depth upto 3-1/2 ft (measured from the top of C.I. cover to the invert level of the drain), the internal dimensions of the manholes shall be 2ft x 1-11/2 ft. These shall be built on abed of 1:4:8 cement concrete 3'-10" by 3'-4". All walls shall be 9" thick in C.C. block masonry 1:3:6 in cement mortar 1:3. The internal surface shall be provided with 1/2" thick cement plaster (1:3) all round and fitted with C.I. cover and frames 16" dia inside, held in position by forced cement concrete slab 4" thick and 3'-10" long by 3'-4" wide.

12. Manholes Type "B":-

The internal size of plain manholes shall be 3' long add 2'-6" wide. These shall be built on a bed of 1:4:8 cement concrete 4'-10"c9'-4"x6" thick. All walls shall be 8" thick in C.C. block masonry 1:3:6 in cement mortar 1:3. The internal surface shall be provided with ½" thick cement plaster (1:3) all round and fitted with 1'-6" dia cast iron cover in R.C.C. slab at the top. The cement concrete in R.C.C. slab to be of 1:2:4 ratio (1 cement, 2 coarse sand, 4 of ¾" stone aggregate). The foot irons in manholes shall be cast iron of approved design, quality and ¾" tick, in cross section. These shall be fixed l' apart vertically and staggered laterally and shall not protrude more than 4-1/2" from wall. Benching in all types of manholes shall be of fine cement concrete and of dimensions as specified in the detailed drawings.

Type Design “A” Maximum depth 3'-6"

Type Design “B” For depth over 3 - 6” to 7-11”

Manholes for greater depth and larger size of sewers will have to design as required in each case. The size and weight of the cast iron cover and frame as required in each type design are specified as follows.

Type Design “A” 16” dia clear opening 1 Cwt 1 Qr.

Type Design “B” 18” dia clear opening 1 Cwt 1 Qr.

If the manhole happens to be on road, the clear opening of the frame shall be 20" dia and the weight 4 Cwts. The inside meeting of the cover and frame shall be of slanting design and the clear opening mentioned above shall be the inside dia of the frame at the bottom. The cover and frame shall be given a thick coat for anticorrosive bit mastic points. The cover shall be provided with strong lifting arrangements. The cover and frame shall conform the standard drawings and will be supplied to contractor.

13. House Drainage:-

Material and size: House drains shall be 4” dia: UPVC pipes as mentioned under sub-head Drainage but if they pass through any covered area or under floor, they shall be 4” dia. Upvc pipe conforming to Sch-40 UPVC pipe shall be of the plain spigot and socket type jointed with spun-yard packing in half the depth of the jointing space and the rest of the space filled in with lead and properly caulked and finished. After test, the pipe shall be encased in cement concrete (1:2:4) 6" thick all round.

14. Gully Traps:-

These shall have traps of suitable size and design according to the situation and fixed as described below. Each gully trap shall have one UPVC. grating 6”x6” and one C.I. cover and frame 12”x12”. Gully's are to be fixed on concrete foundation 1” square and not less than 4" thick. After fixing and testing galleys and branch drain and after permission has been given to concrete round the pipe the level with top edge of gully. A curb in cement concrete 1:3:6 block or brick masonry in 1:3 cement mortar about 3” high from the ground level is then to be built round top edge of gully rendered in ½”cement plaster, (1:3) in such a manner that surface water may not allowed to enter the gully.

Gully traps will be of cast iron or of cement concrete as stated in the Schedule of items of work:

NOTE:- House drains and each rain connection from W.C. pan or gully shall also be put to water test and treated in this respect similar to the pipe work in the main drains as described in Sub-head Drainage".

15. C.C. Gully Trap:-

The C.C. Gully Trap must be new, perfectly sound, and free from cracks, or standard nominal diameter and other dimension. Each gully trap shall have one C.I. grating 6" x 6” and one water tight C.I cover with grame (12”x12” inside dimensions) with machined seating faces. The excavation for gully traps shall be done true to dimensions and levels as indicated on plans or as directed by the Engineer-in-charge.

The gully trap shall be fixed on cement concrete foundations 2’--3” square and not less than 4" thick. The mix. For the concrete will 1:2:4:

After fixing and testing gully trap and branch drain a block masonry chamber 12" x12" (inside) laid in cement mortar 1:6 shall be built with 4" thick wall round the gully trap from the top of the bed concrete upto ground level. The space between the chamber walls and the trap shall be filled in with cement concrete of the specifications of bed concrete. The upper portion of the chamber i.e, above the top level of the trap shall be plastered inside with cement mortar 1;3 finished with floating coat of neat cement. The corners and bottom of the chamber shall be rounded off so as to slope towards the grating.

C.I. cover with frame 12"x 12" (inside) with machined seating faces shall then be fixed on the top of the block masonry with cement concrete 1:2:4 and entered smooth. The finished top of cover shall be left about 1-1/2" above the adjoining ground level so as to exclude the surface water from entering the gully trap.

16. Septic Tank:-

i. EXCAVATION:-

As specified in "Excavation" of civil contract. The rate shall be inclusive of back filling and disposal of surplus earth outside the municipal limits of the city or cantonment.

ii. CEMENT CONCRETE:-

As specified in section of concrete of Civil contract.

iii. BRICK MASONRY:-

As specified in section of concrete brick masonry of civil contract.

iv. REINFORCEMENT:

As specified in section of R.C.C. of Civil contract.

17. S.W. Drainage:-

Stone ware pipe drains: All drain shall be laid on a bed of 6' thick concrete projection on each side of the drain to the full width of the trench. The drains with their invert level at four feet depth and less from ground level shall also be covered with 6" thick concrete above crown of pipe and filled in a manner that it extends level to the top of pipe. The width at bottom of trenches ready for concrete shall be:-

For 4" S.W. Drain	1' - 9"
For 6" S.W. Drain	2' - 0"

For drain of larger sizes, working space on either side of the pipes, should not be less than 9" as measured from the outside of the pipe to the side of the trench and the whole width shall be concreted and treated in other respects as above.

NOTE:- Concrete for pipe work will be raised in trenches in soft and reclaimed soils only and where it is considered necessary as cover on top of the pipe for extra protection on a-c of traffic on it or other reasons, in the case, order of the Engineer-in-charge shall be obtained for its use and rate settled.

Stone ware Pipes:

All pipes shall be new and perfectly sound free from fire cracks and imperfection of glaze, cylindrical, straight, in length of stand and nominal diameter, length and depth of socket and barrel made of hard burnt stone ware of droll gray colour and thoughts salt glazed inside and

outside. Pipes made to British Standard Specification of equivalent will be accepted for use on works.

Laying and jointing of Stone ware Pipes:

The pipes shall be carefully laid to the level and gradient shown on the plans and section and great care shall be taken to prevent any sand, etc from entering the pipes. The pipe between manholes shall be laid truly in straight line without vertical or horizontal undulations.

The pipe will be laid "Socket up" the gradient. The bocley of the pipe must for its entire length rest on an even bed and places must be excavated in the trench to receive the socket of the pipe. In each joint, spun yarn socked in cement wash shall be passed around the joint and inserted in it by means of a calking tool are more yarn shall be added and well rammed home.

The object of the yarn is to center the spigot of one pipe, within the socket of the other and to prevent the cement mortar of the joint penetrating into the pipe.

Cement mortar (l cement 2 sand) shall be slight by mast end and must be on account, be soft or sloppy and shall be carefully inserted by hand into the joint, when the cement has been inserted it shall be added on until the space of the caulked cement. The joint shall be finished off neatly outside the joint it to be removed and to guard against any projection sacks or gunny bag shall be drawn past each joint after completion. The Contractor shall be responsible that each section of pipe is properly cleaned on completion of the work.

B. SANITARY FITTINGS

1. European type W.C. Pan:-

The W.C pan shall be readily flushed of “wash down type” and shall bear the mark of the manufacture. The pan shall be that of ICL/ Karam Ceramics. The closet shall be white vitreous China.

The seat with lid shall be of black Bacolite of approved make and size complete with rubber buffers and one-piece hinge. The flushing of W.C. pan shall be done by 3 gallons "low level” flushing cistern of white vitreous china with internal fittings, brackets and C.P. brass flushing handily, which shall be fixed at low level and connected to the W.C. pan by means of 1-1/2" diameter white enameled porcelain bend, and rubber inlet connection. There shall be ¾” over flow with mosquito proof coupling with 0.05 diameter per formations.

The pan shall be fixed with gunmetal screws to rough wood plugs let into the floor:

OR

The flushing of W.C: pan shall be done by the Medus valve brass chromium plated, with lever handle regulating valve on inlet and loose wall flange two piece flush pipe with clamp and buffers (Shanks No.49683 Catalogue "H” Page 84).

2. Orisa Type W.C. Pan:

The W.C pan shall be that of ICL/ Karam Ceramics type or in white vitreous China having not less than 19” clear opening between flushing rims. It shall have the flushing horn in the front unless it is not possible to accommodate, cistern to suit this design. The pan shall bear the mark of the manufacturing firm. It shall have integral foot treads and trap 2” vent arm shall be provided, if required.

The W.C Pan shall be sunk in floor sloped towards the pan in a workmanlike manner, care being taken not to damage the pan in the process of fixing. If damages in anyway, it shall be replaced. It shall be fixed on proper cement concrete bare taking care that the cushion is uniform and even without having any hollows between the cement base and the pan. The flushing of the W.C. pan shall be done by pull and let go flushing cistern. The cistern shall be of best case iron mosquito proof of 3 gallons' capacity together with cover, level chain and pull, ball valve with copper float and necessary unions etc for connection with inlet and outlet pipes and overflow. It shall be of valve-less siphon type.

3. Lavatory Basins:

The basins shall be of White vitreous China of slotted pattern. The size of the basin shall be 25" x 28" or 22" x 16". The basins shall be of Swat Ceramics. Each lavatory basin shall be provided with a pair of ½" C.P. Pillar taps 1-1/4" C.P brass waste of standard pattern with C.P. brass waste of standard pattern with C.P brass chain and 1-1/4" rubber plug and 1-1/4" diameter C.P. brass bottle trap and union which shall be connected to 1-1/4" dia waste pipe. The fitting shall be of foreign make and will be approved before use.

The basin shall be supported on a pair of C. I cantilever bracket etc embedded or fixed in position by means of wooden cleats and screws. The brackets shall be painted to the required shade. The waste pipe shall discharge on a floor trap leading to gully trap or direct into gully trap or shall be connected to a waste pipe stack. C.P. brass bottle trap and union may not be provided where surface drain or a floor trap is placed directly under lavatory basin and waste discharged into it vertically.

4. European Type Stall Urinals:-

These shall be of white glazed fireclay and of the following dimensions, unless specified otherwise.

Height from treads to top or Division = 4'-0"

Width Center to Center of Division = 2'-0"

The urinal range shall be provided with automatic flush cistern in white glazed fireclay of the capacity according to the No. of stalls to be flushed. The flush pipe and spreader shall be off C.P. brass. The trap shall be proper C.I. urinal trap 2-1/2" to 3" dia depending on the number of stalls in the range and approved by the Engineer-in-charge. For approved pattern of trap, see twyfords general catalogue page 255 No.354 and No.407.

5. Lipped Urinal:-

The urinal shall be flat back-lipped front basin 17" high of glazed earthen ware of shanks or its approved equivalent make. It shall be fixed in the position by using wooden plugs embedded in wall and screws of proper size each urinal shall be connected to 1-1/2" dia waste paper which shall discharge into a channel or a floor trap.

6. Stainless Steel Sink:-

The sink shall be Stainless steel sheet (size 40" x 20") of the 18/18 quality (18% chromium and 8% Nickel). The bowl is die drawn from one-piece stainless steel with outlet placed in the corner. It shall be provided with overflow arrangement. The drain channel of which is placed on the outside in the corner. The outlet in the bowl shall have 1-1/4" N.P. screwed ripple. The sink shall

be provided with 1-1/2" N.P brass waste standard pattern with C.P. brass chain and 1-1/2" rubber plug and 1-1/2" dia waste pipe. The fitting shall be of foreign make. The sink shall be supported on C.I. cantilever brackets embedded or fixed into positively by means of a wooden cleat and screws. The brackets shall be painted to the required shade as specified under flushing cistern.

7. Towel Rail:-

Rail shall be of C.P. brass with two C.P. brass brackets. The size of the rail shall be 30" x ¾". The brackets shall be fixed by means of C.P. brass screws to wooden cleats firmly in the wall.

8. Mirror:-

The mirror shall be of Belgium make glass with leveled edge. The size of the mirror shall be 24" x 18" unless other size is asked for. It shall be mounted on hardboard ground and shall be fixed in position by means of 4 C.P brass screws and washers over rubber washers and wooden plugs firmly embedded in the wall C.P. brass clumps with C.P. brass screws may be an alternative method for fixing.

9. Glass Shelf:-

The shelf shall be of glass of best quality with edges rounded off. The size of the shelf shall be 25" x 5" x 14" unless otherwise specified. The shelf shall have C.P. brass brackets, which shall be fixed with C.P brass screws to wooden plugs firmly embedded in the wall.

10. Toilet Paper Holder:-

The paper holder shall be C.P. brass screws shall be used for fixing (similar to 'Twyfor' design No.1108).

11. Plastic Connection:

½" dia plastic pipes shall be provided and fitted completed with two unions and heavy C.P: brass stopcock.

12. Floor Traps:

The traps shall be of self-cleaning provided with 1" puff pipe, where the length of the waste is more than 5'-0" or the floor trap is connected to a waste sack with bends. The other specifications for these shall be the same as those for H.C.I. soil, waste and vent pipes and fittings (the traps for the urinal connection shall have dome shaped C.P. brass grating with hinge).

13. Bib Cocks:-

The Bibcock shall be brass, acres down patterns of the size and quality as specified. "Waste Not/ Waste" type may also be used if required. All the fittings shall be approved by the Engineer-in-charge before they are installed.

SECTION-15 SOIL WASTE, VENT PIPE AND FITTINGS

1. Heavy Cast Iron Pipes and Fittings:

All soil waste and vent pipes and fittings shall conform to the British Standard Specification for 'Heavy Quality'. They shall be free from creaks and other flaws. The interior of pipes and fit tings shall be clean and smooth and painted inside and outside interior of pipes and fittings shall be clean and smooth and painted inside and outside while, hot with D. August Smith's solution or their approved anticorrosive paint. The access door fittings shall be of proper design so as not to form any cavities in which filth may accumulate. Doors shall be provided with 1/3" rubber insertion packing and when closed and bolted they shall be watertight. The pipes and fittings shall be fixed to walls by curing proper holder-bat clamps. The pipes shall be fixed perfectly vertical or in a line as directed. The spigot and shall about the shoulder of the socket and leave no angular space in between. All soil pipes shall be carried up above the roof and shall have H.C.I. terminal guard. Connections between main pipe and branch pipes shall be made by using proper branches and bends with across doors for cleaning.

All H.C.I pipes and fittings including joints will be tested by a smoke test and left in working order after completion. The smoke test shall be carried out stated under:

Smoke shall be pumped into the drains at the lowest and from a smoke machine, which consists of a blow and burner. The materials usually burnt are greasy cotton waste, which is easily detectable by sight as well as by smell if leaking at any point of the drain.

All the exposed H.C.I pipes and fittings shall be painted with enamel paint to match the colour of the surroundings.

The surface of the pipes and fittings to be painted shall be painted thoroughly. Redoxide of other primer shall be painted and allowed to dry. The finishing shall be done by painting 2 or more coats with paint of any shade matching with surroundings.

Lead Caulked Joints:

The annular space of between the socket an spigot will be first well packed in with spun- yarn leaving 1" from the lip of the socket for the lead. The joint may be leaded using proper leading rings or if they are not available by wrapping a ring of bump rope covered with clay round the lead shall be poured in (for pipes with sockets facing upwards ½" high small clay bund on the socket edge may be used).

The lead shall be rendered thoroughly fluid and each joint filled in one pouring. Before caulking the project in lead shall be removed by flat chisels and the joints caulked round with proper caulking tools and hammer of 2 to 3-pound weight in such a manner as to make the joint quite sound. After being well set joint is to be left flush, neat and even with the socket

2. PVC Pipes:

Soil waste and ventilation pipes shall be general-purpose poly vinyl chloride rigid pipes class "B" as manufactured by "AROKEY CHEMICAL INDUSTRIES LTD" Karachi or equivalent. Pipes shall be jointed using "Shavyl" solvent cement 70 or equal material with tapered sleeve fittings for permanent jointing. All horizontal runs of pipe work shall be supported at interval of 5 feet maximum; these supports shall comprise 1-1/2" M.S angles cast into the walls. All vertical stacks shall be supported in the walls with clamp anchors as required to relive joint stresses. Each pipe

shall be carefully examined on arrival and the site of work, any defective pipes shall not be used and shall be segregated and marked in a conspicuous manner. Minor damage shall be made good by cutting the damaged portion. If major defect exist the pipes shall be removed from the site of works. All pipes shall be laid in straight lines and to the proper gradient as shown on the drawings or as directed. All pipes shall be kept free form earth debris, superfluous cement and other obstructions and shall be laid in clean condition. All horizontal pipes shall be run at a uniform grade of mot less than 1/8" inch per foot of fall in the direction of flow except as noted. All vent pipes shall extend through the roof. It is emphatically stressed that all pipes shall be recessed in the floor and the walls and no pipe shall be exposed to the naked eye except where not possible to do so. Where ever the pipes pass through the floor or the wall sleeves should be provided of the required sizes. Cutting of opening and installation of sleeves through walls and surface shall be done in neat workman like manner. Opening shall be cut only as large as required for the installation of sleeves. Sleeves shall be made of 16 gauge M.S sheet and shall extend upto-finished surfaces.

3. G.I. Pipes fittings:-

The pipes shall be of galvanished wrought iron and of water quality manufactured by a firm of repute. The fittings may either be of galvanished wrought iron or galvanished malleable iron. Pipes and fittings shall conform to the specifications of the British Tube Makers Association for water pipe. Pipes and fitting of which the gal vanishing has been damaged shall not use.

The approximate weight of the pipes shall be as under:-

Bore in pipe in inches	Approx; weight in lbs per ft.
½'	0.89
¾"	1.19
1"	1.77
1-1/4"	2.40
1-1/2"	2.87
2"	3.86
2-1/2"	6.04
3"	8.00
4"	11.43
6"	13.00

Where pipes have to be cut or rethreaded ends shall be carefully filed out so that no obstruction to bore is offered. In jointing the pipes, the inside of the socket and screwed end of the pipe shall be rubbed over with white leave and free turns of hemp yarn wrapped round the screwed end of the which shall then be screwed home in the socket with pipe wrench. Care must be taken that all pipes and fittings are kept at all times free from dust and dirt during faxing.

For internal work, G.I. pipes and fitting inside and outside the walls shall be fixed visible. (not in chase) by means of standard pattern holed-bat clamps peeing the pipe ½" clear of the wall everywhere. When it is imperative to fix the pipe in front of house or in any conspicuous position,

where it looks unsightly, chasing may be adopted.

All pipes and fittings shall be fixed truly vertical and horizontal unless unavoidable.

For external work G.I. pipes and fittings shall be laid in trenches. The width of the trench shall be minimum width required for the working. The pipe laid under ground shall not be less than 2-1/2" feet from the ground level. They shall be surrounded on all sides by 6" river sand. The work of excavation and refilling shall be done in accordance with the general specifications for earthwork.

Al internal G.I. pipes and fittings shall be painted with white or any other tint, as specified. G.C.I pipes and fittings.

All pipes and fittings in external work shall be painted with anti-corrosive paint as directed by the engineer-in-charge. All G.I. pipes and fittings may be tested to a pressure of 100 lbs.per sq inch to ensure that pipes have proper threads and that proper materials (such as white lead and hemp) have been used in jointing. All leaky joints must be made leak-proof by tightening or redoing.

4. **Brass and Gun Metal Water fittings:**

The fittings shall be of strong construction and good finish as made in Pakistan to the Standard specification noted against each category or by any reputable maker to these specifications:

a.	Brass bib Cocks (tape) Stop Cocks	B.S.S. No. 1010
b.	Gun Metal Full way valves Ball Valves	D.S. &D.P.S.D/C-WW/57
c.	Ball Valves	B.S.S. 1212.

Pillar taps of ½" dia for fixing to lavatory basins and ¾"dia to baths shall be of reputable manufacturer as approved by the Engineer-in-charge.

In case of hot water supply, the pipe and special shall be under sub-head "D". The pipes and fitting shall be wrapped round with asbestos rope and then covering the same with Hessian clothe smearing properly with asbestos paste.

5. U.G. Hydrant:

The underground Hydrant shall be of spinal type with body, cover gland, cap on spindle of best iron, Nuts and valve (with leather face) valve sea, plug and outlet piece, which can be screwed to suit any brigade thread, of gun metal. Cap of the outlet piece screwed valve by a W.I. chain, may in either G.I. or gun metal screwed or unscrewed as desired. The spindle shall be of forged bronze (size 2-1/2" dia).

i. Stand pipe Hydrant shall be of valve type. The valves shall be of brass or gun metal with adopter and union of hosepipe. The valve shall have a brass or C.I. Wheel.

ii. The hosepipe shall be made of rubber-lined nylon, with brass coupling, brass nozzle; the length of pipe shall be as per schedule.

6. Sluice valve:

The sluice valves are to be of cast iron and to have gunmetal faces and removable seats and are also to have machine cut gunmetal screws. They are to work easily and smoothly under all conditions and are to be watertight when close a head of 200 ft. or such greater head as may be

specified.

7. Overhead Water Storage Tank:

The overhead water storage tanks shall be built by the Civil Contractor in waterproof reinforced cement concrete as per design and drawings. The Contractor shall have to supply and fix the following to the O.H. Tank during the progress of the construction of the same. Paddlo will be used at the rate of 5 lbs per bag of cement by weight in the concrete and inside plaster for waterproofing

i. **Outlet:-**

G.I. pipe as required with sluice valve and a G.I Tees arm of the required length. This pipe shall be carried 2 inside the internal side of the wall of the Reservoir. The “Tees" Arm will accommodate the number of outgoing branches of the required size and branch sluice sub- valves. The branches will not be allowed to be connected to the reservoir directly.

ii. **Cleaning out Pipe:-** Cleaning put pipe shall be G.I. pipe of required diameter with sluice draining valve. It shall be fitted as flush with the bottom of Reservoir as for as possible and carried down to the ground level as required and instructed by the Engineer-in-charge.

iii. Inlet Pipe:-

Inlet pipe shall be G.I. pipe according to the size of the pump or as indicated in the drawings and shall be fitted 12 inches below the ceiling of the R.C.C. roof of the Reservoir.

iv. Overflow:-

Overflow shall be G.I. pipe of the size greater than the inlet pipe and shall be brought down to the ground level and connected to special manhole chamber. The overflow pipe shall be fitted 8.inches below the ceiling of the R.C.C top slab of reservoir. An overflow warning pipe of higher dia than the outlet pipe shall be installed as directed by the Engineer-in-charge and or as indicated on the drawings.

SECTION-16 TECHNICAL SPECIFICATIONS FOR ELECTRIFICATIONS WORKS

01. GENERAL INSTRUCTIONS

1. The Contractor must have an electrical Contractors license issued by the Electrical Inspector, Government of Pakistan of the concerned region. The electrical work shall be carried out only by licensed workmen authorized by the Government of Pakistan to under take such work under the

   Provision of Indian Electricity Act and Rules as adopted in Pakistan as per latest I.E.E Regulations and under the direct supervision of whole a time Electrical Engineer and Electrical Supervisor having a certificate of competency for the type of work under execution. The Electrical Contractor license number, name of the Electrical Engineer, Electrical Supervisor, Electrician wiremen and particulars of their license shall be intimated in writing to the owner before the commencement of work.
2. The installation generally shall be carried out in conformity with the Pakistan Electricity Act and Rules and the latest addition of I.E.E. Wiring Rules:
3. Any special requirements of the local Electric Supply Company shall be complied with and all work shall be carried out to the entire satisfaction of the Bank or his representative, as provided in the contract.
4. The Contractor shall set out the work himself and if any discrepancy is found he shall report the matter to the Engineer Incharge and shall act as directed. If any defective or modify set out is carried out by the Contractor on his own will, he shall rectify or make it good at his own cost.
5. The Contractor shall keep pace with the work of Civil Contractor and site Engineer will be kept informed about the progress of his work so that there is no hindrance in the progress of work at site.
6. The Contractor shall take care not damage the structure during execution of the work in such as case repair and make good all losses at his own cost.
7. The Contractor will be responsible for arranging electric service connection for the premises. The pursuance of the case so as to ensure expeditious action by the supply authorities will also be the responsibility of the contractors. All expenses in this respect except service connection charges payable to Electric Supply Authorities shall be borne by the Contractors.
8. The rates against all the items of schedule of quantities shall include all labour and material specified.
9. **Temporary Electric Connection:** During the construction period and upto the time the building is handed over to the bank temporary electric connection shall be obtained by the contractor himself through local electric supply agency for the use of tools, equipment and lighting etc. at site. The contractor shall be responsible for this service, its maintenance repairs, payment to supply company and its operations at his own cost, starting two weeks after notification of award of the contract and as desired by the Bank.

02. MATERIAL REQUIREMENTS:

1. **General:** The Contractor shall furnish all material at site confirming fully to the specifications given herein and to the accepted standards as laid down by B.S.S, I.E.E. and P.S.I. It is not the intent of these specifications to include all details of design and Construction of various material and equipment to be supplied under this tender. The requirements of Material and equipment's shall in all respect conform to the high standard of engineering design, workmanship, performance and function as herein specified and shall fully meet the quality level and ruggedness requirements of the specifications. All material and equipment which has to be supplied and installed by the Contractor shall be passed / approved by the Engineer Incharge at site even if the same is exactly in accordance with the catalogue number or types specified in the schedule of Quantities of this tender.

2. **Wires & Cables:** Cables used for conduit wiring shall be single core with standed copper conductors except where specified P.V.C. insulated, tested to B.S2004-1961 and a manufactured by M/s. Pakistan cables Ltd. The cables shall be 250/440 volt grade unless other wise specified in Schedule of Quantities.

3. **Earth Continuity Conductors:**Earth continuity conductor and earthling leads shall be hard drawn solid bare copper wires except where specified. It shall be soft drawn standed cooper wires. The necessary fixing accessories, earthling clips, sweating sockets etc. shall be provided.

4. **Conduit & Conduits Accessories**

   i. **Conduit**

   All conduit supplied by the Contractor shall be in standard Manu factured lengths of heavy gauge steel (16.S.W.G) threaded type conduit, protected by the black enamel coating, manufactured and tested according to B.S 31 - 1940.

   The coating shall be of heavy enamel which should not flake or crack from bending or rough usage. Before applying black enamel coating on the outside surface of conduit a Red, oxide anti-rust coating shall be given on the cleaned surface of conduit. The black enamel coating shall also be given on the surface of conduit after fixing it in position. Each length of conduit shall be furnished with threaded ends and threaded coupling screwed on one end. The minimum size of conduit used shall be 3/4" dia unless a smaller size is specified situation which would be light gauge. Test certificates for tests carried out by the manufacturer according to B.S: 31 – 1940 shall be produced when ever required.

   ii. **Flexible Conduit:**

   Flexible conduit shall be furnished and installed where required or indicated on the drawing for connection to equipment subject to vibration or where necessary for convenient dismantling. Flexible conduit for use in dry locations shall be of spiral inter locked steel strip construction, zinc coated. The water tight flexible metal conduit shall be of spiral interlocked steel strip construction zinc coated, with rubber or plastic covering over all.

   iii. **Conduit Accessories:**

   The Contractor shall furnish all conduit fittings bushing elbows, coupling, bends inspection box, junction box, solid plugs, check nuts etc. as required for a complete conduit installation and they shall be of a quality equal to that specified for conduit above. Soft metal bushes shall be used at conduit termination ends in order to save wire insulation for damage, due

to sharp conduit edges, in cable pulling operations. The bush shall be of standard design and shall have soft rounded edges.

Fittings for use with flexible conduit shall adopt the conduit to threaded connections and shall have an inside diameter not less than the corresponding size of the heavy gauge steel conduit.

Junction boxes shall be 4 inch square minimum 1 ½" or 2 1/8" deep as required to accommodate the numbers of conductors or taps necessary. The junction boxes shall be made of 16 S.W.G sheet steel, with protective paint, coating inside and outside the box. All cost iron outlet boxes a light or fan point on ceiling or wall shall be large enough to accommodate the number of wires necessary. These shall not be less than 2" diameter round type and 1 5/8" deep except that smaller boxes may be used where required by the particular light fitting to be installed. The sizes of junction boxes and outlet boxes are given as minimum only. The actual sizes required at different situations shall be determined by the Contractor, keeping in view the case of operation at installation and maintenance.

All such outlet boxes shall be provided with one piece type cover plate, suitable for the device installed and blank for the junction boxes. The cover plates shall be flush with the finished surface of wall, ceiling etc. in the case of concealed wiring.

In case PVC conduit pipes are to be used the same and their accessories should be of Shavyl Galco or Rivna makes only.

5. **Switch & Socket outlet Boxes:**

Switch and socket outlet boxes shall be of the size suitable to the dimensions of switch and socket unit gang outlet boxes shall be use where two or more devises are grouped in location.
These outlet boxes shall be made of 16 S.W.G. sheet steel with protective black enamel paint coating inside and outside the box.
Before applying black enamel the cleaned surface of sheet steel box shall be given Red oxide anti-rust coating inside and outside the box. The cover of such outlet box shall be approved Masonite, tufnol, bakelite or plastic as specified in the Schedule of Quantities, mounting the switches or switch socket unit. Where switch and socket outlet boxes are to be installed on surface in an exposed conduit wiring system, these shall have, in addition to the protective quoting, colour paint to match the colour or the wall etc.

6. **Switches:**

Switches controlling light and fan points shall be single pole, suitable for 250 volts 50 c/s circuits. The ratings of switches shall be as called for in the schedule of quantities. These shall be made of bakelite or plastic and suitable for flush mounting in the outlet box as called for in schedule of quantities. Where more than one switch is to be installed at one location, the switches on one common board on a common outlet box. The gauges switches shall be molded type have in a plastic face plate for flush mounting. Where there are more than three switches at one location or fan regulators and switches are on common board, gang switches should not be used. At such location single switches and fan regulators, if any shall be grouped on a common outlet box and mounted on a 1/8" thick white plastic sheet / flush with the surface wall. Where switches are

installed in damp or wet area these shall be weather - proof type. The switches shall be as manufactured by M/s Pakistan plastic industries.

7. **Switch & Socket Units:**

Switch and socket units shall be 3-pin rated for 15 Amps at 250 V 50 c/s A.C as specified in schedule of quantities. These shall be moulded type with white plastic face plate and suitable for mounting recessed on wall or column on a 16 SWG sheet-steel box of appropriate size. Each socket shall have its control switch by the side of it on a common board and thus the complete unit specified in schedule of quantities shall comprise of switch and a 3-pin socket of the rating specified.

The unit shall be as manufactured by M/s Pakistan Plastic Industries. Where switch and socket unit are installed in a damp or wet area, they shall be weather proof type.

03. LIGHTING FIXTURES:

Lighting fixtures details are given in the Schedule of quantities. Where a definite manufacturer's type of lighting fixture has been specified it shall serve as an illustration of type and if that particular type is not available in the market any approved equal type may be suitable after getting prior approval of the Bank. The determination of equality will be based on certified photometric data, covering the coefficient of utilization, average brightness data, etc, as well as equivalence or construction material shape, finishes etc. For any substitution Banks Architects approval must be obtained. Lighting fixtures shall in all respect confirm to high standard of engineering design and workmanship, performance and function as specified as specified and shall fully meet the quality level requirements.
Where the type of fitting is not specified the Contractor shall submit samples based on the requirements of specifications and approval of the owner shall be obtained.

All fluorescent light fittings shall have lamps, and blasts of proper type and wattage as specified in the schedule of quantities. The fluorescent light fitting with more than one lamp shall have power factor correction capacitor to give a power factor of 0.9. All fluorescent light fittings shall have capacitors against radio interference. The fluorescent lamps shall be of cool day light colour. The sheet steel body of the flours cent light fitting shall be decreased and de-rusted. White stove enameled and shall have been bushed wire entries. The plastic diffuser with fluorescent light fittings shall be of 'PERSPEX' only. Chokes starters, holders shall be Philips make only.

The glass globes and shades specified with incandescent lighting fittings shall be of first quality glass without any air bubbles or voids. The wall bracket-fitting shall have adoptable plate to mount the fitting on the standard conduit outlet box.

04. L.T. SWITCH BOARDS:

Cubical Type:

The main İ.T switch board shall be sheet steel fabricated, cubicle type, floor mounting, factory assembled, ready wired. The rated voltage shall be 500 Volts, 50 c/s three phase. The rupturing capacity shall be 31 MVA at 415 Volts. The switch board shall be divided into panels and each

panel shall be divided into compartments to accommodate the required number of switches, circuit breakers, bus bar and meters.

The main incoming manually operated air circuit breaker shall have current rating as specified in the schedule of quantities. It shall be triple pole and neutral with rated voltage 500 V. The following protective releases shall be provided:-

i. Triple pole series connected adjustable bimetallic over current releases.

ii. Triple pole series connected instantaneous action magnetic short circuit releases.

The current transformers with suitable rating shall be provided for metering and protections. ON. OFF. And TRIP visual indicators shall be provided.

The following metering shall be provided on the incoming side of the main L.T switch board:

Ammeter of range and make as specified in the schedule of quantities.

Voltmeter 0-500 volts range and makes as specified

KWH meter, 3 phases, 4 wire for unbalanced loads. Make as specified

Power factor meter, 0.5 – 10.5 ranges, Make as specified.

The meters shall be square shaped, and flush mounting type. The bus bar chamber shall consist of air insulated, four hard drawn electrolytic flat copper bars with porcelain insulators. The current ratings of bus bar shall be as specified in the schedule of quantities.

The outgoing air circuit breakers shall have short circuit and over current protections. The over current bimetallic release shall be adjustable and the range of adjustment shall be as specified on the drawings. The outgoing switch fuses shall have H.R.C. type fuses with fuse grip and fuse base suitable for H.R.C designed to B.S.S 88 and ASTA 20 Certified. The H.R.C fuses shall have a category of duty 440 AC5. The visual indicators of 'blown' fuse link shall be provided on H.R.C fuses.

05. MINIATURE CIRCUIT BREAKERS:

In case where MCB's are specified in the schedule of quantities the same shall be of the following specifications:-

The MCB's used in distribution system shall be moulded case no fuse type having a switching mechanism. The MCB's shall have protection against overload and short circuit.

The MCB shall have a magnetic tripping time of 0.2 SEC max. When more the its rated current passes through it.

In the distribution boards the MCB's should be neatly installed in gang form by an appropriate arrangement. The MCB's shall be of Dorman, BBC AEG or. Terasaki make only.

The switch board shall be supplied with cable and boxes end cable glands for the sizes or cables shown on the drawing for incoming and outgoing connections.

The L.T panel shall be given Red oxide anti rust coating and two coats of approved colour paint. The switches etc, shall be numbered and the designations shall be printed in 3/8" high letters with black paint.

The tenderers shall submit the drawings and all relevant details of L.T. switch board offered.

06. PEDESTAL TYPE:

The pedestal type sub-main switch board shall be factory assem beld, ready wired for all internal wiring. The rated voltage shall be 500 volts, 50 c/s three phase. It shall consist of angle iron frame and pedestal and sufficient angle iron enforcing members to make it robust, self contained and rugged. The front shall have fixed sheet steel cover on which switches, circuit breakers etc. shall be mounted. There shall be a removal sheet steel cover on the back such that the internal wiring connections and live parts are not accessible in the normal working of the switch board. Necessary conduit entry holes shall be provided on the top and the bottom for outgoing connections. The incoming connections hall is in the bottom. The required number of circuit breakers, switches and distribution boards etc, as detailed in the schedule of quantities shall be mounted on the front securely and firmly.

The technical specifications of circuit breakers and switch fuses shall same as given for the outgoing circuit breakers and switches for the main L.T. switch board. The incoming load break switch shall be provided with arc Shutes and quick breaking mechanism. The rupturing capacity shall be 25 MVA

The switch shall be given Red Oxide anti rust coating and double coating of approved colour paint. The switches etc. shall be numbered and the designations shall be painted in 3/8" high letters in red colour. The required number of cable end boxes and cable glands for the incoming and outgoing cables as shown on the drawings shall be provided with the switch board.

The tenderer shall submit dimensioned drawings and all relevant details of the switch boards offered at the time submitting the tenders.

07. SUB-MAIN SWITCH BOARD:

The sub-main switch board shall comprise of switch fuses, bus bar chamber and distribution boards as detailed in schedule of quantities.

The switch fuse shall be iron clad or sheet steel fabricated, mounted on the surface of the wall, unless otherwise specified on the schedule of quantities. The position of the operating handle of the switch fuse shall be clearly marked ON/OFF on the cover. The switch fuse shall remain in locked position when the operating handle indicates ON. The switch fuse shall have only H.R.C type fuses. The fuse portion shall consist of porcelain fuse base and porcelain or bakelite fuse grip accommodation the H.R.C fuse.

The distribution fuse board shall have heavy gauge sheet steel enclosure with one leaf door and latch. The fuses shall be H.R.C type designed to BS.S.88 & ASTA 20, certified only, accommodated in a porcelain or bakelite fuse grip with porcelain fuse bases embedded firmly to the board. The number of ways shall be clearly marked and circuit numbers shall be printed on a bakelite strip mounted on the top of each row of fuses.

The bus bar chamber shall consist of high conductivity flat copper bars, supported on porcelain or bakelite bushes. The number of copper bars shall be four for triple pole and neutral and two for double pole. The bus bar chamber shall be enclosed in a heavy gauge sheet steel enclosure with one leaf door and latch.

All component of switch bard shall have separate individual housing and they shall be mounted on a common 16 SWG sheet steel enclosure, arranged neatly to occupy minimum space, keeping in view the free and unhindered operation of individual component. All live parts shall be enclosed and shall not be accessible in normal operations of the switches and distributions fuse board. The switch fuse, bus bar chamber, and distribution fuse boards shall be suitable for operations on 440/250 volt, three phase/single phase 50c/s A.C system as specified on drawings.

08. H.T SWITCH BOARD:

The high voltage, 11 KV switch board shall be totally enclosed, floor mounting, cubicle type, factory assembled, ready wired for 11 KV 3 phase, 50 c/s system. The breaking capacity of the switch board shall be 350 KVA at 11 KV.

The incoming 11 KV, triple pole oil circuit breaker shall be withdraw able type arranged for vertical isolation and horizontal withdrawal, It shall be trip free and fitted with adjustable trip devices to prevent incorrect and hesitant closing. The main contract shall be double break types fitted with D-Iron grid are control devices. The circuit breaker shall be fully interlocked. The interlocking mechanism should ensure that

i. The breaker can be closed only if the roll-out truck is in the operating or isolated position and not in any intermediate position.

ii. The roll-out truck cannot be moved out from the operating or isolated position when the breaker is close. Indicators shall be provided for indication of ON. OFF. Trip and positions of the breaker at withdrawal, earth and operation.

iii. The circuit breaker shall be fitted with voltage transformer and current transformers of appropriate ratings for metering and protections. The relay operated tripping mechanism for over current, earth fault and short circuit protections shall be provided with time delay and instantaneous settings of appropriate ranges.

iv. The following material shall be provided of the make as indicator in the BOQ.

v. Moving iron ammeters range 0-100 Amps with ammeter selector switch:

vi. Moving iron voltmeter, range 0-13 KV with voltmeter selector switch.

vii. Kilowatt hour meter, suitable for 3 phase wire system and for balanced and unbalanced loads, complete with maximum demand indicator.

viii. All meters shall be flush mounting type and square shape. The bus bar shall be of high conductivity solid copper bars with insulation covering and porcelain bushings.

ix. The outgoing 11 KV switch fuses shall be rated for 400 amps and shall have 30 Amps and 45 Amps H.R.C type fuses designed to B.S.S 88 & ASTA 20 certified respectively. The switch fuse shall have trip free mechanism and automatic mechanical trip mechanism

action on all three fuses blow of. There shall be tripping device to operate in conjunction with the Bechholz relay provided at the transformers.

x. The 11.KV switch board shall be complete in all respect including cable lend boxes for paper insulated underground 11 KV cables of suitable size as specified in the schedule of quantities for incoming and outgoing connections. The anchor bolts, name plates etc, shall also be provided.

09. H.T & L.T CABLES:

The high tension cables shall be copper conductor, 11 KV 3 core, paper insulated double steel tape armored and served. The serving shall be both below and above the armor, by means of compounded paper tape and compounded hesian tape. In order to prevent adhesion a coating of lime wash or other suitable material shall be applied to the outer surface of the cable. The core identifications marking shall be provided. The cable shall confirm to British Standard Specifications 480 part-I 1954.

The low tension P.V.C cables shall be copper conductor, 1.1 KV, 3½ core PVC insulated and PVC sheathed non-armored. The core identification marking shall be provided.

The low tension PVC armored cables shall be 1.1 KV, 3. ½ core PVC insulated, PVC bedded, single wire armored and sheathed with PVC overall. The cables shall conform to B.S.3346-1961. The core identification marking shall be provided.

The low tension paper insulated cable shall be copper conductor 1.1 KV 3 ½ core paper insulated lead covered double steel tape armored and served both below and above the armored by means of compounded paper tape and compounded hesian tape. The core identification marking shall be provided.

Wall mounting indoor type cable end boxes:

The wall mounting indoor type cable end boxes shall be used for H.T incoming L.T. outgoing connections at transformers. The HT cable end boxes shall be suitable for terminating the 11 KV 3 core paper insulated, lead covered double steel tape armoured cables of size as per schedule of quantities.

The L.T cable end boxes shall be suitable for terminating the 1.1 KV 3.1/2 core paper insulated, lead covered double steel tape armoured cables of size 6.4 sq. inch.

The cable end boxes shall be constructed of cast iron. Adequate space should be provided for splaying of cores. The box shall have a top cover with perfect fit and compound tightly joint. The black bituminous cable compound shall be provided, for terminating and bonding the lead sheath of the cable on incoming side of the box, brass wiping gland shall be provided. An armour clamp shall also be provided for bonding the armoring. On the outgoing side the box shall have insulator bushing made of glazed porcelain suitable for individual core of cable to pass. The box shall be of standard make and the tenderer shall submit the drawing and the relevant details of cable end boxes at the time of tendering.

10. TRANSFORMER:

The transformers shall be three phase oil immersed, and self cooled, indoor type and of the rating specified in the schedule of quantities. The no-load voltage ratio shall be 11 KVI / 430 V

and frequency 50 c/s. the transformer shall be Delta-Star connected and the vector group shall be DYli. The percentage impendence shall be 4-5% taking ambient temperature of 45 C the temperature rise shall confirm, to B.S.S. 171.1959.

The manually operated off-load tap changer on H. V side shall have tapings of 7% ±5% and ± 2.5%

The transformer shall be provided with a double float Bechholz relay for tripping and alarm as protection against abnormal working of the transformer.

The transformer tank shall be of welded steel construction tubular type. The transformer shall be complete with conservator, silica gel breather, oil gauge, dial type thermometer, arcing horns, oil drain plug, oil filling cap, drain valve with sampling device, lifting lugs, earthing terminals bi-directional rollers, diagram and rating plates, etc.

The transformer shall be tested at the factory, as per B.S.S.171, 1959 and a test certificate shall be provided at the time of approval.

The transformer shall be painted with anti corrosive paint of approved quality and finished in enamel steel grey colour. The drawings and complete technical data shall be submitted with the tender.

11. EARTHLING CONDUCTOR & ELECTRODES:

The earth continuity conductors shall be solid hard drawn bare copper wire of sizes specified on the drawings and schedule of quantities. The earth continuity conductors of size above 3/0 SWG shall be hard drawn standard bare copper wire. All fixing accessories earthling clips, sewating sockets, lugs, thimbles etc. shall be provided for a complete earthling insulation.

The earthling set shall be 2'x2'x1/4 in thick electrolytic copper plate. The surface of plate shall be tinned for protection. The plate shall have two terminals for connection the earthling leads, Nuts, Bolts and washers etc. shall be of either brass or copper tinned for protection against corrosion. The earthling points shall, comprise of tinned copper bar rectangular in shape having dimensions 6”x2”x1/4” Two terminals for connections shall be provided. The terminals shall have copper or brass bolts, nuts, and washers tinned for protection against corrosion. There shall be one galvanized iron bolt provided in the center for fixing the copper bar on the surface of wall.

12. GALVANIZED IRON PIPES:

The G.I pipe shall be used for protection of earth leads from earthling set to the earthling points and at locations shown on the drawings.

The pipe shall be galvanized inside and out by hot dip galvanizing process. The G.I pipe shall be free from stains, bars spots or any other defect. The G.I pipe shall be KPM Hyesons brand.

The pipe fittings and specials such as sockets, bends, check nuts etc. shall be galvanized inside outside. The saddles and clamps used for fixing the pipe on the surface shall be of gal vanished iron.

13. LIGHTENING PROTECTION SYSTEM

i. General:

The contractor shall furnish all material required for a complete lightening protection system as specified herein and as per British standards CP 326 101.

The system shall consist of vertical and horizontal air terminations, down copper conductors, and earth electrodes and joined effectively to form a continuous path for lightening current to earth.

ii. Air termination:

The vertical air termination shall consist of ¾" diameter 3 feet long tinned copper rod, pencil shape pointed at top end, copper terminal with clamp for connection to down conductor at the lower end of the rod and a self supporting base frame with two fixing holes, bolts, and nuts for fixing on the RCC roof. The vertical air termination shall be as shown on the drawings.

The horizontal termination shall consist of 1" x 1/8" copper strip.

iii. Down conductor:

The down conductor shall be 1/0 S.W.G hard drawn bare copper wire.

iv. Earth electrodes:

The earth electrode shall consist of ¾" diameter, steel cored copper rod less than 4 feet length with coupling and stud bolts at driving end for installing additional sections. The rod shall be tinned for protection against weather. There shall be three 4 feet sections of rod to be driven in the ground to form one 12 feet earth electrodes. The last 44 feet section of the rod shall have an earth terminal for connection to the down conductor and to adjacent earth electrodes.

14. INSTALLATION INSTRUCTIONS:

1. Wires & cables:

i. General:

The contractor shall furnish all material and labour to install wires and cables as indicated on drawings or listed in the schedule of quantities and as specified herein. Apart for the material specified under heading material specification the contractor shall provide, without any extra cost, material for terminating the wires and cables such as ceiling rose lugs, solder , clamps supports, bushes, fixing pipe etc. necessary for a complete wiring installation. Other miscellaneous items such as filling compound identification tag, earthling clips and straps shall also be furnished for a complete wiring installation in accordance with best modern practice.

All wires and cables shall be arranged to provide bends of reasonably large radius, whether they are run in conduit or cable turn king, bens shall not be made to a radius less than 10 times the overall diameter of cables. Wiring shall be continuous between terminations and use of connectors or joints will not be allowed. Looping in system shall be followed throughout.

ii. Concealed Conduit Wiring:

The installation of wires and cables in conduit or G.I pipes shall be done with care to prevent damaging the cables. To facilitate pulling cable, lubrication only as recommended by the cable manufacturer may be used for decreasing friction. Under no circumstances shall soap or oil of any kind be used. The cable manufacturer's specifications for minimum bending radius, pulling speed and maximum pulling tension on cables shall govern the cable puling operations. Where several cables or wires are to occupy the same conduit, they shall be pulled together.

Pull boxes shall be installed in conduit runs, wherever required to limit the pulling length of cables. The drawings are diagrammatic and do not indicate the locations of pull boxes, however, they should be installed in conduit runs to limit pulling lengths to the following:

i. Straight runs - not more than 200ft.
ii. Runs with on 90 degree bend – not more than 100ft:
iii. Runs with two 90 degree bends – not more than 50ft.

The minimum length of all inspection boxes, shall be equal to not less than four times the cable manufacturer's recommended bending radius of the cable.

iii. Cable termination:

Terminal lugs for most equipment are included with the equipment itself except lugs for connection to motor leads and necessary devices; the contractor shall furnish and install all lugs required for such equipment. Cables connectors and lugs shall be rated in capacity equal to or greater than the conductor with which they are used. Control cables entering control boards, switch gear etc, shall be surely fanned out in a neat arrangement and laced with linen waxed cord where the terminations are made. Wires and cables shall not be laced to conduction material unless a 1/16" tick plate of insulating material is placed between the conduction material and the cable. The ceiling roses in concealed conduit wiring shall be flush type. These shall be mounted on the conduit outlet boxes at light points such that the lip of the ceiling rose finishes flush with the surface. The terminal blocks shall be of the moulded base type with separate studs for incoming and outgoing cables, with barriers between terminal and terminal making strip sand cover. Terminal blocks shall be used at special locations where looping in is rendered difficult. The consent of Engineer-Incharge is required for the use for terminal blocks.

2. Conduit Installation:

i. General:

The contractor shall furnish all labour and material for the installation of conduit on surface or concealed in concrete or brick work, as required. The drawings show the

approximate routes and terminal points of conduit. However; if for any reason the contractor desires to use any alternate rout, he may do so at his own responsibility as to the interference with other equipment's and maintaining concealed runs of conduit. Such alternate routes shall incur no additional cost to the owner and must have prior written permission from the engineer-in charge.

Conduit and conduit accessories shall be as specified herein and shall be so installed that the require field conditions are full met.

ii. Concealed Conduit Runs:

The conduit runs shall be concealed in ceiling, floor slabs, columns wall etc. changes in direction of conduit runs shall be made with sweep bends using bending tools. Standard conduit bends may be used to facilitate installation and where conduit turns out of thin slabs. Where conduit is to be concealed in RCC work, the laying of conduit shall be complete in all respects before pouring of concrete. The conduit shall be laid above the bottom reinforcement steel of the slab and shall be firmly secured by tying to the reinforcing steel, in order to avoid being disturbed during the pouring of concrete. After pouring of concrete the concealed conduit shall have a covering of 11/2"to 2 inches. Junction boxes, pull boxes, outlet boxes etc, shall be held firmly and shall be flush with the suffix of the slab or beam, and keeping this in view the depth of outlet boxes, junction boxes etc. shall be appropriate.

The termination of conduit at or near the equipment, switch gear etc. is shown diagrammatically on the drawings. The exact final locations of the terminations shall be coordinated with the switch gear, panel board and other equipments to be installed. Any extension of conduit near the equipment, switch etc. to suit the field condition shall be made without any extra cost. All conduit terminations shall conform to the type of equipment enclosures to which the conduit connections are to be made. Conduit end pointing upward or downward shall be properly plugged, in order to prevent foreign matters entering it. All opening through which concrete may leak shall be carefully plugged and boxes themselves shall be suitable protected against filling with concrete. All ends of M.S conduit shall utilize bushes of soft material to prevent sharp edges of conduit ends from cutting or damaging the wires or cables to be pulled through them. Conduit crossing expansion joints in concrete slabs shall be provided with expansion fittings to compensate for the building expansion or construction.

Where conduit have to be concealed in RCC work after pouring of concrete or in brick work, chases shall be first made with appropriate tools not to dig unduly deeper than required. The conduit shall be firmly fixed into the recesses made previously and then it shall be covered to have at least 1-1/4" cover before plastering. The work of cutting in the RCC work or brick work shall be coordinated with the civil work and contractor shall get approval be the Engineer Incharge for the route etc. to suit the site conditions, before starting chasing and cutting. Where conduit passes through the wall, holes just enough to pass the conduit shall be made with special tools.

iii. Conduit on Surface:

Exposed runs of conduit on the surface of wall, column or ceiling shall be as indicated on drawings. The conduits and accessories shall be firmly held with the surface of wall by means of saddles, clamps, brackets etc, Special plugs such as Rawl plugs or Phil plugs must be used for fixing clamps, saddles etc. in the wall to support the conduit. In case where the use of such plug is not feasible due to the consideration of wall structures, wooden plugs may be used, but on all cases these should be capable of sustaining the weight of conduit and its accessories. The clamps shall be fixed at intervals depending upon the size and weight of conduit. In any case these shall not be fixed at more than 2-1/2 feet intervals. The straight runs of conduit shall not be more than 1-1/2 to 2ft below the ceiling level and share hindrance is met in the rout, the conduit shall be taken round the hindrance above or below neatly, and then run at the same height.

The exposed conduit and its accessories including clamps and support shall be given coats of anti-corrosive paint of approved standard, before and after the installation.

iv. Cleaning:

The entire conduit system shall be essentially completed before wiring is installing. Conduit shall be tested for continuity and obstruction. Any obstruction found shall be cleaned by use of a cutting mandrel of other approved device, and the conduit be cleaned out before the installation of cables.

v. Earthing:

The earth conductors shall be installed along the sub-main cables as shown on the drawings. At terminations copper earth continuity conductors shall be connected to the body of the switch board or to the earthing point by means of proper size brass or copper socket soldered to the earth wires ad fixed by means of proper size nuts, bolts and washers. All equipment frames, L/T & HT switch board, transformer, cable trays etc. shall be connected with earthing leads or earth continuity conductors of sizes shown on the drawing.

The earthing sets shall be installed at locations shown on the drawing. A 15 feet deep pit in the bare ground shall be excavated and the copper earth plate shall be placed vertically in bottom of the pit. The earth leads of 7/0.166 standed bare copper wire shall be connected at two points on the earth of ptate by means of copper sockets nuts and bolts. The copper earth leads shall be taken out of the pit and up to the earthing point in a 2" G I pipe. A mixture of grinded charcoal and powdered lime in the ratio of 4:1 by volume shall be poured around the earth plate to cover it by one foot on sides and top. The charcoal mixture shall be rammed in layers. The pit shall be back filled in layers of the earth consolidated by watering and ramming. At the ground level a 2 x 2 x 1 ½ deep cement concrete inspection chamber shall be constructed. The inside surface of the Chamber shall be plastered and an angle iron frame and a heavy duty cast iron cover with lifting lugs shall be provided and fixed. A ½ inch diameter G.I. pipe piece shall be fixed as inlet of water to the inspection chamber as directed at site.

The earth resistance shall be tested with and without water as per instructions given under section D-Testing of these specifications.

vi. Installation of Switches & Socket Outlets:

All light control switches and socket outlet units shall be fixed flush with the surface of wall on recessed 16 SWG sheet Stel box of appropriate dimensions. The light control switches up to 3 numbers at one location are specified as gang switches. These shall be mounted on gang boxes with the plastic face plate flush with the surface of wall or columns

At locations where any number of switches with fan regulator is grouped, gang type switches shall not be used. At such location single switches shall be grouped and fixed flush on a plastic sheet mounted on a recessed sheet steel box of appropriate dimensions. The mounting height of light control switch shall be 4 1/2ft, above finished floor level unless otherwise specified on the drawings. The switch and socket outlet units shall be fixed, flush with the surface of wall on recessed sheet steel box of appropriate dimensions, The mounting height of switch and socket outlet units shall be 9 inches above finished floor level unless otherwise specified on drawings

The fixing of plastic plate on outlet boxes and of single switches and fan regulators on plastic sheet shall be by means of flat head chromium plated brass screws. The' flat head of the screw shall be sunk in the plastic plate so as finish flush with the surface of plate.

vii. Installation of H.T & L.T Switch Board:

The Contractor shall provide all labour and material to install, test and commission the high tension and low tension switch boards. The anchoring bolts, angle iron supports, foundation plates etc. shall be provided and installed. After this Contractor supplies the detailed foundation drawings of the switch boards, the building contractor shall leave approved sized holes in cement concrete floor and the electrical contractor shall place the foundation bolt and anchoring plates in the holes and fill the same with 1:2:4. cement concrete mixture for preparing the foundation for the switch board.

The cubicle type and pedestal type switch boards shall be installed on the floor having a minimum clearance of 2 ft. between the back of the switch board and the wall. The switch board shall be bolted firmly and in level on the floor. In general the manufacturer's instructions for installations shall be followed.

The incoming and outgoing cable shall enter to switch board from the bottom. Special care shall be taken in connecting the paper insulated cable to cable and boxes so as to have no danger of compound leakage during operating. The cable compound and insulation tape etc. shall be furnished without additional cost to the owner.

The body of the switch board shall be connected at two points with the earth continuity conductor from the earthing point. Proper size brass or copper thimbles or sweating sockets shall be used for connecting the earthing conductor.

15. INSTALLATION OF H.T. & L.T CABLES:

The H.T and L.T cables shall be installed in the prepared cable trenches and on the surface of wall, column or ceiling as required. The cable trenches shall be constructed by the Building Contractor, details of which are required to be submitted by the electrical contractor at the time of submitting his tender.

The L.T cables shall be laid in cable trenches neatly such that they do not cross each on the haphazardly. At directions and bends, the minimum interval radius of bend shall be 4 times the overall diameter for PVC armoured and for paper insulated armoured cables.

The L.T cables shall be fixed on the surface of ceiling or wall, where shown on the drawing, by means of approved cast aluminum cleats of appropriate dimensions. The aluminum cleats shall be in two parts as shown on the drawing. The cleats shall be fixed by means of galvanized bolts or screws at six feet internal.

The Contractor shall provide all fixing material such as clamps, cleats screws, bolts etc required for the installation of cables without any additional cost to the owner.

i. Transformer:

The contractor shall furnish all labour and material to install, test and commission the transformers. The Building Contractor shall construct the cement concrete cable trenches in the transformer room.

The transformer shall be installed at the location shown on the drawings and all fittings dispatched loose from the factory shall be assembled as per manufacturer's instructions. All site tests shall be performed as per instructions given in Section "D-Testing" of these specifications.

The H.T and L.T cable end boxes shall be installed on the wall. The angle iron brackets for installing the cable end boxes shall be provided and installed. The cores of cables coming out of the cables end boxes shall be neatly fanned out and connected to the transformer terminals by means of proper size thimbles, nuts and bolts.

The transformer neutral shall be earthed via sub-station earth point. Two separate connections for transfer body earth shall also be made.

The transformer shall be tested and commissioned in the presence of the Engineer Incharge.

ii. Installation of Lightening Protection System:

The Contractor shall furnish all labour and material required for a complete installation of Lightening protection system. The air termination shall be installed at locations shown on the drawing. The vertical air termination shall be fixed on the flat roof surface rigidly and firmly. The horizontal air termination shall be connected effectively to the vertical air termination. The copper clamps, nuts, bolts and washers shall be provided. The horizontal air termination shall be fixed on the flat surface of the RCC roof by means of copper or brass fixing clamps at 6 feet intervals. All joints and bonds in the horizontal air termination shall be mechanically and electronically effective. The joints shall be bolted and shall have an overlap of at least one inch. Before bolting at the joint the surface of overlap shall be thoroughly cleaned and after bolting up, the joint shall be protected from weather by applying bitumen coat all round the joint. The down conductor shall be fixed on the outside surface of wall or column by means of copper or brass clamps fixed at 4 feet intervals. The I/O S.W.G down conductor shall be connected to the horizontal air termination copper strip be means of proper size compression type socket and nut bolt.

The protection of joint shall be made as for the joints in horizontal air termination mentioned earlier. The down conductor shall be connected effectively to the earth electrode.

The earth electrodes shall be driven in the ground as close to the building as possible. These shall be driven in three sections of 4 feet length to from one 12 feet long earth electrode. At each location shown on the drawing at least four such electrodes shall be fixed 12 feet apart, unless a lower earth resistance is obtained in lesser number of electrodes. The maximum earth resistance measured between the electrodes shall be 10 ohms. All earth electrodes at one location shall be connection to each other by means of I/O SWG bare copper wire buried directly underground. At each earth electrodes a cement concrete inspection chamber of l'xl'x6" deep with case iron cover shall be constructed for inspection and protections of down conductor's connection with the earth electrodes.

The completed system shall be tested for continuity and earth resistance. The combined earth resistance shall not exceed 10 ohms.

16. TESTS:

i. **General:**

Upon completion of installation the Contractor shall perform field tests on all equipment, materials and systems. All tests shall be conducted in the presence of the Engineer Incharge for the purpose of demonstrating equipment or systems compliance with specifications. The Contractor shall furnish, install and maintaining all tools, instruments test equipment, material, connections, etc and furnish all personnel including personnel including supervision and "stand- by" labour required for the testing, setting and adjustment of all electrical facilities, and other component parts, including putting same into operation.

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

The Contractor shall record all test values of the tests made by him on all equipment, giving both "as found" and "as left" conditions. Three (3) copies of all test data shall be given to the Engineer Incharge for record purposes.

The witnessing of any tests by the engineer Incharge does not relieve the Contractor of his guarantees for material, equipment and workmanship as specified in the conditions of Contract.

ii. **Insulation Test:**

Insulation resistance tests shall be made on all electrical equipment, using a self-contained instrument such as the direct indicating ohm-meter of the generator type. Direct current potentials shall be used in these tests and shall be as follows:-

Circuits under 220 Volts -- 500 Volt Test

Circuits 220 Volts to 400 Volts – 1000 Volt Test

The minimum acceptable insulation resistance value will be 5 Megohms.

The test equipment for insulation testing will be furnished by the Contractor. Before making connections at the ends of each cable the insulation resistance measurement test of each cable shall be made. Each conductor of a multi-core cable shall be tested individually to each conductor of the group and also the earth. If insulation resistance test readings are found to be less than the specified minimum in any conductor, the entire cable shall be replaced and the new cable tested.

All transformers, switch gears shall be given on insulation resistance measurement test to ground after installation but before any wiring is connected. Insulation tests shall be made between open contacts of circuit breakers, switches and between each phase and earth. If the insulation resistance of the circuit under test is less than that specified above, the case of the low reading shall be determined and removed. Corrective measures shall include dry out procedure by means of heaters if equipment is found to contain moisture. Where corrective measures have been necessary and the insulation resistance readings taken after the correction has been made satisfy the requirements specified herein, repeat insulation resistance measurements shall be made twice and at least 12 hours apart: The maximum range for each reading on the 3 successive tests shall not exceed 20% of the average value. After all tests have been made, the equipment shall be reconnected.

iii. **Earth Resistance Test:**

Earth resistance test shall be made by the Contractor on the earthling system, separating and reconnecting each earth connection as may be required by the Engineer Incharge. If it is indicated that soil treatment or other corrective measures are required to lower the ground resistance values, The Engineer Incharge will determine the extent of such corrective measures,

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

Earth resistance test shall be performed as per Electrical Inspector's requirements. Where more than one earthling sets are installed, the earth resistance test between two seats shall be measured by means of resistance bridge Instrument. The earth resistance between two sets shall not exceed one ohm.

iv. **Transformers & Switchgear:**

In addition to the insulation resistance test on the transformer, a polarity or phase rotation test shall also be made. Auxiliary devise breather, Buchholz, relay etc shall be tested for satisfactory operation.

Each air circuit breaker shall be operated electrically and mechanically, ascertaining that handle mechanisms are operating. All interlock control circuits shall be checked out for proper connections in accordance with the wiring diagrams given by the manufacturer.

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

Series over current trip elements shall be checked against rating of equipment served. Also to be checked for correct size and function are fuses, disconnect switches, number of interlocks, indicating lights, alarms and remote control devise. Name plates shall be checked for proper designation of equipment served.

v. **Operating Tests :**

Current load measurement shall be made on equipment and on all power and lighting feeders. The current reading shall be taken in each phase wire and in each neutral wire while the circuit or equipment is operating under actual load conditions. Clip-on ammeters may be used to take current readings. All light fittings shall be tested electrically and mechanically to check whether they comply with the standard of specifications. Fluorescent light fittings shall be tested so that when functioning properly no flickering or choke singing is felt.

vi. **Completed Tests:**

After any equipment has been tested, checked for operation etc and is accepted by the Owners representative, the Contractor shall be responsible for the proper protection of such equipment for assurance that subsequent testing of other equipment or systems do not disturb the completed work.

SECTION -17 TELE PHONE

MATERIAL REQUIRMENT: -

1.**Conduit & Conduit Accessories:**

The Contractor shall furnish and install a complete conduit system with associated outlet boxes and terminal boxes, so as to complete in all respects for installation of wires, cables and instruments. Conduits shall be of heavy gauge steel 16 SWG back enameled. The specification for conduit accessories remain same as given in D (i) of Section I of these specifications. At each telephone outlet location as shown on the drawings, The contractor shall furnish heavy gauge sheet steel box black enameled inside and out and install flush with the surface of wall suitable for mounting the telephone rosette.

2.**Distribution Boxes:**

Telephone cable distribution boxes shall be constructed with interior dimensions not less than those indicate in the Schedule of Quantities & Drawings. Distribution boxes for telephone cables shall be made of superior quality teak wood ½" thick and enclosed in tight fitting in black enameled steel outer box of 16 SWG the two being fixed together by means of nuts and bolts. A sheet steel door of 16 SWG with locking mechanism shall be fixed on the box, flush with the surface of the wall. The colour of the door shall match the wall colour.

The terminal strips fixed in the distribution box shall be made of copper. These shall be of Telephone Industries of Pakistan, or equivalent.

3.**Telephone Cables:**

Single pair telephone cables shall be P.V.C insulated twin copper conductor P.V.C sheathed flat. Multicore cables shall be P.V.C insulated and P.V.C. sheathed circuits in cross section containing as may pairs as called for in Schedule of Quantities and Drawings. All cables will be made up of bare copper wire conductors of 0.6 mm diameter, P.V.C. insulated, twisted in pairs and P.V.C. sheathed. The cables shall be of 250 volt grade with insulation resistance of 100 megohms / km

4.**Telephone Rosettes:**

Telephone rosettes shall be with copper terminals, 2-way 5amp, made of Plastic or bakelite, having a screw type dome cover with lip opening for outgoing cables.

INSTALLATION INSTRUCTIONS:

1.**Conduit Installation:**

The telephone conduit installation shall be as outlined in 1.2 of Section 1 of these specifications. Telephone conduit shall be laid not less than 6" away from the electrical conduits or cables, and wherever electrical conduit and telephone conduits cross each other they shall do so at right angles only.

Identification marking shall be given at the termination or free end of conduit so that it may not be confused with electrical conduits. The marking shall be both by colour and by attaching an approved brass tag using brass of bronze tie wire. Each tag shall be clearly stamped with "T" fore telephone conduit.

2.**Distribution Boxes:**

Distribution boxes for telephone cables shall be fixed recessed in the wall or column as called for in the drawings and shall be provided with sheet steel hinged door with locking mechanism having a common key for operating those boxes.

3.**Pulling of Telephone Cables in Conduits:**

Telephone cables shall be pulled in conduits following the same instructions as for pulling of electrical wires and cables given in Section 3, under the heading “Wire and Cables Installation". Where telephone cable enter distribution box, one foot length of cable shall be left coiled in the distribution box for T&T Department to solder them on the soldering terminals.

SECTION-18 FIRE ALARM

MATERIAL REQUIREMENTS:

5.**General**

The Contractor shall furnish and install a complete electrically supervised non coded fire alarm system as specified herein and as indicated on drawings. The fire alarm system shall be non-coded electrically supervised system. Operation of any manual station shall cause all sounding devices to sound continuously until the alarm condition is corrected and system is reset. The system shall operate on 230/415 volts, single phase/3 phase 50 c/s A.C supply. The fire alarm system is specified here on the basis of the equipment manufactured by Minneapolis Honeywell Regulator Co. U.S.A. represented in Pakistan by M/s Zelin Ltd, Zelin's Corner, Victoria Bunder road, Karachi. Any equipment manufactured by other standard companies may be offered.

6.**Manual Station.**

The manual station shall be operated by pulling down on the lever, when operated the lever shall remain down with the alarm contact closed until the station is resent. Honey well type S464B or similar. The manual station shall have sheet steel housing and mounted on a sheet steel box recessed on the wall.

7.**Alarm Bell**

Fire alarm bells shall be vibrating type with 6” gong. The alarm bells shall be provided with adaptor plate for mounting on standard conduit outlet box. The Alarm Bell shall be Honeywell type SC40 similar.

8.**Annunciator Panel:**

The main Annunciator panel located near the fire alarm panel shall have zone identifications, to identify each zone in the event of operation of manual station in that zone. The zone identification shall be printed on replaceable tape between the panel display screen and lamp. Display screen shall be of Tran's lucent glass. The sub main Annunciator shall be similar to the main Annunciator but with two zone identifications only. The Annunciator shall be Honeywell type W649B or similar.

9.**Fire Alarm Panel:**

The Fire Alarm Panel shall operate on 230/415 volt single phase 50 c/s A.C supply. The panel components shall include supervisory meter and relay for bell station circuit, trouble and alarm lights, integral trouble buzzer, and silencing switch. The fire alarm panel shall provide required bell

circuit as shown on the drawings. A transformer for low voltage bell circuit shall be provided. The fire alarm panel shall be semi-recessed or recessed mounting with hinged doors. The fire alarm panel shall be Honeywell type W728A or similar.

INSTALLATION INSTRUCTIONS:

10.**Conduit & Wiring:**

The installation of conduit and wiring shall be as given in Section 1 of these specifications

11.**Manual Stations:**

The manual Stations shall be installed on the surface of wall on the recessed conduit outlet boxes, at locations shown on the drawings. The center line of the unit shall be 5 feet above finished floor level. The manufacturer's installation instructions shall be followed.

12.**Fire Alarm Panel:**

The fire alarm panel shall be installed recessed or semi-recessed in the wall at location shown on the drawings. All wiring connections shall be made as per manufacturer's instructions. The center line of the panel shall be at height of 5 feet above finished floor level. The main Annunciator panel shall be mounted adjacent to the fire alarm panel. The sub-main Annunciator panels shall be fixed recessed or semi-recessed in the wall at locations shown on the drawings. The mounting height of sub-main Annunciator shall be same as that of fire alarm panel.

SECTION-19 CLOCK SYSTEM

MATERAIL REQUIREMENT:

13.**General:**

The clock system will consist of master clock unit producing electrical impulses at definite interval and feeding them over a two wire circuit to the secondary clocks installed at various locations. The secondary clocks will run by the impulses received from master clock and therefore all clocks will give on time indication

The contractor shall supply and install conduit, wires, Master clock, secondary clocks and all accessories required for a complete clock system as specified herein and as called for in the drawings.

14.**Conduit:**

The conduit shall be black enameled heavy gauge 16 S.W.G. The conduit and conduit accessories requirements shall be same as detailed in section 1 of these specifications.

15.**Wiring:**

The wires shall be single core standed, and P.V.C insulated and shall be of M/s Pakistan Cables Ltd.

16.**Master Clock:**

The master Clock unit is required to control minimum of 29 secondary clocks by sending electrical impulses at regular, intervals to the secondary clocks. The Master Clock shall be pendulum operated and shall incorporate an impulse transmitter to send impulses to secondary clocks over a two wire circuit. Should the main supply fail, the system will be kept going very many hours by the accumulators.

For advancing all clocks in the system, and advancing lever shall be provided. The accuracy of the clock shall be within ½ second per day.

The Master Clock unit shall be suitable to operate on 250 Volts, 50 c/s A.C single phase supply. The current supply is taken from trickle charged accumulator.

17. **Salve Clocks:**

The slave clock shall be suitable to operate in conjunction with the above specified master Clock. The slave clock shall have 12" diameter aluminum dial with black glistens serif numerals hour marking, convex face glass and satin silver colour metallic body.

INSTALLATION INSTRUCTIONS

18. **Conduit and Wiring:**

Identification marking shall be given at the termination of free end of conduit so that it may not be confused with the electrical conduit. The installation for wiring remains same as far electrical wires.

19. **Master Clock:**

The Master Clock shall be installed on the surface of wall. Manufacturer's instructions for installation and connections shall be followed.

20. **Slave Clock:**

The clocks shall be installed on the surface of wall or column at a height of about eight feet from the finished floor level or on the side of the beam as specified. The clock shall be installed, connected and tested so as to be ready for operations. The manufacturer's instructions for installation shall be followed.

MODEL OF PRICING

WIRING OF LIGHT POINT:

1. **One Point Controlled By One Switch:**

The rates against this item of schedule of quantities shall include all labour and material specified for wiring between the point and switch. The circuit conduit and siring are covered by separate items in schedule of quantities.

2. **Two or Three Points Controlled By One Switch:**

The rates against this item of schedule of quantities shall include all labour and material specified for wiring between outlet to outlet and the switch. Two or three light point outlets controlled by one switch shall be counted as one light point. The circuit conduit, and wiring are covered by separate items in schedule of quantities for this item.

3. **Wiring of 5 AMP Plug Point:**

The rates against this item of schedule of quantities shall include all labour and materials specified for wiring of plug point from the nearest circuit available as shown on the drawings. The socket and switch unit is covered schedule of quantities.

4.**Light Circuits:**

The rates against these items shall include all labour and material specified for circuit wiring. The circuit conduit is shown as bold continuous line on the drawing and the number of 7/0.29 wires are indicated. Where the circuit wires pass through the light point conduit, the conduit is not counted under items pertaining to it but the wire is measured upto its termination at switch or outlet. At such location conduit is considered included is wiring of light point items. The contractor shall determine the size of conduit for wiring of light point according to the number of wires shown on the drawing.

Technical Proposal

- **Site Organization**
- **Method Statement**
- **Mobilization Schedule**
- **Construction Schedule**
- **Equipment**

Site Organization

Method Statement

Mobilization Schedule

In accordance with the Particular Conditions, Sub-Clause 4.1, the Contractor shall not carry out mobilization to Site unless the Engineer gives consent.

Construction Schedule

Form EQU: Equipment

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment listed in Section III, Evaluation and Qualification Criteria. A separate Form shall be prepared for each item of equipment listed, or for alternative equipment proposed by the Bidder.

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	

Omit the following information for equipment owned by the Bidder.

Owner	Name of owner	
	Address of owner	
	Telephone	Contact name and title
	Fax	Telex
Agreements	Details of rental / lease / manufacture agreements specific to the project	

SECTION VI: STANDARD BIDDING FORMS

Table of Forms

Form of Bid.....
Letter of Bid – Technical Proposal.....
Letter of Bid - Financial Proposal.....
Bidder Information Form.....
Bidder's JV Members Information Form.....
Personnel.....
Financial Situation.....
EXPERIENCE.....
Form of Bid Security.....
Form of Bid-Securing Declaration.....
Appendix-A.....
The Base Date Prices and Current Date Prices of the specified elements shall be obtained from the sources specified in the contract.....
.....

FORM OF BID

Date: _____
To: Gentlemen and/or Ladies:

Having examined the Bidding Documents including Addenda Nos; _____ the receipt of which is

[insert numbers]

hereby duly acknowledged, we, the undersigned, offer to deliver _____
_____
_____

[Mention description of goods and services]

in conformity with the said Bidding Documents for the sum of

_____
_____

[Mention total Bid Amount in words and figures]

or such other sums as may be ascertained in accordance with the Schedule of Prices attached herewith and made part of this Bid.

We declare that our Bidding price did not involve agreements with other Bidders for the purpose of Bid suppression.

We are hereby confirming _____
_____

[insert the name of the Appointing Authority]

to be the Appointing Authority, to appoint the adjudicator in case of any arisen disputes in accordance with **ITB Clause 45.1.**

We undertake, if our Bid is accepted, to deliver the goods in accordance with the delivery schedule specified in the Schedule of Requirements.

If our Bid is accepted, we undertake to provide a Performance Security (or Guarantee) in the form, in the amounts, and within the times specified in the Bidding Documents.

We declare that, as Bidder(s) we do not have conflict of interest with reference to **ITB Clause 3.7**.

We agree to abide by this Bid for the Bid Validity Period specified in **BDS 17**, and it shall remain binding upon us and may be accepted at any time before the expiration of that period.

We are not participating, as Bidders, in more than one Bid in this Bidding process, other than alternative offers in accordance with the Bidding Documents.

Our firm, its affiliates or subsidiaries – including any subcontractors or suppliers for any part of the contract – has not been declared ineligible by the Government of Pakistan under Pakistan's laws or official regulations.

Until a formal Contract is prepared and executed, this Bid, together with your written acceptance thereof and your notification of award, shall constitute a binding Contract between us.

We understand that you are not bound to accept the lowest or any Bid you may receive.

We certify / confirm that we comply with the eligibility requirements as per **ITB Clause 3** of the Bidding Documents.

Dated this_____day of_____20_____.

(Name)_____

[Signature]

[in the capacity of]

Duly authorized to sign Bid for and on behalf of

Letter of Bid – Technical Proposal

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT

Place this Letter of Bid in the first envelope "TECHNICAL PROPOSAL".

The Bidder must prepare the Letter of Bid on stationery with its letterhead clearly showing the Bidder's complete name and business address.

Note: All italicized text in black font is to help Bidders in preparing this form and Bidders shall delete it from the final document.

Date of this Bid submission: [*insert date (_____) of Bid submission*]
RFB No.: [*insert number of Bidding process*_____]
Alternative No.: [*insert identification No if this is a Bid for an alternative*]

To: **[*National Bank of Pakistan*]**

We, the undersigned Bidder, hereby submit the first part of our Bid, the Technical Proposal

In submitting our Bid we make the following declarations:

(a) **No reservations:** We have examined and have no reservations to the bidding document, including addenda issued in accordance with Instructions to Bidders **(ITB 9);**
(b) **Eligibility**: We meet the eligibility requirements and have no conflict of interest in accordance with ITB 3;
(c) **Bid/Proposal-Securing Declaration**: We have not been suspended nor declared ineligible by the Procuring agency/Employer based on execution of a Bid Securing Declaration or Bid Securing Declaration in the Procuring agency/Employer's country in accordance with **ITB 3;**
(d) **Conformity:** We offer to execute works in conformity with the bidding document and in accordance with the works requirements: [*insert a brief description of the WORKS*];
(e) **Bid Validity Period**: Our Bid shall be valid for the period specified in **BDS 18.1** (as amended, if applicable) from the date fixed for the Bid submission deadline specified in **BDS 24.1** (as amended, if applicable), and it shall remain binding upon us, and may be accepted at any time before the expiration of that period;
(f) **Performance Security**: If our Bid is accepted, we commit to obtain a performance security in accordance with the bidding document;
(g) One Bid per Bidder: We are not submitting any other Bid(s) as an individual Bidder, and we are not participating in any other bid(s) as a Joint Venture member or as a subcontractor, and meet the requirements, other than Alternative Bids submitted in accordance with **ITB 20;**
(h) **Suspension and Debarment**: We, along with any of our subcontractors, suppliers, consultants, manufacturers, or service providers for any part of the contract, are not subject to, and not controlled by any entity or individual that is subject to, a temporary suspension or a debarment imposed by the Procuring agency/Employer. Further, we are not ineligible under Pakistan laws;
(i) **State-owned enterprise or institution**: [*select the appropriate option and delete the other*] [*We are not a state-owned enterprise or institution*] / [*We are a state-owned enterprise or institution*];

(j) **Binding Contract**: We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed;

(k) **Not Bound to Accept**: We understand that you are not bound to accept the Most Advantageous Bid or any other Bid that you may receive; and

(l) **Fraud and Corruption**: We hereby certify that we have taken steps to ensure that no person acting for us, or on our behalf, engages in any type of Fraud and Corruption.

Name of the Bidder: *[_____]

Country of Origin of the Bidder: *[_____]*

Name of the person duly authorized to sign the Bid on behalf of the Bidder: ** [_____ _____]

Title of the person signing the Bid: [_____]

Signature of the person named above: [_____]

Date signed [_____]

*: In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder.

**: Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

Letter of Bid - Financial Proposal

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT

Place this Letter of Bid - Financial Proposal in the second envelope marked "FINANCIAL PROPOSAL".

The Bidder must prepare the Letter of Bid - Financial Proposal on stationery with its letterhead clearly showing the Bidder's complete name and business address.

Note: All italicized text is to help Bidders in preparing this form.

Date of this Bid submission: [_____ *of Bid submission*]
Request for Bid No.: [*insert number of bidding process* _____]
Name of Project.: [*insert Name of Project*]
Alternative No.: [*insert identification No if this is a Bid for an alternative*]

To: [*National Bank of Pakistan*]

We, the undersigned Bidder, hereby submit the second part of our Bid, the Financial Proposal

In submitting our Financial Proposal, we make the following additional declarations:

(a) **Bid Validity Period**: Our Bid shall be valid for the period specified in **BDS 18.1** (as amended, if applicable) from the date fixed for the bid submission deadline specified in **BDS 24.1** (as amended, if applicable), and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(b) **Total Price:** The total price of our Bid is:

In case of only one lot, the total price of the Bid is [*insert the total price of the bid in words and figures, indicating the various amounts and the respective currencies*];

In case of multiple lots, the total price of each lot is [*insert the total price of each lot in words and figures, indicating the various amounts and the respective currencies*];

In case of multiple lots, total price of all lots (sum of all lots) [*insert the total price of all lots in words and figures, indicating the various amounts and the respective currencies*];

(c) **Commissions, gratuities and fees:** We have paid, or will pay the following commissions, gratuities, or fees with respect to the bidding process or execution of the Contract: [*insert complete name of each Recipient, its full address, the reason for which each commission or gratuity was paid and the amount and currency of each such commission or gratuity*].

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate "none.")

(d) **Binding Contract:** We understand that this Bid, together with your written acceptance thereof included in your Letter of Acceptance, shall constitute a binding contract between us, until a formal contract is prepared and executed.

Name of the Bidder:* [_____]

Name of the person duly authorized to sign the Bid on behalf of the Bidder: ** [_____ _____]

Title of the person signing the Bid: [_____]

Signature of the person named above: [_____]

Date signed [_____]

*: In the case of the Bid submitted by a Joint Venture specify the name of the Joint Venture as Bidder.

**: Person signing the Bid shall have the power of attorney given by the Bidder. The power of attorney shall be attached with the Bid Schedules.

FORM ELI 1
Bidder Information Form

[The Bidder shall fill in this Form in accordance with the instructions indicated below. No alterations to its format shall be permitted and no substitutions shall be accepted.]

Date: *[insert date (_____) of Bid submission*]
RFB No.: *[insert number of Bidding process_____]*
Alternative No.: *[insert identification No if this is a Bid for an alternative _____]*

Page _____ of_____ pages

1. Bidder's Name *[insert Bidder's legal name]* …….
2. In case of JV, legal name of each member: *[insert legal name of each member in JV]* ……
3. Bidder's actual or intended country of registration: *[insert actual or intended country of registration]* …….
4. Bidder's year of registration: *[……]*
5. Bidder's Address in country of registration: *[……]*
6. Bidder's Authorized Representative Information Name: *[……]* Address: *[……]* Telephone/Fax numbers: *[……]* Email Address: *[……]*
7. Attached are copies of original documents of *[check the box(es) of the attached original documents]* ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or documents of registration of the legal entity named above. ☐ In case of JV, JV agreement, in accordance with ITB 3.3. ☐ Establishing that the Bidder is not under the supervision of the Procuring agency/Employer [in case of subsidiaries] 8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

ELI2

Bidder's JV Members Information Form

[The Bidder shall fill in this Form in accordance with the instructions indicated below. The following table shall be filled in for the Bidder and for each member of a Joint Venture].
Date: *[insert date (_____) of Bid submission*]
RFB No.: *[insert number of RFB process_____]*
Alternative No.: *[insert identification No if this is a Bid for an alternative _____]*

Page _____ of_____ pages

1. Bidder's Name: *[insert Bidder's legal name] ……*
2. Bidder's JV Member's name: *[insert JV's Member legal name] …… ……*
3. Bidder's JV Member's country of registration: *[……]*
4. Bidder's JV Member's year of registration: *[……]*
5. Bidder's JV Member's legal address in country of registration: *[…… ……]*
6. Bidder's JV Member's authorized representative information Name: *[……]* Address: *[……]* Telephone/Fax numbers: *[……/ ……]* Email Address: *[……]*
7. Attached are copies of original documents of *[check the box(es) of the attached original documents]* ☐ Articles of Incorporation (or equivalent documents of constitution or association), and/or registration documents of the legal entity named above. 8. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

Personnel

Form PER -1

Contractor's Representative and Key Personnel Schedule

Bidders should provide the names and details of the suitably qualified Contractor's Representative and Key Personnel to perform the Contract. The data on their experience should be supplied using the Form PER-2 below for each candidate.

Contractor' Representative and Key Personnel

1.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……..
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*] ……
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……
2.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……..
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*] ……

	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……
3.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*]
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……
4.	**Title of position:**	
	Name of candidate:	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*] ……
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……
5.	**Title of position:**	
	Name of candidate	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*] ……
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……

6.	**Title of position:** *[insert title]*	
	Name of candidate	
	Duration of appointment:	[*insert the whole period (start and end dates) for which this position will be engaged*] ……
	Time commitment: for this position:	[*insert the number of days/week/months/ that has been scheduled for this position*] ……
	Expected time schedule for this position:	[*insert the expected time schedule for this position (e.g. attach high level Gantt chart*] ……

Form PER-2:
Resume and Declaration
Contractor's Representative and Key Personnel

Name of Bidder

Position [#*1*]: [*title of position from Form PER-1*]		
Personnel information	**Name:**	**Date of birth:**
	Address:	**E-mail:**
	Professional qualifications:	
	Academic qualifications:	
	Language proficiency: *[language and levels of speaking, reading and writing skills]*	
details		
	Address of Procuring agency/Employer:	
	Telephone:	**Contact (manager / personnel officer):**
	Fax:	
	Job title:	**Years with present Procuring agency/Employer:**

Summarize professional experience in reverse chronological order. Indicate particular technical and managerial experience relevant to the project.

Project	**Role**	**Duration of involvement**	**Relevant experience**
[main project details]	*[role and responsibilities on the project]*	*[time in role]*	*[describe the experience relevant to this position]*

Declaration

I, the undersigned *[insert either "Contractor's Representative" or "Key Personnel" as applicable]* , certify that to the best of my knowledge and belief, the information contained in this Form PER-2 correctly describes myself, my qualifications and my experience.

I confirm that I am available as certified in the following table and throughout the expected time schedule for this position as provided in the Bid:

Commitment	**Details**
Commitment to duration of contract:	*[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]* ……
Time commitment:	*[insert period (start and end dates) for which this Contractor's Representative or Key Personnel is available to work on this contract]* ……

I understand that any misrepresentation or omission in this Form may:

(a) be taken into consideration during Bid evaluation;

(b) result in my disqualification from participating in the Bid;

(c) result in my dismissal from the contract.

Name of Contractor's Representative or **Key Personnel: [*insert name*]**

Signature: _____

Date: (day month year): _____

Countersignature of authorized representative of the Bidder:

Signature: _____

Date: (day month year): _____

Form CON – 2

Historical Contract Non-Performance, Pending Litigation and Litigation History

Bidder's Name: _____

Date: _____

JV Member Name_____

ICB/NCB No. and title: _____

Page _____of _____pages

Non-Performed Contracts in accordance with Qualification Criteria			
☐ Contract non-performance did not occur January *[insert year]* ☐ Contract(s) not performed since [*insert year]*			
Year	**Non-performed portion of contract**	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and PKR equivalent)**
		Contract Identification: Name of Procuring agency/Employer(PA): Address of PA: Reason(s) for nonperformance:	
Pending Litigation, in accordance with Qualification Criteria			
☐ No pending litigation ☐ Pending litigation			

Year of dispute	Amount in dispute (currency)	Contract Identification	Total Contract Amount
		Contract Identification: _____ Name of PA: _____ Address of PA: _____ Matter in dispute: _____ Party who initiated the dispute: ____ Status of dispute: _____	
Litigation History in accordance with Section III, Evaluation and Qualification Criteria of the Prequalification document			
☐ No Litigation History ☐ Litigation History			
Year of award	**Outcome as percentage of Net Worth**	**Contract Identification**	**Total Contract Amount (currency), PKR Equivalent (exchange rate)**
[insert year]	*[insert percentage]*	Contract Identification: *[indicate complete contract name, number, and any other identification]* Name of PA: *[insert full name]* Address of PA: *[insert street/city/country]* Matter in dispute: *[indicate main issues in dispute]* Party who initiated the dispute: *[indicate "Procuring agency/Employer" or "Contractor"]* Reason(s) for Litigation and award decision *[indicate main reason(s)]*	*[insert amount]*

Financial Situation

Form FIN – 3.1:

Financial Situation and Performance

Bidder's Name: _____
Date: _____
JV Member's Name_____
ICB No. and title: _____
Page _____of _____pages

1. Financial data

Type of Financial information in (currency)	**Historic information for previous _____*years*, _____ (amount in currency, currency, exchange rate*, PKR equivalent)**				
	Year 1	Year 2	Year 3	Year4	Year 5
Statement of Financial Position (Information from Balance Sheet)					
Total Assets (TA)					
Total Liabilities (TL)					
Total Equity/Net Worth (NW)					
Current Assets (CA)					
Current Liabilities (CL)					
Working Capital (WC)					
Information from Income Statement					
Total Revenue (TR)					
Profits Before Taxes (PBT)					
Cash Flow Information					
Cash Flow from Operating Activities					

*Refer to ITB 16 for the exchange rate

2. Sources of Finance

Specify sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments.

No.	Source of finance	Amount (PKR)
1		
2		
3		

2. Financial documents

The Bidder and its parties shall provide copies of financial statements for _____years pursuant to Evaluation and Qualifications Criteria, Sub-factor 3.1. The financial statements shall:

(a) reflect the financial situation of the Bidder or in case of JV member, and not an affiliated entity (such as parent company or group member).

(b) be independently audited or certified in accordance with local legislation.

(c) be complete, including all notes to the financial statements.

(d) correspond to accounting periods already completed and audited.

☐ Attached are copies of financial statements for the _____years required above; and complying with the requirements

Form FIN – 3.2:

Average Annual Construction Turnover

Bidder's Name: _____
Date: _____
JV Member's Name_____
ICB/NCB No. and title: _____
Page _____of _____pages

	Annual turnover data (construction only)		
Year	**Amount** **Currency**	**Exchange rate**	**PKR equivalent**
[indicate year]	*[insert amount and indicate currency]*		
Average Annual Construction Turnover *			

* See Section III, Evaluation and Qualification Criteria.

Form FIN – 3.3:

Financial Resources

Specify proposed sources of financing, such as liquid assets, unencumbered real assets, lines of credit, and other financial means, net of current commitments, available to meet the total construction cash flow demands of the subject contract or contracts as specified in Section (Evaluation and Qualification Criteria)

Financial Resources		
No.	**Source of financing**	**Amount**
1		
2		
3		

Form FIN – 3.4:

Current Contract Commitments / Works in Progress

Bidders and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Current Contract Commitments					
No.	**Name of Contract**	**Procuring agency/Employer's Contact Address, Tel, Fax**	**Value of Outstanding Work [PKR Equivalent]**	**Estimated Completion Date**	**Average Monthly Invoicing Over Last Six Months [PKR/month)]**
1					
2					
3					
4					
5					

Form FIN - 5:

Self-Assessment Tool for Bidder's Compliance to Financial Resources (Criterion 2.1 of Section 3)

This form requires the same information submitted in Forms FIN – 3.3 and FIN -3.4. All conditions of "Available Financial Resources Net of CCC ≥ Requirement for the Subject Contract" must be satisfied to qualify.

Form FIN - 5A: For Single Entities

For Single Entities: (A)	Total Available Financial Resources from FIN – 3.3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 3.4 (C)	Available Financial Resources Net of CCC D = (B - C)	Requirement for the Subject Contract (E)	Results: Yes or No [*D must be greater than or equal to E*] (F)
_____ (Name of Bidder)				. . . . . ._	

Form FIN - 5B: For Joint Ventures

For Joint Ventures: (A)	Total Available Financial Resources from FIN – 3.3 (B)	Total Monthly Financial Requirement for Current Contract Commitments (CCC) from FIN – 3.4 (C)	Available Financial Resources Net of CCC D = (B - C)	Requirement for the Subject Contract (E)	Results: Yes or No [*D must be greater than or equal to E*] (F)
One Partner:					
_____ __ (Name of Partner)				. . . . . .	
Each Partner:					

_____ _ (Name of Partner 1)				. . . .	
_____ _ (Name of Partner 2)				. . . .	
_____ _ (Name of Partner 3)				. . . .	
All partners combined	∑ D = Sum of available financial resources net of current contract commitments for all partners		∑ D = _____	. . . .	

Form FIN – 5 is made available for use by the bidder as a self-assessment tool, and by the employer as an evaluation work sheet, to determine compliance with the financial resources requirement as stated in 2.3.3. Failure to submit Form FIN - 5 by the Bidder shall not lead to bid rejection.

EXPERIENCE

Form EXP - 4.1

General Construction Experience

Bidder's Name: _____
Date: _____
JV Member's Name_____
ICB/NCB No. and title: _____
Page _____of _____pages

Starting Year	Ending Year	Contract Identification	Role of Bidder
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of PA: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of PA: _____ Address: _____	
		Contract name: _____ Brief Description of the Works performed by the Bidder: _____ Amount of contract: _____ Name of PA: _____ Address: _____	

Form EXP - 4.2(a)

Specific Construction and Contract Management Experience

Bidder's Name: _____
Date: _____
JV Member's Name_____
ICB/NCB No. and title: _____
Page _____of _____pages

Similar Contract No.	**Information**			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount			PKR equivalent	
If member in a JV or sub-contractor, specify participation in total Contract amount				
PA's Name:				
Address: Telephone/fax number E-mail:				

Form EXP - 4.2(a) (cont.)

Specific Construction and Contract Management Experience (cont.)

Similar Contract No.	Information
Description of the similarity in accordance with Sub-Factor 4.2(a) of Section III:	
1. Amount	
2. Physical size of required works items	
3. Complexity	
4. Methods/Technology	
5. Construction rate for key activities	
6. Other Characteristics	

Form EXP - 4.2(b)

Construction Experience in Key Activities

Bidder's Name: _____
Date: _____
Bidder's JV Member Name: _____
Sub-contractor's Name[2] (as per ITB 34.2 and 34.3): _____
ICB/NCB No. and title: _____

Page _____ of _____ pages

All Sub-contractors for key activities must complete the information in this form as per ITB 38 and Qualification Criteria and Requirements, Sub-Factor 4.2.

1. Key Activity No One: _____

	Information			
Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Sub-contractor ☐
Total Contract Amount			PKR equivalent	
Quantity (Volume, number or rate of production, as applicable) performed under the contract per year or part of the year	Total quantity in the contract (i)	Percentage participation (ii)		Actual Quantity Performed (i) x (ii)
Year 1				
Year 2				
Year 3				
Year 4				

[2] If applicable

	Information
PA's Name:	
Address: Telephone/fax number E-mail:	

2. Activity No. Two

3. ……

	Information
Description of the key activities in accordance with Section III:	

Form EXP - 4.2 (c)

Specific Experience in Managing ES aspects

[The following table shall be filled in for contracts performed by the Bidder, and each member of a Joint Venture]

Bidder's Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Member Name: *[insert full name]*
ICB/NCB No. and title: *[insert ICB/NCB number and title]*
Page *[insert page number]* of *[insert total number]* pages

1. Key Requirement no 1 in accordance with 4.2 (c): _____

Contract Identification				
Award date				
Completion date				
Role in Contract	Prime Contractor ☐	Member in JV ☐	Management Contractor ☐	Subcontractor ☐
Total Contract Amount			PKR	
Details of relevant experience				

2. Key Requirement no 2 in accordance with 4.2 (c): _____
3. Key Requirement no 3 in accordance with 4.2 (c): _____
4. …

Appendix-A

Form of Bid Security

(Bank Guarantee)

[The bank shall fill in this Bank Guarantee Form in accordance with the instructions indicated.]

[Guarantor letterhead or SWIFT identifier code]

Beneficiary: *[Purchaser to insert its name and address]*

No.: *[Purchaser to insert reference number for the Request for Bids]*

Alternative No*.: [Insert identification No if this is a Bid for an alternative]*

Date: *[Insert date of issue]*

BID GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that _____ *[insert name of the Bidder, which in the case of a joint venture shall be the name of the joint venture (whether legally constituted or prospective) or the names of all members thereof]* (hereinafter called "the Applicant") has submitted or will submit to the Beneficiary its Bid (hereinafter called "the Bid") for the execution of _____ under Request for Bids No. _____ _ ("the RFB").

Furthermore, we understand that, according to the Beneficiary's conditions, Bids must be supported by a Bid guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ (_____) upon receipt by us of the Beneficiary's complying demand, supported by the Beneficiary's statement, whether in the demand itself or a separate signed document accompanying or identifying the demand, stating that either the Applicant:

(a) has withdrawn its Bid during the period of Bid validity set forth in the Applicant's Letter of Bid ("the Bid Validity Period"), or any extension thereto provided by the Applicant; or

(b) having been notified of the acceptance of its Bid by the Beneficiary during the Bid Validity Period or any extension thereto provided by the Applicant, (i) has failed to sign the contract agreement, or (ii) has failed to furnish the performance security, in accordance with the Instructions to Bidders ("ITB") of the Beneficiary's bidding document.

This guarantee will expire: (a) if the Applicant is the successful Bidder, upon our receipt of copies of the Contract agreement signed by the Applicant and the performance security issued to the Beneficiary in relation to such Contract agreement; or (b) if the Applicant is not the successful Bidder, upon the earlier

of (i) our receipt of a copy of the Beneficiary's notification to the Applicant of the results of the Bidding process; or (ii) twenty-eight days after the end of the Bid Validity Period.

Consequently, any demand for payment under this guarantee must be received by us at the office indicated above on or before that date.

_____

[Signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

Appendix-B

Form of Bid-Securing Declaration

[The Bidder shall fill in this Form in accordance with the instructions indicated.]

Date: *[date (as day, month and year)]*
No.: *[number of bidding process]*
Alternative No.: *[insert identification No if this is a Bid for an alternative]*

To: *[complete name of Procuring agency/Employer]*

We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid-Securing Declaration.

We accept that we will be blacklisted and henceforth cross debarred for participating in respective category of public procurement proceedings for a period of (not more than) six months, if fail to abide with a bid securing declaration, however without indulging in corrupt and fraudulent practices, if we are in breach of our obligation(s) under the Bid conditions, because we:

(a) have withdrawn our Bid during the period of Bid validity specified in the Letter of Bid; or

(b) having been notified of the acceptance of our Bid by the Procuring agency/Employer during the period of Bid validity, (i) fail or refuse to sign the Contract; or (ii) fail or refuse to furnish the Performance Security (or guarantee), if required, in accordance with the ITB.

We understand this Bid Securing Declaration shall expire if we are not the successful Bidder, upon the earlier of (i) our receipt of your notification to us of the name of the successful Bidder; or (ii) twenty-eight days after the expiration of our Bid.

Name of the Bidder*****_____

Name of the person duly authorized to sign the Bid on behalf of the Bidder******_____

Title of the person signing the Bid_____

Signature of the person named above_____

Date signed _____ day of _____, _____

*****: In the case of the Bid submitted by joint venture specify the name of the Joint Venture as Bidder
******: Person signing the Bid shall have the power of attorney given by the Bidder attached to the Bid

[Note: In case of a Joint Venture, the Bid-Securing Declaration must be in the name of all members to the Joint Venture that submits the Bid.]

Appendix-C

Formula for Price Adjustment

*[**Note to Procuring agency/Employer:** It is recommended that in the case of very large and/or complex works contracts, it may be necessary to specify several families of price adjustment formulae corresponding to the different works involved. **When finalizing the contract document, ensure that the finalized Schedule of Cost Indexation is attached to** **the Contract Agreement.***]

a) Price Adjustment/ escalation shall not be applicable on Civil, Mechanical and Electrical projects /contracts having contract life less than 365 days from the date of the signing of the contract.

b) Procuring Agency/Employer is advised not to change any provisions hereof unless otherwise stated by the Authority.

c) No method, other than given in this formula will be applicable to compute the price adjustment.

d) This document will be applicable only for Price Adjustment in local currency (Pak. Rs.). Price Adjustment in foreign currency is not allowed.

e) Price Adjustment formula and corresponding references to be inferred for price adjustment shall be agreed and firmed up before signing of the contract. Procuring agency and contractor shall firm up the weightages and co-efficient for respective items before signing of the contract and there shall be no change permissible in the weightages after signing of the contract.

f) For imported plant/ equipment and materials quoted in local currency (Pak. Rs.), foreign currency, exchange rates shall be fixed at the respective interbank currency exchange rates, 28 days prior to the tender opening date. The change in foreign currency exchange rate will be applicable to the foreign currency component stated in the Letter of Credit established by the Contractor or his Vendor.

g) This procedure is to assist the Procuring agency/Employer and bidder for the preparation of provisions for price adjustment in their bidding / contract documents. All the coefficients of the price adjustment formula shall be specified in the bidding document at the time of advertisement.

[The formulae for price adjustment shall be of the following general type:]

$$\mathbf{P}n = \mathbf{A} + \mathbf{b}\,\frac{\mathbf{L}n}{\mathbf{L}o} + \mathbf{c}\,\frac{\mathbf{M}n}{\mathbf{M}o} + \mathbf{d}\,\frac{\mathbf{E}n}{\mathbf{E}o} + \ldots\ldots\ldots\ldots$$

where,

"**P**n" is the Price Adjustment factor for the work carried out in the period "n".

"**A**" is a constant or the Non-Adjustable Portion of the Price Adjustment Factor to be specified in Appendix-C to Bid, representing the Non-Adjustable Portion of the Contract Price.

"**b**, **c**, **d .....**" are Coefficients or weightages of the order of 0.xx (i.e., fractions rounded off to two decimals) for each specified element of adjustment in the Contract. The sum of **A**, **b**, **c**, **d**, etc., shall be one.

"Ln", "En", "Mn", ... are the current cost indices or reference prices for period "n", expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the date 28 days prior to the last day of the period (to which the particular Payment Certificate relates); and

"Lo", "Eo", "Mo", ... are the base cost indices or reference prices, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the Base Date.

1. Construction schedule should be provided by the contractor as required in the Contract. Price Adjustment shall be applicable as payable in full for the original scheduled completion period.

2. In the event the completion of contract exceeds the original scheduled period:

   2.1 In case of default on the part of the contractor causing delay in original scheduled completion, the rate of Price Adjustment will be frozen at the original scheduled date of completion; however Price Adjustment will be applicable till actual completion. While computing Price Adjustment beyond the scheduled completion period, in the event the rate is reduced, then that reduced rate will be applied.

3. The Price Adjustment will be payable in full for the extended period if the contractor has been granted an extension of time for no fault on the part of the contractor, duly approved by the Employer.

4. Unless specifically stated otherwise in the contract, the basis for compensation will be only those elements, which are specifically listed as specified items in the tender documents. This list will specify the elements for Civil, Electrical, Mechanical, Sanitary, HVAC, etc., separately.

5. Formula for Price Adjustment provided herein will be applicable for all the contracts such

as Civil, Electrical, Mechanical, etc.

6. There shall be no Price Adjustment for the elements which the Employer has either supplied free of cost or at fixed prices as well as for those elements for which an umbrella *ex gratia* or escalation cover is provided by the Government through an Executive Order or Statutory Regulatory Order (SRO).

Weightages of Specified Items

Each of the cost elements, having cost impact of five (05) percent or highercan be selected for adjustment.

In determining the weightages, the following procedure shall be adopted:

a) Base Date Price alone of an element based on market rate shall be considered excluding cost of construction/ installation, overheads and profit.

b) Engineer's Estimate shall be prepared for complete project.

c) Appropriate Rate Analysis of the Engineer's Estimate shall be made to determine costs of the basic elements.

d) For such cost elements having various types of a particular element, individual cost of such family of the element used in the project to be determined and added to work out the element cost. (Grade-40 andGrade-60 steel shall be treated under same category).

e) Each cost element determined as above, shall be divided by the total amount of Engineer's Estimate to determine various weightages.

Weightage of Fixed Portion

Weightage of fixed portion (Non-adjustable portion of the estimated cost of the contract), shall be determined as under:

a) First the weightages of all the cost elements having value of five (5) percent or more to be added up to see whether the total is 75 percent or less. In that case the total is to be subtracted from one (01) to determine the weightage of the fixed portion,

b) In case total weightage of the cost elements including HSD and labour exceeds 75 percent, the element(s) having lowest weightage(s) other than HSD and labour, shall be excluded in considering the adjustable costs elements.

c) Fixed portion shall be 25 percent and in case the fixed portion exceeds 25 percent it shall be supported by calculations attached with the bidding documents.

d) Sum of fixed portion and weightages b, c, d, ….etc., of the adjustable portion shall always be one (01).

Base Date Price

The base date price (or base date index) of any element shall be the price of the element for the month on the day falling 28 days prior to the last day for submission of bids.

Current Date Price

The current date price (or current date index) of any element shall be the price of the element for the month falling on the day 28 days prior to the last day of the period to which the particular Payment Certificate relates.

Sources of Prices

The prices of elements subject to Price Adjustment shall be to the extent possible as given in the Statistical Bulletins published by Federal Bureau of Statistics (FBS), Statistical Division Government of Pakistan. Statutory notifications and official price from public sector organizations, where available, may be used at the option of the Employer. The source for prices of High Speed Diesel (HSD) shall be either Statistical Bulletins or Pakistan State Oil (PSO) or Oil and Gas Regulatory Authority (OGRA). However, for a particular adjustable element, the same source should be used throughout the currency of contract as also stipulated in the tender documents before issuing the tender documents.
The Base Date Prices and Current Date Prices of the specified elements shall be obtained from the sources specified in the contract.

Method for payment of bills

The billed amount of the Works for each calendar month will be obtained from the checked bills submitted by the Contractor. In case the billed amount is for more than one month, the amount of the bill shall be segregated for actual workdone in each month.

Coefficient or Weightages

a) The coefficient for each specified element shall be calculated and given in the bidding/tender documents. The coefficient for each specified adjustable element shall be determined by the user proportionate to its ratio in the total amount of the Engineer's Estimate, in accordance with the prescribed procedure. The sum of these coefficients shall form the adjustable portion of the Contract, which shall not exceed 0.75.
b) Coefficients for each adjustable item shall be agreed by both parties and shall be fixed and locked at the time of the signing of the contract and shall remain constant during the currency of the contract.

Price Adjustment for Lump Sum Contract

a) Formula of Price Adjustment shall be used in determining Price Adjustment for contracts having detailed breakdown of cost. However, when a contract is assigned on lump sum basis without detailed breakdown of quantities and cost, Price Adjustment for the Specified Elements in the contract will be computed as follows:

$$\text{Increase/ Decrease in Cost (Price Adjustment Factor)} = \frac{\text{Current Date Price} - \text{Base Date Price}}{\text{Base Date Price}}$$

b) If the resulting Price Adjustment Factor is positive (+ve), the price should be added tothe contractor's payable amount. If the result is negative (-ve), the price should be subtracted from the payable amount.

c) The executed quantities of the elements subject to Price Adjustment can be obtained from the actual measurement or from certified invoice of the contractor or any other mode agreed between the parties which shall be stipulated in the contract.

Section VIII. General Conditions (GC)

Red Book:

© FIDIC 2017. All rights reserved.

The Conditions of Contract are the "General Conditions" which form part of the "Conditions of Contract for Construction for Building and Engineering Works Designed by the Employer ("Red book") Second edition 2017" published by the Federation Internationale Des Ingenieurs – Conseils (FIDIC) and the following "Particular Conditions" which shall complement the General Conditions of the Contract.

An original copy of the above FIDIC publication i.e. "*Conditions of Contract for Building and Engineering Works Designed by the Employer*" must be obtained from FIDIC.

International Federation of Consulting Engineers (FIDIC)

FIDIC Bookshop – Box- 311 – CH – 1215 Geneva 15 Switzerland

Fax: +41 22 799 49 054

Telephone: +41 22 799 49 01

E-mail: fidic@fidic.org

www.fidic.org

FIDIC code: ISBN13: 978-2-88432-084-9

Section IX. Special Conditions of the Contract

Special Conditions of the Contract

The Special Conditions of Contract (SCC) complement the General Conditions of Contract (GCC) to specify data and contractual requirements of the National Bank of Pakistan, the engineer, the sector, the overall project, and the works. In the event of a conflict, the provisions herein shall prevail over those in the GCC.

Part A – Contract Data

Contract data of the SCC, includes data to complement the GCC in a manner similar to the way in which the Bid Data Sheet complements the Instructions to Bidders.

SCC Clause Number	GCC Clause Number	Amendments of, and Supplements to, Clauses in the GCC
General Provision (GCC 1)		
1.	1.3	**For notices** Wing Head Engineering North, Engineering Group, LCMG, 2nd Floor NBP G-5/1 Building Islamabad: Contractors Authorized representatives name and address: …… ……
2.	1.4	**Governing Law;** The Applicable Law shall be: **Laws of the Country**
3.	1.4	**Communication Language:** The Communication Language shall be: **ENGLISH**
4.	1.5	**Documents forming the contract listed:** **(a) The Contract Agreement; (b) The Letter of Acceptance; (c)The Particular Conditions Part A – Contract Data(BDS); (d) the Particular Conditions Part B – Special Provisions(SCC); (f) General Conditions; (g) the Specification; (h) the Drawings; (i) the Schedules; (j) the JV Undertaking (if the Contractor is a JV); and (k) any other documents forming part of the Contract.**
The Employer/ Procuring agency/Employer (GCC Clause 2)		

5.	2.1	Time for access to the Site: **10** days after Commencement Date
The Engineer (GCC Clause 3)		
6.	3.2	Engineer's Duties and Authority: Variations resulting in an increase of the Accepted Contract Amount in excess of 15 % shall require approval of the National Bank of Pakistan.
The Contractor (GCC Clause 4)		
7.	4.2	Performance guarantee/ security will be *5%* of the Contract Price in the form of a bank guarantee from a scheduled bank of Pakistan/Insurance bond from an insurance company having at least AA rating from PACRA/JCR. **Contracts Worth Rs. 10 Mn. or above**
8.	4.7.2(a)	**Clause 4.7 Setting out** Period for notification of errors in the items of reference ***"30 Day"***
9.	4.22	**Contractor's Operations on site** On Site *[Describe any other places as forming part of the Site]*
Sub-Contracting (GCC Clause 5)		
10.	5.1(a)	Maximum allowable accumulated value of work subcontracted (as a percentage of the Accepted Contract Amount) **Note: N/A**
11.	5.1 (b)	Works for which sub-contracting is not permitted. [*Insert works for which sub-contracting is not permitted*] **Note: N/A**
Staff and Labour (GCC Clause 6)		
12.	6.5	Normal working hours ***[12 Hours]***
Plant, Material and Workmanship (GCC Clause 7)		
13.	7.2	Samples *[please specify if required]*
Commencement, Delays and Suspension (GCC Clause 8)		
14.	8.3	Number of additional paper copies of program Note: ***Through EPADS***

15.	8.8	Delay damages shall be payable for each day of delay shall be 0.1% of the Contract Price per day, in the currency and proportions in which the Contract Price is payable. Maximum amount of delay damages is *10*% of the Contract Price
Measurement and Valuation (GCC Clause 12)		
16.	12.2	The method of measurement shall be in accordance with the Bill of Quantities. Except as otherwise stated in the Contract, measurement shall be made of the net actual quantity of each item of the Permanent Works and no allowance shall be made for bulking, shrinkage or waste*]*
17.	12.3	Percentage profit *[*five percent (5%)*]*
Variations and Adjustments (GCC Clause 13)		
18.	13.4 (b)(ii)	Percentage rate to be applied to Provisional Sums for overhead charges and profit is ***20 %***
19.	13.7	Adjustments for Changes in Cost: The Contract Price shall be adjustable during Contract Execution. *[The Procuring agency/Employer shall ensure consistency with Bid Data Sheet]*
Contract Price and Payment (GCC Clause 14)		
20.	14.2	Total advance payment shall be 10 % Percentage of the Accepted Contract Amount payable in the currency and proportion of the contract. *[Insert number and timing of installments if applicable]* **Note: N/A**
21.	14.2.3	Repayment of Advance payment: [*insert percentage if applicabel* **Note: N/A**
22.	14.3(iii)	Percentage of retention: **5%** Limit of Retention Money **5 %**
23.	14.5(b)(i)	Plant and Materials:

		If Sub-Clause 14.5 applies: Plant and Materials for payment when shipped _____ *[list].* **Note: N/A**
24.	14.5(c)(i)	Plant and Materials: Plant and Materials for payment when delivered to the Site _____ *[list].* **Note: N/A**
25.	14.6.2	Withholding (amounts in) an IPC _____ % of the Accepted Contract Amount. **Note: N/A**
26.	14.7(a)	Period of payment of Advance Payment to the Contractor _____days *[insert number of days, normally 28 days]* **Note: N/A**
27.	14.7b(i)	Period for the Procuring agency/Employer to make interim payments to the Contractor under Sub-Clause 14.6 (interim Payment) **30 days** *[insert number of days, normally 30 days]*
28.	14.7b(ii)	Period for the Procuring agency/Employer to make interim payments to the Contractor under Sub-Clause 14.13 (Final Payment) **60 days** *[insert number of days, normally 60 days]*
29.	14.7(c)	Period for the Procuring agency/Employer to make final payment to the Contractor **60 days** *[insert number of days, normally 56 days]*
30.	14.8	financing charges for delayed payment (percentage points above the average bank short-term lending rate as referred to under sub-paragraph (a)) _____% **Note: N/A**
31.	14.11.1(b)	Number of additional paper copies of draft Final Statement
32.	14.15	**Currencies of Payment** The Contract Price shall be paid in the currency or currencies named in the Contract Data. If more than one currency is so named, payments shall be made as follows:

		(a) if the Accepted Contract Amount was expressed in Local Currency only or in Foreign Currency only.
33.	14.15 (a)(i)	The proportions or amounts of the Local and Foreign Currencies, and the fixed rates of exchange to be used for calculating the payments, shall be as stated in the Contract Data, except as otherwise agreed by both parties. **Note: N/A**
34.	14.15 (c)	Payment of Delay Damages shall be made in the currencies and proportions specified in the Contract Data.
35.	14.15 (f)	If no rates of exchange are stated in the Contract Data, they shall be those prevailing on the Base Date and published by the central bank of the Country.
36.	17.2 (d)	**Liability for Care of the Works** Any operation of the forces of nature (other than those allocated to the Contractor in the Contract Data) which is Unforeseeable or against which an experienced contractor could not reasonably have been expected to have taken adequate preventative precautions.
		Insurance (GCC Clause 19) Note: N/A
37.	19.1	Permitted deductible limits **insurance required for the Works**: **Note: The sum stated in Letter of Acceptance plus fifteen percent 15%.** **insurance required for Goods**: **Note: Full replacement Cost** insurance required for liability for breach of professional duty: _ **Note: N/A** _____ insurance required against liability for fitness for purpose (if any is required): **Note: N/A** _____ **insurance required for injury to persons and** **damage to property**: a**) As per workmen compensation act b) Contractor's all Risk including Third party c) Damages to the Structure, stores if supplied by the Bank** insurance required for injury to employees: __ other insurances required by Laws and by local practice: _____

38.	19.2.1(b)	Additional amount to be insured (as a percentage of the replacement value, if less or more than 15%
39.	19.2.1(iv)	List of Exceptional Risks which shall not be excluded from the insurance cover for the Works **Note: N/A**
40.	19.2.2	Extent of insurance required for Goods Amount of insurance required for Goods **(19.1) Note: Full replacement Cost**
41.	19.2.3(a)	amount of insurance required for liability for breach of professional duty **Note: N/A**
42.	19.2.3(b)	Insurance required against liability for fitness for purpose Yes/No [*delete as appropriate*] **Note: N/A**
43.	19.2.3	Period of insurance required for liability for breach of professional duty **Note: N/A**
44.	19.2.4	Amount of insurance required for injury to persons and damage to property **(19.1) Note: a) As per workmen compensation act b) Contractor's all Risk including Third party c) Damages to the Structure, stores if supplied by the Bank**
45.	19.2.6	**Insurance** <u>Other insurances required by Laws and by local practice</u> The contractor shall provide all other insurances required by the Laws of the countries where (any part of) the Works are being carried out, at the Contractor's own cost. Other insurances required by local practice (if any) shall be detailed in the Contract Data and the Contractor shall provide such insurances in compliance with the details given, at the Contractor's own cost.
Dispute Avoidance/ Adjudication Board (GCC Clause 21) Note: N/A		
46.	21.1	Time for appointment of DAAB *[specify]*
47.	21.1	The DAAB shall comprise *[specify] members*
48.	21.1	List of proposed members of DAAB - Proposed by Employer/ Procuring agency/Employer

		1. …… 2. …… 3. …… - Proposed by Contractor 1. …… 2. …… 3. ……
49.	21.2	Appointing entity (official) for DAAB members

Part-B Special Provisions

The Procuring agency/Employer shall be required to draft the special provisions (particular conditions Part-B) by referring the concerned clauses as stipulated in the General Conditions of the Contract. These provisions should be drafted by keeping following guidelines in consideration:

i. Particular conditions must be drafted clearly and without any ambiguity;

ii. Party's duties, rights, obligations, roles and responsibilities shall be clearly described in line with General Conditions of the Contract, requirements as specified in the bidding document;

iii. While drafting special provisions realistic timelines must be provided for completion of the project / assignment;

iv. All disputes must be settled either through arbitration act 1940 or through International Chamber of Commerce.

Note: Special Provisions shall always over rule and supersede the respective provisions of General Conditions of the Contract. In order to conveniently trace the respective clause, reference of the concerned GCC clause must be provided.

Table: Summary of Sections (if any) Note: N/A

Description of parts of the Works that shall be designated a Section for the purposes of the Contract (Sub-Clause 1.1.73)	Value: Percentage[3] of Accepted Contract Amount (Sub-Clause 14.9)	Time for Completion (Sub-Clause 1.1.84)	Delay Damages (Sub-Clause 8.8)

[3] These percentages shall also be applied to each half of the Retention Money under Sub-Clause 14.9

SECTION VIII: CONTRACT FORMS

Notification of Award

(On Procuring agency/Employer's letterhead)

Letter of Acceptance

[Date]. . . . . .

To: . . . . .[Name and address of the contractor]

Subject: . . . . .[Notification of Award Contract No.]

This is to notify you that your Bid dated . . . . ……[date]. . . . . …… for execution of the . . . . .[name of the contract and identification number, as given in the Bid Data Sheet] . . . . . for the Accepted Contract Amount of the equivalent of . . . . . [amount in words and figures and name of currency]. . . . ., as corrected and modified in accordance with the Instructions to Bidders, is hereby accepted by our Agency.

You are requested to furnish the Performance Security within 28 days in accordance with the Conditions of Contract, using for that purpose the Performance Security Form included in Section 9 (Contract Forms) of the Bidding Document.

Authorized Signature: .....

Name and Title of Signatory: .....

Name of Agency: .....

Attachment: Contract Agreement

Form of Contract

THIS AGREEMENT made the _____ day of _____ 20_____ between *[name and address of Procuring agency/Employer]* of Pakistan (hereinafter called "the Procuring agency/Employer") of the one part and *[name of Contractor]* of *[city and country of Contractor]* (hereinafter called "the ") of Contractor other part:

WHEREAS the Procuring agency/Employer desired that the works *[brief description of works]* should be executed by the contractor, and has accepted a Bid by the contractor for the execution and completion of these works and remedying of any defects therein, in the sum of *[contract price in words and figures]* (hereinafter called "the Contract Price").

NOW THIS CONTRACT WITNESSETH AS FOLLOWS:

1. In this Contract words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract referred to.

2. The following documents shall be deemed to form and be read and construed as part of this Contract, In the event of any ambiguity or conflict between the Contract Documents listed below, the order of precedence shall be the order in which the Contract Documents are listed below:-

    (a) This form of Contract;
    (b) Letter of Acceptance;
    (c) the Form of Bid and the Price Schedule submitted by the Bidder;
    (d) the Works Requirements;
    (e) the Technical Specifications;
    (f) the Drawings;
    (g) the General Conditions of the Contract
    (h) the Special Conditions of Contract,
    (i) the completed schedule including Bill of Quantities; and
    (j) [*add here: any other documents*]

3. In consideration of the payments to be made by the Procuring agency/Employer to the contractor as mentioned in this contract, the contractor hereby covenants with Procuring agency/Employer to execute the works to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Procuring agency/Employer hereby covenants to pay the Contractor in consideration of the execution and completion of the Works and the remedying of defects therein, 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 to be executed in accordance with their respective laws the day and year first above written.

Signed, sealed, delivered by _____the _____ (for the Procuring agency/Employer)	Signed, sealed, delivered by _____the _____ (for the Contractor)
Witness to the signatures of the Procuring agency/Employer ……	Witness to the signatures of the Contractor ……

Performance Guarantee Form

To: *[name of Procuring agency/Employer]*

WHEREAS *[name of Contractor]* (hereinafter called "the contractor") has undertaken, in pursuance of Contract No. *[reference number of the contract]* dated *[insert date]* for the execution of *[insert name of the works and its brief description] (*hereinafter called "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the contractor shall furnish you with a Bank Guarantee by a reputable bank for the sum specified therein as security for compliance with the Contractor's performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Contractor a guarantee:

THEREFORE, WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Contractor, up to a total of *[amount of the guarantee in words and figures],* and we undertake to pay you, upon your first written demand declaring the Contractor to be in default under the Contract and without cavil or argument, any sum or sums within the limits of *[amount of guarantee]* as aforesaid, without your needing to prove or to show grounds or reasons for your demand or the sum specified therein.

This guarantee is valid until the: *[insert date]*

Signature and seal of the Guarantors

_____

[name of bank or financial institution]

_____

[address]

_____

[date]

Advance Payment Security

Demand Guarantee

_____

Beneficiary: _____

Date: _____

ADVANCE PAYMENT GUARANTEE No.: _____

Guarantor: _____

We have been informed that [Inset name of the Contractor] (hereinafter called "the Contractor") has entered into Contract No. _____ dated _____ with the [insert name of the Procuring agency/Employer] (hereinafter called "the Procuring agency/Employer") for the execution of _____ (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, an advance payment in the sum _____ (_____) is to be made against an advance payment guarantee.

At the request of the Contractor, we as Guarantor, hereby irrevocably undertake to pay the Procuring agency/Employer any sum or sums not exceeding in total an amount of _____ upon receipt by us of the Procuring agency/Employer's complying demand supported by the Procuring agency/Employer's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating either that the Applicant:

(a) has used the advance payment for purposes other than the costs of mobilization in respect of the Works; or

(b) has failed to repay the advance payment in accordance with the Contract conditions, specifying the amount which the Contractor has failed to repay.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Procuring agency/Employer's bank stating that the advance payment referred to above has been credited to the Contractor on its account number _____ at _____..

The maximum amount of this guarantee shall be progressively reduced by the amount of the advance payment repaid by the Contractor as specified in copies of interim statements or payment certificates which shall be presented to us.

The Guarantee shall remain valid up to the aforesaid date and shall be null and void after the aforesaid date or earlier if the advance made to the Contractor is fully adjusted against payments from Interim Payment Certificates of the Contractor provided that the Guarantor agrees that the aforesaid period of validity shall be deemed to be extended if on the above mentioned date the advance payment is not fully adjusted.

_____

[signature(s)]

Note: All italicized text is for use in preparing this form and shall be deleted from the final product.

Retention Money Security

Demand Guarantee

_____ *[Guarantor letterhead or SWIFT identifier code]*

Beneficiary: _____ *[Insert name and Address of Procuring agency/Employer]*

Date: _____*[Insert date of issue]*

RETENTION MONEY GUARANTEE No.: *[Insert guarantee reference number]*

Guarantor: *[Insert name and address of place of issue, unless indicated in the letterhead]*

We have been informed that _____ *[insert name of Contractor, which in the case of a joint venture shall be the name of the joint venture]* (hereinafter called "the Contractor") has entered into Contract No. _____ *[insert reference number of the contract]* dated _____ with the Procuring agency/Employer, for the execution of _____ *[insert name of contract and brief description of* Works*]* (hereinafter called "the Contract").

Furthermore, we understand that, according to the conditions of the Contract, the Procuring agency/Employer retains moneys up to the limit set forth in the Contract ("the Retention Money"), and that when the Taking-Over Certificate has been issued under the Contract and the first half of the Retention Money has been certified for payment, payment of *[*insert the second half of the Retention Money *or if the amount guaranteed under the Performance Guarantee when the Taking-Over Certificate is issued is less than half of the Retention Money,* the difference between half of the Retention Money and the amount guaranteed under the Performance Security and, if required, the ES Performance Security*]* is to be made against a Retention Money guarantee.

At the request of the Applicant, we, as Guarantor, hereby irrevocably undertake to pay the Beneficiary any sum or sums not exceeding in total an amount of _____ *[insert amount in figures]* (_____) *[amount in words]* upon receipt by us of the Procuring agency/Employer's complying demand supported by the Beneficiary's statement, whether in the demand itself or in a separate signed document accompanying or identifying the demand, stating that the Applicant is in breach of its obligation(s) under the Contract, without your needing to prove or show grounds for your demand or the sum specified therein.

A demand under this guarantee may be presented as from the presentation to the Guarantor of a certificate from the Procuring agency/Employer's bank stating that the second half of the Retention Money as referred to above has been credited to the contractor on its account number _____ at _____ *[insert name and address of Contractor's bank]*.

This guarantee shall expire no later than the …. day of ……, 2…, and any demand for payment under it must be received by us at the office indicated above on or before that date.

_____

[signature(s)]

Note: All italicized text (including footnotes) is for use in preparing this form and shall be deleted from the final product.

Integrity Pact

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC. PAYABLE BY THE SUPPLIERS OF GOODS, SERVICES & WORKS IN CONTRACTS WORTH RS.10.00 MILLION OR MORE

Contract Number: _____ Dated: _____
Contract Value: _____
Contract Title: _____

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

Without limiting the generality of the foregoing [Name of Contractor] represents and warrants that it has fully declared the brokerage, commission, fee 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 consultations 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 Contractor] 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, representative or warranty.

[Name of Contractor] accepts full responsibility and strict liability for making and false declaration, not making full disclosure, misrepresenting fact 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 right 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 Contractor] 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 time the sum of any commission, gratification, bribe, finder's fee or kickback given by [Name of Contractor] as aforesaid for the purpose of obtaining or inducing the procurement of any contract, right, interest, privilege or other obligation or benefit in whatsoever form from GoP.

_____ _____

[Procuring agency/Employer] [Contractor]

Check List
Evaluation Criteria with respect to Project

S. No	Criteria	Yes/No	Page No.
1	Nationality in accordance with **ITB 4.3**		
2	No conflicts of interest in accordance with **ITB 3.7**		
3	Non-performance of a contract did not occur as a result of contractor default since ***[3 years]*.**		
4	Bidder's financial position and prospective long term profitability sound according to criteria established in 3.1 below and assuming that all pending litigation will be resolved against the Bidder		
5	No consistent history of court/arbitral award decisions against the Bidder since 1st **January *[2022]***		
6	The Bidder shall demonstrate that it has access to, or has available, liquid assets, unencumbered real assets, lines of credit, and other financial means (independent of any contractual advance payment) sufficient to meet the construction cash flow requirements estimated as ……for the subject contract(s) net of the Bidders other commitments		
7	The Bidders shall also demonstrate, to the satisfaction of the Procuring agency/Employer, that it has adequate sources of finance to meet the cash flow requirements on works currently in progress and for future contract commitments		
8	The audited balance sheets or, if not required by the laws of the Bidder's country, other financial statements acceptable to the Procuring agency/Employer for the last ***03* years** shall be submitted and must demonstrate the current soundness of the Bidder's financial position and indicate its prospective long-term profitability.		
9	Minimum average annual construction turnover of **PKR ……** calculated as total certified payments received for contracts in progress and/or completed within the last 03 years, divided by **03 years**		
10	Experience under construction contracts in the role of prime contractor, JV member, sub-contractor, or management contractor for at least the last **03 years**, starting from (insert date) …….		
11	A minimum number of similar contracts specified below that have been satisfactorily and substantially completed as a prime contractor, joint venture member, management contractor or sub-contractor between **03 years** and application submission deadline: (i) N contracts, each of minimum value V; Or (ii) Less than or equal to N contracts, each of minimum value V, but with total value of all contracts equal or more than N x V;…… **,** *(ii)……..above if not applicable]*.		
12	For the above and any other contracts completed and under implementation as prime contractor, joint venture member, management contractor or sub-contractor on or after the first day of the calendar year during the period stipulated in 4.2 (a) above, a minimum construction experience in the following key activities successfully completed		
13	An active status on FBR Active Taxpayer List and with Provincial Revenue Board.		
14	Valid registration in Pakistan Engineering Council in financial category C-6 or above with Specialization Code CE-10 & EE-04 on bidding date.		