



UNIVERSITY OF BUNER SWARI, DISTRICT BUNER

DEVELOPMENT OF UNIVERSITY OF BUNER AT SWARI (PHASE-I)

CONSTRUCTION OF BUILDINGS AND INFRASTRUCTURE WORKS AT SWARI CAMPUS OF UNIVERSITY OF BUNER (PACKAGE-5)

CONSTRUCTION OF ANCILLARY WORKS

TECHNICAL BID

BIDDING DOCUMENTS (VOLUME – I)

**INSTRUCTIONS TO BIDDERS
BIDDING DATA SHEET
EVALUATION AND QUALIFICATION CRITERIA
STANDARD BIDDING FORMS
GENERAL CONDITIONS OF CONTRACT
SPECIAL CONDITIONS OF CONTRACT
CONTRACT FORMS
SPECIFIC PROVISIONS**

SEPTEMBER 2026

PART-A – BIDDING PROCEDURE & REQUIREMENTS

SECTION-I: INVITATION FOR BIDS

UNIVERSITY OF BUNER, SWARI, DISTRICT BUNER

**DEVELOPMENT OF UNIVERSITY OF BUNER AT SWARI (PHASE-I)
CONSTRUCTION OF BUILDINGS AND INFRASTRUCTURE WORKS AT SWARI CAMPUS OF
UNIVERSITY OF BUNER (PACKAGE-5)**

**CONSTRUCTION OF ANCILLARY WORKS IN UNIVERSITY OF BUNER, SWARI CAMPUS
(PHASE-I, PACKAGE-5)**

INVITATION FOR BIDS

Date:

1. This Invitation for Bids follows the Procurement Notice (PN) or Procurement Advertisement (PA) No. ----- of for the subject Project / Procurement which appeared in *[insert media]* vide dated *[insert dates of issue of PN/PA]* and on EPADS.
2. University of Buner is executing the PSDP Project titled “Development of University of Buner (Phase-I)” through Higher Education Commission (HEC), Government of Pakistan. The Project covers the construction of buildings and infrastructures works at Swari Campus of University of Buner. Works involving Academic Block-A, Administration Block, Faculty & Staff Hostel and Girls Hostel along with External Development Works have been completed. University of Buner now intends to construct Ancillary Works for functional requirements of the Swari Campus. The scope of Works comprises construction of civil, plumbing, electrical and related works.
3. The Procuring agency / Employer has reserved the funds for the procurement planned during the financial year 2026-27. It is intended that part of the proceeds of the funds will be used to cover eligible payment under the contract for the **“Construction of Ancillary Works in University of Buner, Swari Campus (Phase-I, Package-5)”**.
4. University of Buner (UoB) now invites electronic bids from eligible bidders for **“Construction of Ancillary Works in University of Buner, Swari Campus (Phase-I, Package-5)”**.
5. The bidding shall be conducted in line with the procedure of the Rule 36(b) Single Stage - Two Envelop procedure prescribed under Public Procurement Rules 2004, e-Pak Procurement Regulations, 2023 and any Regulations, Regulatory Guides, Procurement Guidelines or Instructions issued by the Authority (from time to time), and is open to all potential bidders registered in the EPADS.
6. All bids must be accompanied by a Bid Security in form of Bank Guarantee from any Scheduled Bank in Pakistan approved by the Employer in the amount of 2% of Contract Value.
7. The electronic bids prepared in accordance with the instructions prescribed in the electronic bidding documents must be submitted through EPADS on or before *[mention bid closing date and time]*. Electronic bids will be opened by using EPADS on the same day at *[mention bid opening time at least 30 minutes after bid closing time]*

**Project Director
University of Buner (UoB)
Swari, District Buner**

SECTION-II: INSTRUCTION TO BIDDERS

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 the 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. <i>(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).</i>
	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.
	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 .
	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.
	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.
	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.
	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. <i>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.</i>
	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: <i>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.</i>

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 BDS . 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.
	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 Bidding 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 bidding 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.
	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: <i>Provided that except in Single Stage One Envelope Procedure, the bid shall include only the copies of technical proposal.</i>

	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.
	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: <i>The envelopes shall be sealed and marked in accordance with the bidding procedure adopted as referred in Rule-36 of Public Procurement Rules, 2004.</i>
	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.
	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.

	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 .
	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.
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 .
	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 .
	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.
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.
	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.
	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.
	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.
	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.
	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.

	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.
	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.
	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.
	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.
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

		<i>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 –</i> <i>(a) Submit the number of copies of signed bids required by the invitation;</i> <i>(b) Furnish required information concerning the number of its employees;</i> <i>(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.</i>
	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: <i>“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.</i>
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. <i>Note: In case of international bidding, the parameters for incorporation or licensing within Pakistan may be fulfilled as part of post qualification.</i>
	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: <i>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.</i>
	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.
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.
	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.
G. 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.

H. 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 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: University of Buner (UoB) The subject of procurement is: Construction of Ancillary Works in University of Buner, Swari Campus (Phase-I, Package-5) Period for completion of the works: 182 days Commencement date execution of the works: 14 days after signing of Contract Type of Procurement: National Competitive Bidding
2.	2.1	Financial year for the operations of the Procuring Agency/Employer: 2026-27 Name of Project: Construction of Ancillary Works in University of Buner, Swari Campus (Phase-I, Package-5) Name of financing institution: University of Buner (UoB) Name and identification number of the Contract: Ancillary Works in University of Buner, Swari Campus (Phase-I, Package-5)
3.	3.1	Not Applicable
B. Bidding Documents		
4.	7.1	Delete the text of Sub-Clause 7.1 and substitute with the following: 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: <u>Technical Bid</u> Volume-I Section I Invitation for Bids Section II Instructions to Bidders (ITBs) Section III Bid Data Sheet (BDS) Section IV Eligible Countries

BDS Clause Number	ITB Number	Amendments of, and Supplements to, Clauses in the Instruction to Bidders
		Section V Evaluation and Qualification Criteria Section VI Works Requirements, Technical Specifications & Schedule of Requirements Section VII Standard Bidding Forms Section VIII General Conditions (GC) Section IX Special Conditions of Contract (SCC) Part-A Contract Data Part-B Special Provisions Section X Contract Forms Section XI Specific Provisions Volume-II Technical Specifications Volume-III Drawings Financial Bid Volume-IV Letter of Bid – Financial Proposal Preamble to Engineer's Estimate Engineer's Estimate Integrity Pact
5.	7.2	Complete Bid duly signed, stamped and scanned shall be submitted online on EPADS v2.0.
6.	8.1	The address for clarification of Bidding Documents is; Project Director University of Buner (UoB) Swari, District Buner
7.	8.5	Pre-bid meeting venue, time, and date will be as per Invitation for Bids.
C. Preparation of Bids		
8.	10.1	The Language of all correspondences and documents related to the Bid is: English
9.	15.5	The bid price shall be adjusted in accordance with Appendix-C (Formula for Price Adjustment).
10.	15.6	Name of the works: Construction of Ancillary Works in University of Buner, Swari Campus (Phase-I, Package-5) The identification No.: Ancillary Works in University of Buner, Swari Campus (Phase-I, Package-5)

BDS Clause Number	ITB Number	Amendments of, and Supplements to, Clauses in the Instruction to Bidders
		The No. and identification of lots (contracts) comprising this open competitive bid: Not Applicable
11.	16.1	The currency of the Bid shall be in Pak. Rupees (PKR)
12.	18.1	The Bid Validity period shall be 90 days .
13.	19.1	The contractors quoting their bids up to a limit of 10% below Engineer estimate shall submit bid security @ 2% only of Engineer Estimate. The currency of the Bid Security shall be: PKR
14.	19.3	The Bid Security shall be, at the option of the bidder, in the form of Deposit at Call or a Bank Guarantee issued by a Scheduled Bank in Pakistan or from a foreign bank duly counter guaranteed by a Scheduled Bank in Pakistan in favour of the Employer (Project Director) valid for a period 28 days beyond the Bid Validity date. The Bid Security in original (in hard form) shall be submitted by the Bidder to the Employer (Project Director). Whereas, scanned version of Bid Security shall be submitted along with e-bids through EPADS v2.0 .
15.	19.3 (c)	The contractors quoting their bids more than 10% below up to 20% below on Engineers' Estimate shall submit along with their bids 8% Additional Security of Engineer's Estimated cost in addition to 2% bid security. If the bid is not accompanied with the required amount of additional security, then it will be considered as non-responsive and the 2% bid security shall be forfeited in favour of Government and the second lowest bidder and so on will be considered accordingly. i. Similarly, a contractor quoting bid more than 20% below shall submit with his bid an additional security on Engineer's Estimated cost equal to the differential amount of submitted bid and Engineers' Estimate along with detailed rate analysis. In case of more than 20% below bids, if the bid is not accompanied by the detailed rate analysis and / or required amount of additional security, then the said bid shall be considered as non-responsive. All the securities submitted along with such non-responsive bid shall be forfeited in favour of Government and the 2 nd lowest bidder and so on will be considered accordingly. ii. In case detailed rate analysis submitted with the bids is, in view of the Procuring Entity, not convincing, the Head of the Procuring Entity may declare such bid as non-responsive without any forfeiture of bid securities and record reasons thereof. iii. The procuring entity may offer the contract to next lowest bidder after due diligence in the context of financial difference between such two bids or may advertise procurement opportunity afresh. iv. After commencements of work by the successful bidder, the procuring entity may replace the Additional Security with a bank guarantee of the same amount from the scheduled bank; if the already deposited security is not in the form of bank guarantee.

BDS Clause Number	ITB Number	Amendments of, and Supplements to, Clauses in the Instruction to Bidders
		v. The Additional Security shall be released to the contractor in four installments i.e. 1st installment of 25% to be released upon completion of 25% of the project, 2nd installment of 25% to be released upon completion of 50% of the project, 3rd installment of 25% to be released upon completion of 75% of the project and the 4th installment of 25% to be released after 100% completion of the project. All previous orders, instructions and regulations issued regarding additional security shall stand superseded. (Ref. Regulation No. XIV 2022, vide Notification No. S.R.O (14)/Vol: 1-24/2021-22 dated May 10, 2022).
16.	20.1	Alternative Bids to the requirements of the Bidding Documents will not be permitted.
17.	20.2	Not applicable
18.	22.1	The e-bids, prepared in accordance with the instructions in the Bidding documents, must be submitted through EPADS v2.0 . Manual submission of Bids shall not be entertained.
19.	22.2	The written confirmation of authorization to sign on behalf of the Bidder shall consist of: Written power of Attorney .
D. Submission of Bids		
20.	23.2 (a)	Bid shall be submitted through EPADS v2.0. Original Bid Security shall be submitted at the following address: Project Director University of Buner (UoB) Swari, District Buner
21.	23.2 (b)	Title of the subject Procurement or Project name: Construction of Ancillary Works in University of Buner, Swari Campus (Phase-I, Package-5) ITB title and No: Ancillary Works in University of Buner, Swari Campus (Phase-I, Package-5) Time and date for submission: As per Invitation for Bids
22.	24.1	The deadline for Bid submission will be as per Invitation for Bids.
E. Opening and Evaluation of Bids		
23.	27.1	Bids will be opened by using EPADS v2.0 .

BDS Clause Number	ITB Number	Amendments of, and Supplements to, Clauses in the Instruction to Bidders
24.	33.2	Not Applicable
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.
27.	34.5	Not Applicable
28.	35	Not Applicable
29.	38.2	Not Applicable
F. Award of Contract		
30.	48.1	The Performance Security (or guarantee) shall be 10% (ten percent) of the Contract Price.
31.	48.2	The Performance Security shall be in the form of Bank Guarantee issued by a Scheduled Bank in Pakistan or from a foreign bank duly counter guaranteed by a Scheduled Bank in Pakistan in favour of the Employer (Project Director).
G. Review of Procurement Decisions		
32.	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

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

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.

Qualification of Bidders shall be evaluated on the basis of mentioned criteria with at least 50% score in each category regarding the Bidder's Experience, Personnel Capabilities, Equipment Capabilities and Financial Capabilities etc. as demonstrated in the qualification documents submitted by the Bidders, in addition to the fulfillment of mandatory requirements, shall be considered qualified.

The Employer reserves the right to waive minor deviations, if they do not materially affect the capability of the Bidder to perform the Contract.

A. MANDATORY REQUIREMENTS

- i. Valid registration with Pakistan Engineering Council (PEC), duly renewed for the year 2026-27, in Category C-4 or above, having CE-01, CE-09, CE-10 & EE-04 as Codes of Specializations.
- ii. Valid Registration / Enlistment with C&W Department, Government of Khyber Pakhtunkhwa for the current year (2026-27).
- iii. Valid Income Tax Registration Certificate.
- iv. Valid Registration with Sales Tax Authorities i.e. Federal Board of Revenue (FBR) and / or Khyber Pakhtunkhwa Revenue Authority (KPRA).
- v. On Active Tax Payer's List of Federal Board of Revenue (FBR) and / or Khyber Pakhtunkhwa Revenue Authority (KPRA).
- vi. Affidavit of "No-blacklisting" of authorized signatory on judicial stamp paper prepared within the current month of submission of bidding document to the effect that the firm has never been blacklisted.
- vii. In case of no litigation, the affidavit of "No litigation" of authorized signatory on judicial stamp paper prepared within the current month of submission of bidding document to the effect that the firm has never been involved in any litigation and, if involved in litigation, then details related to (a) year and matter in dispute, (b) value of award if against the applicant and (c) award as percentage of net worth of applicant.

B. DETAILED REQUIREMENTS

All the bidders will be further evaluated as per following criteria, if mandatory requirements are fulfilled. The detailed qualification evaluation shall be carried out on the basis of the criteria for the different categories and minimum passing marks prescribed hereunder:

S. No.	Category	Weightage / Marks	Passing Marks
B1	Experience Record	40	20
B2	Personnel Capabilities	15	7.5
B3	Equipment Capabilities	15	7.5
B4	Financial Soundness	30	15
	Total	100	50 (overall)

B1. EXPERIENCE RECORD

Marks for this category will be given on the basis of the following criteria:

S. No.	Description	Maximum Marks	Marks Allocation
(a)	Completed Projects Experience as Constructor in Construction of works involving buildings / infrastructure works (site development, water supply, sewerage, drainage, walkways etc.) – completed during last ten (10) years	24	• 12.0 marks will be awarded for each completed project, having cost equal to or more than Rs. 200 million up to maximum of 25 marks. • 8.0 marks will be awarded for each completed project, having cost from Rs. 100 million to Rs. 199.9 million up to maximum of 25 marks. • 6.0 marks will be awarded for each completed project, having cost from Rs. 50 million to Rs. 99.9 million up to maximum of 25 marks. • No marks will be given for completed projects having cost less than Rs. 50 million.
(b)	On-Going Projects Experience as Constructor in Construction of works involving buildings / infrastructure works (site development, water supply, sewerage, drainage, walkways etc.) – currently in-hand	16	• 8.0 marks will be awarded for each in-hand project, having cost equal to or more than Rs. 200 million up to maximum of 15 marks. • 6.0 marks will be awarded for each in-hand project, having cost from Rs. 100 million to Rs. 199.9 million up to maximum of 15 marks. • 4.0 marks will be awarded for each in-hand project, having cost from Rs. 50 million to Rs. 99.9 million up to maximum of 15 marks. • No marks will be given for in-hand project having cost less than Rs. 50 million.
Total Marks Allocated (a)+(b)		40	

Explanation Notes:

- i. The bidder must provide "Letter of Award" for each in-hand project and Taking Over/ Completion Certificate of each completed projects of which the experience is being claimed. Project will not be considered for evaluation for which above letter/ certificate is not provided.
- ii. The Bidder shall provide complete information of the projects including scope, cost, and covered area, etc.

B2. PERSONNEL CAPABILITIES

Marks for this category will be given on the basis of the following criteria:

S. No.	Designation	Maximum Marks	Marks Allocation
(a)	Project Manager	4.0	4.0 marks will be awarded for B.Sc. Civil Engineer with valid PEC Registration, having at least 10 years relevant experience.
(b)	Site / Construction Engineer	2.0	2.0 mark will be awarded for B.Sc. Civil Engineer with valid PEC Registration, having at least 05 years relevant experience.
(c)	Site Supervisor (Civil)	2.0	1.0 marks will be awarded for each Associate Engineer DAE (Civil), having at least 07 years relevant experience.
(d)	Site Supervisor (Electrical)	1.0	1.0 mark will be awarded for Associate Engineer DAE (Electrical), having at least 07 years relevant experience.
(e)	Quantity Surveyor	1.0	1.0 mark will be awarded for Quantity Surveyor DAE (Civil), having at least 07 years relevant experience.
(f)	Laboratory Technician	1.0	1.0 mark will be awarded for Quantity Surveyor DAE (Civil), having at least 07 years relevant experience.
(g)	Surveyor	1.0	1.0 mark will be awarded for Surveyor with Certificate having at least 07 years relevant experience.
(h)	Foreman (Civil)	2.0	1.0 marks will be awarded for each Foreman (Civil) having at least 10 years relevant experience.
(i)	Foreman (Electrical)	1.0	1.0 marks will be awarded for Foreman (Electrical) having at least 10 years relevant experience.
Total Marks Allocated		15	

Explanation Notes:

- i. The applicant must provide the following, failing which, no marks will be given against any position for which above letter/ certificate is not provided:
 - verifiable proof of employment of the proposed staff
 - detailed CVs
 - valid PEC Registration/ Internationally recognized Engineering Body Registration Certificates of proposed Engineers
 - Diploma Certificates of DAE staff

B3. EQUIPMENT CAPABILITIES

Marks for this category will be given on the basis of the following criteria:

S. No.	Description	Maximum Marks	Minimum Quantity / Number of Equipment Required
(a)	Concrete Batching Plant, Transit Mixer and Concrete Pump	2.0	01 No.
(b)	Concrete Mixer Machine (Double Bag)	2.0	02 Nos.
(c)	Scaffolding Pipes	1.0	20,000 Rft.
(d)	Shuttering / Formwork	1.0	20,000 Sft.
(e)	Earth Moving Machinery (Excavator, Dump Truck, Loader, Grader, Tractor Trolley and Water Bouzer)	2.0	01 No. Each
(f)	Vibrators	1.0	01 No.
(g)	Plate Compactor	1.0	01 No.
(h)	Steel Cutting/Bending Machine	1.0	01 No.
(i)	Hoist	1.0	01 No.
(j)	Welding Plant	1.0	01 No.
(k)	Generator Set (20 KVA)	1.0	01 No.
(l)	Total Station & Leveling Equipment	1.0	01 No.
Total Marks Allocated		15	

Explanation Notes:

- i. Proportionate marks will be awarded if minimum number of corresponding equipment is less than minimum required.
- ii. Applicant must provide an undertaking to the effect that the aforementioned equipment is available with the firm.

B4. FINANCIAL SOUNDNESS

Marks for this category will be given on the basis of the following criteria:

S. No.	Description	Maximum Marks	Marks Allocation
(a)	Average Volume of Construction Works (Annual Turn Over) During of Last three (03) years FY 2023-24 FY 2024-25 FY 2025-26	15	• 15.0 marks (Maximum Marks) will be awarded for Annual Turn Over above Rs. 200 million • 8.0 marks will be awarded for Annual Turn Over from Rs. 100 million to Rs. 200 million • No marks will be given for Annual Turn Over less than Rs. 100 million.
(b)	Amount of Liquid Assets / Working Capital for FY 2025-26 and bank credit line (in specific name of this project)	15	• 15.0 marks (Maximum Marks) will be awarded for Liquid Assets / Working Capital above Rs. 100 million • 8.0 marks will be awarded for Liquid Assets / Working Capital from Rs. 50 million to Rs. 100 million • No marks will be given for Liquid Assets / Working Capital less than Rs. 50 million.
Total Marks Allocated (a)+(b)		30	

Explanation Notes:

- i. The Applicant shall submit copies of annual audited reports for the last three years duly certified by the Chartered Accountants and must indicate the soundness of the Applicants financial position.

**SECTION-VI: WORKS REQUIREMENT, TECHNICAL SPECIFICATIONS,
DRAWINGS, SUPPLEMENTARY INFORMATION AND BILL OF QUANTITIES**

SCOPE OF WORKS

The University of Buner is executing the PSDP Project titled “Development of University of Buner (Phase-I)” through Higher Education Commission (HEC), Government of Pakistan. The Project covers the construction of buildings namely Academic Block-A, Administration Block, Faculty & Staff Hostel and Girls Hostel along with External Development Works.

Project Director, University of Buner, intends to construct some Ancillary Works for functional requirements of the Swari Campus. The scope of Works comprises construction of civil, plumbing and electrical works and related works lying within the contract limits shown on the Drawings and any such additional areas adjacent thereto as may be designated by the Engineer from time to time for the construction to be performed under the Contract, and all such areas and additional areas shall comprise the Site.

TECHNICAL SPECIFICATIONS

UNDER SEPARATE VOLUME-II

DRAWINGS

UNDER SEPARATE VOLUME-III

SUPPLEMENTARY INFORMATION

NOT APPLICABLE

BILL OF QUANTITIES

UNDER SEPARATE VOLUME-IV

TECHNICAL PROPOSAL

- SITE ORGANIZATION

The Bidder is required to submit an organization proposed for the Works.

- METHOD STATEMENT

The Bidder is required to submit a narrative outlining the method for performing the Work.

- 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

Pursuant to Sub-Clause 8.3 of the General Conditions, the whole of the Works, and each Section (if any), shall be completed within the Time for Completion for the Works or Section (as the case may be) stated as hereunder and mentioned in Contract Data:

Description	Time for Completion (Days)
Whole Works	182 days

The Bidder shall provide, the Construction Schedule in the bar chart (CPM, PERT or any other to be specified herein) showing the sequence of work items and the period of time during which he proposes to complete each work item in such a manner that his proposed programme for completion of the whole of the Works and Sections of the Works may meet Employer's completion targets in days noted above and counted from the Commencement Date.

- EQUIPMENT (FORM EQU)

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-V, 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
	Quantity	
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-VII: STANDARD BIDDING FORMS

TABLE OF STANDARD FORMS

Letter of Bid (Technical Proposal)
Letter of Bid (Financial Proposal)
Bidder Information Form
Bidder's JV Members Information Form
Concractor's Representative and Key Personnel - Schedule
Concractor's Representative and Key Personnel - Resume and Declaration
Historical Contract Non-Performance, Pending Litigation and Litigation History
Financial Situation - Financial Situation and Performance
Average Annual Construction Turnover
Financial Resources
Current Contract Commitments / Works In Progress
Self-Assessment Tool for Bidder's Compliance to Financial Resources (Criterion 2.1 of Section 3)
General Construction Experience
Specific Construction and Contract Management Experience
Ongoing Contracts / Commitments/ Work In Progress
Construction Experience in Key Activities
Specific Experience in Managing ES Aspects
Appendix-A (Form of Bid Security)
Appendix-B (Form of Bid Securing Declaration)
Appendix-C (Price Adjustment)

LETTER OF BID – TECHNICAL PROPOSAL

INSTRUCTIONS TO BIDDERS: DELETE THIS BOX ONCE YOU HAVE COMPLETED THE DOCUMENT

Place 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 (as day, month and year) of Bid submission]

RFB No.: Ancillary Works in University of Buner, Swari (Phase-I, Package-5)

To: University of Buner (UoB)

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: *[insert complete name of Bidder]

Country of Origin of the Bidder: [insert country of origin]

Name of the person duly authorized to sign the Bid on behalf of the Bidder: ** [insert complete name of person duly authorized to sign the Bid]

Title of the person signing the Bid: [insert complete title of the person signing the Bid]

Signature of the person named above: [insert signature of person whose name and capacity are shown above]

Date signed [insert date of signing] day of [insert month], [insert year]

*: 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: [insert date (as day, month and year) of Bid submission]

Request for Bid No.: Ancillary Works in University of Buner, Swari (Phase-I, Package-5)

Name of Project.: Construction of Ancillary Works in University of Buner, Swari (Phase-I, Package-5)

To: University of Buner (UoB)

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].

(d)

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate "none.")

- (e) 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: *[insert complete name of the Bidder]

Name of the person duly authorized to sign the Bid on behalf of the Bidder: ** [insert complete name of person duly authorized to sign the Bid]

Title of the person signing the Bid: [insert complete title of the person signing the Bid]

Signature of the person named above: [insert signature of person whose name and capacity are shown above]

Date signed [insert date of signing] day of [insert month], [insert year]

*: 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 (as day, month and year) of Bid submission]

RFB No.: _____

Page _____ of _____ pages

1. Bidder's Name [insert Bidder's legal name]
2. Bidder's actual or intended country of registration: [insert actual or intended country of registration]
3. Bidder's year of registration: [insert Bidder's year of registration]
4. Bidder's Address in country of registration: [insert Bidder's legal address in country of registration]
5. Bidder's Authorized Representative Information Name: [insert Authorized Representative's name] Address: [insert Authorized Representative's Address] Telephone/Fax numbers: [insert Authorized Representative's telephone/fax numbers] Email Address: [insert Authorized Representative's email address]
6. 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. ☐ Establishing that the Bidder is not under the supervision of the Procuring agency/Employer[in case of subsidiaries]
7. Included are the organizational chart, a list of Board of Directors, and the beneficial ownership.

FORM ELI 2**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 (as day, month and year) of Bid submission]

RFB No.:

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: [insert JV's Member country of registration]
4. Bidder's JV Member's legal address in country of registration
5. Bidder's JV Member's legal address in country of registration
6. Bidder's JV Member's authorized representative information Name: [insert name of JV's Member authorized representative] Address: [insert address of JV's Member authorized representative] Telephone/Fax numbers: [insert telephone/fax numbers of JV's Member authorized representative] Email Address: [insert email address of JV's Member authorized representative]
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.

NOT APPLICABLE

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)]

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]	
	Address of Procuring agency/Employer:	
details	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: _____

ICB/NCB No. and title: _____

Page _____ of _____ pages

Non-Performed Contracts in accordance with Qualification Criteria			
☐ Contract non-performance did not occur since [insert month & 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: _____

ICB No. and title: _____

Page _____ of _____ pages

1. Financial data

Type of Financial information in (currency)	Historic information for previous three years (amount in currency, currency, exchange rate*, PKR equivalent)				
	2023-24	2024-25	2025-26		
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		

3. Financial documents

The Bidder and its parties shall provide copies of audited balance sheets for last 03 years pursuant to Evaluation and Qualifications Criteria, Sub-factor B.4. The financial statements shall:

- (a) reflect the financial situation of the Bidder, 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 Audited Balance Sheets for the 03 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 V, 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 V (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 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	Contract Cost	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 $\geq$ 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 – 3.4 (B)	Total Monthly Financial Requirement for Current Contract (C)	Available Financial Resources Net	Requirement for the Subject Contract (D)	Results: Yes or No [D must be greater than or equal to E] (F)
NOT APPLICABLE					
_____ (Name of Bidder)				 —	

Note:

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: _____

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: _____

ICB/NCB No. and title: _____

Page _____ of _____ pages

- Attach Taking Over Certificate / Completion Certificate
- Use separate sheet for each project

1.	Name of Contract
2.	Country
3.	Name of Employer
4.	Employer Address
5.	Nature of works and special features relevant to the contract for which the Applicant wishes to prequalify
6.	Contractor Role (Tick One) ☐ Sole Contractor ☐ Sub- Contractor ☐ Partner in a Joint Venture
7.	Value of the total contract (in specified currencies) at completion, or at date of award for current contract Currency.....
8.	Equivalent in Pak/Rs.....
9.	Date of Award
10.	Date of Completion
11.	Contract Duration (Years and Months) _____ Years _____ Months
12.	Scope of Work: ☐ Building Works (Civil, Plumbing & Electrical Works) ☐ External Development Works (Boundary Wall, Roads, Walkways, Water Supply, Sewerage, Drainage and Electrification Works)

FORM EXP - 4.2(A) (CONT.)**ONGOING CONTRACTS/ COMMITMENTS/ WORK IN PROGRESS**

Bidder's Name: _____

Date: _____

ICB/NCB No. and title: _____

Page _____ of _____ pages

- Attach Letter of Acceptance / Work Order / Purchase Order
(Bidder and each partner 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 substantial Completion Certificate has yet to be issued.)
- Use separate sheet for each project

1.	Name of Contract
2.	Country
3.	Name of Employer
4.	Employer Address
5.	Nature of works and special features relevant to the contract for which the Applicant wishes to prequalify
6.	Contractor Role (Tick One) ☐ Sole Contractor ☐ Sub- Contractor ☐ Partner in a Joint Venture
7.	Value of the total contract (in specified currencies) at completion, or at date of award for current contract Currency.....
8.	Equivalent in Pak/Rs.....
9.	Date of Award
10.	Date of Completion (As per Contract Agreement)
11.	Contract Duration (Years and Months) _____ Years _____ Months
12.	Scope of Work: ☐ Building Works (Civil, Plumbing & Electrical Works) ☐ External Development Works (Boundary Wall, Roads, Walkways, Water Supply, Sewerage, Drainage and Electrification Works)

FORM EXP - 4.2(B)**CONSTRUCTION EXPERIENCE IN KEY ACTIVITIES**

Bidder's Name: _____

Date: _____

Sub-contractor's Name¹ (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	NOT APPLICABLE			
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				
PA's Name: Address: Telephone/fax number E-mail:				

¹ If applicable

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]

Bidder's Name: [insert full name]

Date: [insert day, month, year]

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	NOT APPLICABLE		
	☐	☐	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 **NOT APPLICABLE** participating in respective category of public procurement for 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**PRICE ADJUSTMENT****(ADJUSTMENTS FOR CHANGES IN COST AS PER GC CLAUSE 13.7)**

The sources of prices and the weightages for use in the adjustment formula shall be as follows:

Cost Element	Description	Weightages	Applicable Price
(i)	(ii)	(iii)	(iv)
a	Fixed Portion	0.551	
b	Labour (Labourer (un-skilled) per day, shall be taken as representative of all types of Labour (skilled/unskilled) deployed at site)	0.175	Government of Pakistan (GoP) Federal Bureau of Statistics (FBS) Monthly Statistical Bulletin.
c	Cement (OPC cement per bag shall be taken as representative of all types of cement used at the site)	0.124	- do -
d	Reinforcing Steel, Structural Steel & G.I. Poles (½" Ø round M.S. Bars per tonne shall be taken as representative of all types and diameters of Steel Reinforcement)	0.100	- do -
e	High Speed Diesel (HSD) (HSD shall be taken as representative of all kind of fuels used in connection with the Contract)	0.050	As announced by Pakistan State Oil (PSO) or Oil and Gas Regulatory Authority (OGRA) and prevalent on seven (7) days prior to bid opening date
Total		1.000	

Notes:

1. The prices of elements subject to Price Adjustment shall be to the extent possible as given in the Monthly 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.
2. The base prices shall be those applying 28 days prior to the latest day for submission of Bids. Current prices shall be those applying 28 days prior to the start of the execution month to which a particular monthly statement is related.

3. If the Statistical Bulletin of the aforesaid month is not available at the time of Bid opening, then the Basic Prices of Specified Materials will be submitted by the Contractor at the time of their availability and shall be recommended by the Engineer and will be fixed as Basic Prices for Specified Materials for Price Adjustment.
4. The prices for the cost elements of (b) to (e) shall be used for the City of Peshawar.
5. Any fluctuation in the prices of materials other than those given above shall not be subject to adjustment of the Contract Price and shall be deemed to be included in the rates and prices quoted by the Bidders.
6. The prices of materials provided in this Appendix are for the purpose of price adjustment only. The Contractor shall base his rates entered in the Bill of Quantities on current market prices.

PART-B – CONDITIONS OF CONTRACT AND CONTRACT FORMS

SECTION-VIII. GENERAL CONDITIONS (GC)

GENERAL CONDITIONS (GC)**Red Book:**

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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.

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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 Procuring agency/ Employer/ Employer, 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 (GC 1)		
1.	1.3	For notices Procuring agency/Employer Authorized representatives name and address: Project Director University of Buner UoB Swari, District Buner Phone No. (0939) 555211, 555438 Fax No.: (0939) 555437 Engineer's Authorized representatives name and address: National Engineering Services Pakistan (Pvt.) Limited – NESPAK NESPAK House, 5 th Floor, Sector G-5/2, Islamabad Contractors Authorized representatives name and address: To be nominated later
2.	1.4	Governing Law; The Applicable Law shall be: Laws of the Islamic Republic of Pakistan
3.	1.4	Communication Language: The Communication Language shall be: English
The Employer/ Procuring agency/Employer (GC Clause 2)		
5.	2.1	Time for access to the Site: 03 days after Commencement Date
The Engineer (GC Clause 3)		
6.	3.2	Engineer's Duties and Authority: Variations resulting in an increase of the Accepted Contract Amount in excess of 1% shall require approval of the Procuring agency/ Employer.

The Contractor (GC Clause 4)		
7.	4.2	The Contractor shall furnish to the Employer a Performance Security (plus additional security for unbalanced bids in accordance with Bid Data Sheet within fourteen (14) days from the date of receipt of Letter of Acceptance. The Performance Security shall be of an amount equal to ten percent (10%) of the Contract Price (plus additional security for unbalanced bids in accordance with Sub-Clause IB.28.4) in the currency (ies) of the Contract at the option of the bidder, in any of the following form (Ref. KPPRA Regulation No. XV 2022, vide Notification No. S.R.O.(15)/Vol: 1-25/2022-23 dated August 22, 2022/6301-13): (a) Bank Guarantee from any Scheduled Bank in Pakistan or (b) Bank Guarantee from a bank located outside Pakistan duly counter-guaranteed by a Scheduled Bank in Pakistan. The cost of complying with requirements of this Sub-Clause shall be borne by the Contractor. Following text Added after this Clause: The Performance Security shall be binding irrespective of changes in the quantities or variations in the Works or extensions in Time for Completion of the Works which are granted or agreed upon under the provisions of the Contract.
8.	4.7.2(a)	Clause 4.7 Setting out Period for notification of errors in the items of reference: 28 (twenty-eight) days
Sub-Contracting (GC Clause 5)		
9.	5.1	Deleted / Not Applicable
10.	5.2	Deleted / Not Applicable
Staff and Labour (GC Clause 6)		
11.	6.5	Normal working hours 08 (eight) hours.
Plant, Material and Workmanship (GC Clause 7)		
12.	7.2	Samples as required by the Engineer.
Commencement, Delays and Suspension (GC Clause 8)		
13.	8.3	Number of additional paper copies of program: 03 copies

14.	8.8	Delay damages shall be payable for each day of delay shall be 0.01% of the Contract Price per day, in the currency and proportions in which the Contract Price is payable. Maximum amount of delay damages is 5% of the Accepted Contract Price
Measurement and Valuation (GC Clause 12)		
15.	12.2	Method of measurement shall be as per technical specification for relevant BOQ item of work.
16.	12.3	For Scheduled Items: “The valuation will be carried out on the basis of applicable item rates of KP-MRS 2025 (1st Bi-annual) with the application of awarded premium. Failing all above, the valuation will be carried out on the basis of actual with the application of current market rates for labour and material. No escalation on account of material or labour wages etc. shall be allowed on such items if the valuation is carried out on the basis of actual and percentage (%) of overheads, taxes (Income and Sales taxes) & profit etc. all-inclusive to be allowed in such cases shall be twenty-three-point five percent (23.5%).” For Non-Scheduled Items: “The valuation will be carried out by the Engineer on the basis of similar items covered in the Bill of Quantities, insofar as such rates or prices apply and where such rates or prices do not directly apply, the value shall be based on the rates or prices deduced therefrom so far as it is practicable to do so. If the same is not provided in the Bill of Quantities, then the valuation will be carried out on the basis of actual with the application of current market rates for labour, material etc. No escalation on account of material, labour, POL etc. shall be allowed on such items if the valuation is carried out on the basis of current market rates and the percentage of overheads, taxes (Income and Sales taxes) & profit, etc. to be allowed in such cases shall be twenty-three-point five percent (23.5%).”
Variations and Adjustments (GC Clause 13)		
17.	13.4(b)(ii)	Percentage rate to be applied to Provisional Sum for Profit, Overhead Charges and Taxes shall be 23.5%.
18.	13.7	Adjustments for Changes in Cost: Add following at the end of the Clause: (a) Adjustment Formula The adjustment to the monthly statements in respect of changes in cost shall be determined from the following formula: $P_n = A + b \frac{L_n}{L_o} + c \frac{M_n}{M_o} + d \frac{E_n}{E_o} + \dots$

		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. “L_n”, “E_n”, “M_n”, ... 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 “L₀”, “E₀”, “M₀”, ... 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. (b) Sources of Indices and Weightages The sources of indices shall be those listed in the Appendix-C to Bid. (c) Base, Current, and Provisional Indices The base cost indices or prices shall be those prevailing on the day 28 days prior to the latest date for submission of bids. Current indices or prices shall be those prevailing on the day 28 days prior to the start of the execution month to which a particular monthly statement is related. If at any time the current indices are not available, provisional indices as determined by the Engineer will be used, subject to subsequent correction of the amounts paid to the Contractor when the current indices become available. (d) Adjustment after Completion If the Contractor fails to complete the Works within the time for completion, adjustment of prices thereafter until the date of completion of the Works shall be made using either the indices or prices relating to the prescribed time for completion, or the current indices or prices, whichever is more favorable to the Employer, provided that if an extension of time is granted, the above provision shall apply only to adjustments made after the expiry of such extension of time. (e) Weightages The weightages for each of the factors of cost given in the Appendix-C to Bid shall be adjusted if, in the opinion of the Engineer, they have been rendered unreasonable, unbalanced, or inapplicable as a result of varied
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		or additional work executed or instructed under Clause 51. Such adjustment(s) shall have to be agreed in the variation order.
Contract Price and Payment (GC Clause 14)		
19.	14.2	Advance Payment Guarantee: An interest-free Advance Payment for Mobilization up to ten percent (10%) of the Contract Price stated in the Letter of Acceptance less Provisional Sums, shall be paid by the Employer to the Contractor in two equal parts upon submission by the Contractor of an Advance Payment Guarantee for the full amount of the Advance in the specified form from a Scheduled Bank in Pakistan. The Advance Payment Guarantee shall remain valid one month beyond the stipulated date of completion of project. The Advance Payment Guarantee shall be progressively reduced to the balance amount of Advance Payment indicated in the IPCs certified by the Engineer. First part within fourteen (14) days after signing of the Agreement or date of receipt of Engineer's Notice to Commence, whichever is earlier; and Second part within forty-two (42) days from the date of payment of the first part, subject to the satisfaction of the Engineer as to the state of the following: (i) delivery at Site of Minimum Mandatory Equipment and deployment of Minimum Mandatory Staff as per the requirements mentioned in Qualification Criteria; (ii) having completed his contractual obligations as per the requirements of Construction Camp and Housing facilities to Bid; and (iii) having completed at least 2% of the permanent works (to be accessed by the engineer).
20.	14.2.3	Repayment of Advance Payment: This Advance shall be recovered @ 15% of the amount of work done from 2nd Interim Payment Certificates (IPC) onwards and shall be fully recovered before completion of the Works
21.	14.3(b)	Number of Additional Paper Copies of Statements: 03 (three) copies
22.	14.3(iii)	Percentage of retention: 10% (ten percent) of the amount of IPC. Limit of Retention Money: 5% (five percent) of Contract Price stated in the Letter of Acceptance.
23.	14.5(b)(i)	Plant and Materials for payment when shipped: Not Applicable
24.	14.5(c)(i)	Plant and Materials for payment when delivered to the Site: Not Applicable
25.	14.6.2	Withholding (amounts in) an IPC: (a) The Employer at his own or on the recommendations of the Engineer may withhold the whole or part of any payment requested by the Contractor if it is necessary in his opinion to protect himself against losses on account of the following reasons:

		(i) Defective work not rectified. (ii) Non-fulfilment of any due demand and guarantee or renewal of any guarantee or surety. (iii) Claims if third parties raised against the Employer caused through the fault of the Contractor in connection with the works. (iv) Damage caused by the Contractor or his personnel or any sub-contractor, to the Employer, or to a third party on the site. (v) Non-fulfilment of the Contract by the Contractor. (vi) Non-fulfilment of the Contractual Obligation towards submittal of Shop Drawings, Bar Bending Schedules, Samples, erection of Mock-Up samples, As-built drawings, etc. (b) After the reasons of withholding of payments have been eliminated to the satisfaction of the Employer and the Engineer, payments to the Contractor will be undertaken by the Employer without delay.
26.	14.7(a)	Period of payment of Advance Payment to the Contractor: 28 days
27.	14.7(b)(i)	Period for the Procuring Agency/Employer to make interim payments to the Contractor under Sub-Clause 14.6 (interim Payment): 28 days
28.	14.7(b)(ii)	Period for the Procuring Agency/Employer to make interim payments to the Contractor under Sub-Clause 14.13 (Final Payment): 56 days
29.	14.7(c)	Period for the Procuring Agency/Employer to make final payment to the Contractor: 56 days
30.	14.8	In the event of failure of the Employer to make payment within the times stated, the Employer shall not pay to the Contractor any interest or compensation of any sort. The provisions of this Sub Clause are without prejudice to the Contractor's entitlement.
31.	14.11.1(b)	Number of additional paper copies of draft Final Statement: 06 copies
32.	14.15	Currencies of Payment of Contract Price: The Contract Price shall be paid in Pakistani Rupees (PKR).
33.	14.15 (a)(i)	Proportions or amounts of the Local and Foreign Currencies: Local Currency: 100% Foreign Currency: 0%

34.	14.15 (c)	Currencies and Proportions for payment of Delay Damages: Local Currency: 100% Foreign Currency: 0%
35.	14.15 (f)	Rate of Exchange: Local Currency: 1.00
36.	17.2 (d)	Liability for Care of the Works: Nil
Insurance (GC Clause 19)		
37.	19.1	Permitted deductible limits insurance required for the Works: 10% of the loss amount on each and every loss. insurance required for Goods: Nil insurance required for liability for breach of professional duty: Nil insurance required against liability for fitness for purpose (if any is required): Nil insurance required for injury to persons and damage to property: Nil insurance required for injury to employees: Nil other insurances required by Laws and by local practice: Nil
38.	19.2.1(b)	Additional amount to be insured: 15% of Accepted Contract Amount
39.	19.2.1(iv)	List of Exceptional Risks which shall not be excluded from the insurance cover for the Works: Nil
40.	19.2.2	Extent of insurance required for Goods: from Ex-Works to delivery at the Site Amount of insurance required for Goods: Full Replacement Value
41.	19.2.3(a)	Amount of insurance required for liability for breach of professional duty: Full replacement value of the Works to be designed by the Contractor
42.	19.2.3(b)	Insurance required against liability for fitness for purpose: Yes
43.	19.2.3	Period of insurance required for liability for breach of professional duty: Until the date of issuance of Performance Certificate
44.	19.2.4	Amount of insurance required for injury to persons and damage to property: Injury to person and Fata case: in accordance with Workmen Compensation Act Damage to Property: PKR 0.5 million without limit to the number of incidents

45.	19.2.6	Insurance: <u>Other insurances required by Laws and by local practice</u> All insurances as applicable to the extent of execution of the project, under Federal and Provincial laws of Islamic Republic of Pakistan.
Dispute Avoidance / Adjudication Board (GC Clause 21)		
46.	21.1	Time for appointment of DAAB: Within 28 days form the Commencement Date
47.	21.1	The DAAB shall comprise 01 member
48.	21.1	List of proposed members of DAAB [to be inserted at the time of signing of the Contract] - Proposed by Employer/ Procuring Agency/Employer 1. - Proposed by Contractor 1.
49.	21.2	Appointing entity (official) for DAAB members: Chairman Pakistan Engineering Council (PEC) from the list of PEC approved arbitrators published at its website.
50.	21.6	PEC Rules of Conciliation and Arbitration or Pakistan Arbitration Act of 1940, if the former is inactive. The place of Arbitration shall be in the Employer's country: Peshawar, Khyber Pakhtunkhwa, Pakistan.

PART B - SPECIAL PROVISIONS (PARTICULAR CONDITIONS)

1.1	Definitions	<u>1.1.76 "Specification"</u> Following is added at the end: "and consists of two parts i.e., i) "Part A - Specific Provisions"; and ii) "Part B - Technical Provisions"
1.2	Interpretation	"and" is deleted from the end of sub-paragraph (i) and added at the end of sub-paragraph (j). Sub-paragraph (k) is added: "(k) The word "tender" is synonymous with "bid" the word tenderer with "bidder", the words "tender documents" with "bidding documents" and "Schedule of Prices" with "Bill of Quantities", as applicable."
1.5	Priority of Documents	The documents listed at (a) through (k) of this Sub-Clause are deleted and substituted with the following: (a) the Contract Agreement; (b) the Letter of Acceptance; (c) the Letter of Bid; (d) the Special Conditions of the Contract Part A - Contract Data; (e) the Particular Conditions Part B - Special Provisions; (f) the General Conditions; (g) the Specification Part A - Specific Provisions; (h) the Specification Part B - Technical Provisions; (i) Technical Proposal (j) Bill of Quantities; (k) the Drawings; (l) any other documents forming part of the Contract. The addenda/ corrigenda, if any, shall be deemed to have been incorporated at the appropriate places in the documents forming the Contract.
1.6	Contract Agreement	In the last line of the 1st paragraph the text "shall be borne by the Employer" is substituted by "shall be reimbursed by the Employer to the Contractor".
3.1	The Engineer	In sub-paragraph (a) the text "as defined in the Pakistan Engineering Council Act, 1975 (Act No. V of 1976)" are added after the words "professional engineer"
3.2	Engineer's Duties and Authority	The Engineer shall obtain the consent in writing of the Employer before taking action under the following Sub-Clauses of these Conditions: (a) Consenting to the subcontracting of any part of the Works under Sub-Clause 5.1 [Subcontractors] (b) Any action under Sub-Clauses 8.9 [Employer's Suspension] and 8.12 [Prolonged Suspension] (c) Issuance of "Taking Over Certificate" under Sub-

		Clause 10.1 [Taking Over the Works and Sections]. (d) Issuing the "Performance Certificate" under Sub-Clause 11.9 [Performance Certificate]. (e) Sub-Clause 13.1 [Right to Vary]: instructing a Variation, except; (i) in an emergency situation as determined by the Engineer, or (ii) if such a Variation would increase the Accepted Contract Amount by less than the percentage specified in the Contract Data. (f) Sub-Clause 13.3 [Variation Procedure]: approving a proposal for Variation submitted by the Contractor in accordance with Sub-Clause 13.3.2 [Variation by Request for Proposal] or 13.2 [Value Engineering]. (g) Certifying release of second half of the Retention Money under Sub-Clause 14.9 [Release of Retention Money]. (h) Issuing Final Payment Certificate under Sub-Clause 14.13 [Issue of FPC]. (i) Any Change in the ratio of Contract currency proportions and payment thereof under Clause 13.6 [Adjustment for Changes in Law]. (j) Extra payment as a result of Contractor's claims under Clause 20 [Employer's and Contractor's Claim]. Any such requirement shall not be applied to any action by the Engineer under Sub-Clause 3.7 [Agreement or Determination], as stated in Sub-Clause 3.2 [Engineer's Duties and Authority] of the General Conditions. Notwithstanding the obligation, as set out above, to obtain approval, if, in the opinion of the Engineer, an emergency occurs affecting the safety of life or of the Works or of adjoining property, he may, without relieving the Contractor of any of his duties and responsibility under the Contract, instruct the Contractor to execute all such work or to do all such things as may, in the opinion of the Engineer, be necessary to abate or reduce the risk. The Contractor shall forthwith comply, despite the absence of approval of the Employer, with any such instruction of the Engineer. The Engineer shall determine an addition to the Contract Price, in respect of such instruction, in accordance with Clause 13 and shall notify the Contractor accordingly, with a copy to the Employer. Following is added after the words "the Employer's consent is required" in 4th paragraph: "stating that the Employer's consent has been obtained for that specified authority".
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4.2	Performance Security	4.2.1 Contractor's Obligations The entity issuing the Performance Security and its form shall be as under: The Performance Security shall be in the form of Bank Guarantee issued by a Scheduled Bank in Pakistan or from a foreign bank duly counter guaranteed by a Scheduled Bank in Pakistan in favour of the Employer, as per the prescribed form included in the Bidding Documents. Following paragraph is added at the end of this Sub-Clause: "The amount of Performance Security shall be reduced to 50% following issue of the Taking-Over Certificate for the whole of the Works under Clause 10 of Conditions of Contract."
4.3	Contractor's Representative	In second paragraph the text "professional engineer as defined in the Pakistan Engineering Council Act, 1975 (Act No. V of 1976) (having temporary licence in case of foreign engineer under Section 12 of the Pakistan Engineering Council Act, 1975 (Act No. V of 1976)" are added after the words "qualified, experienced". In the 3rd paragraph the words "28 days" are substituted by "14 days". In 2nd line of 4th paragraph the text "or appoint a replacement" is substituted by "except appointment of a suitable temporary replacement is deployed at the Site".
4.4	Contractor's Documents	4.4.2 As-Built Records First paragraph is deleted and the text in the last paragraph is substituted with the following: "The Contractor shall furnish to the Engineer six (06) hard copies, one (01) reproducible and one (01) electronic copy (Auto CAD Drawings) of all Drawings amended to conform to the Works as built. The price of such Drawings shall be deemed to be included in the Contract Price." Following Sub-Clause is added: 4.4.4 Shop Drawings The Contractor shall submit to the Engineer for review three (03) hard copies of all shop and erection drawings applicable to this Contract as per provision of relevant Sub-Clause of the Contract. Review and approval by the Engineer shall not exceed 21 days and be construed as a complete check but will indicate only that the general method of construction and detailing is satisfactory and the Engineer's review or approval shall not

		relieve the Contractor of any of his responsibilities under the Contract.
4.8	Health and Safety Obligations	The following text is added at the end of this Sub-Clause: In the event of work being carried out outside the normal working hours and in the event of work being carried out at night, the Contractor shall at his own cost, provide and maintain such good and sufficient light as will enable the work to proceed satisfactorily and without danger. The approaches to the Site and the Works where the night work is being carried out shall be sufficiently lighted. All arrangement adopted for such lighting shall be to the satisfaction of the Engineer.
4.20	Progress Reports	At the end of sub-paragraph (g) the word “and” is deleted and at the end of sub-paragraph (h) the full stop (.) is replaced with “;”, and the following new sub-paragraphs are added as: (i) planned programme for the execution of the Works for next fifty (56) days to enable the Engineer to determine its programme of inspection and testing; (j) monthly summary of daily job record indicating weather conditions, deployment of Contractor’s Equipment, labour employment, local material procurement and material import, if any; and (k) salient contractual and project information
6.1	Engagement of Staff and Labour	The following paragraph is added at the end of the Sub-Clause: “The Contractor shall, to the extent practicable and reasonable, employ staff (not less than 50%) and labour (not less than 85%) with appropriate qualifications and experience from sources within the Islamic Republic of Pakistan.”
6.7	Health and Safety of Personnel	The existing text is substituted with the following: “In order to provide for the safety, health and welfare of persons, and for prevention of damage of any kind, all operations for the purposes of or in connection with the Contract shall be carried out in compliance with the Safety Requirements of the Government of Pakistan with such modifications thereto as the Engineer may authorize or direct and the Contractor shall take or cause to be taken such further measures and comply with such further requirements as the Engineer may determine to be reasonably necessary for such purpose. The Contractor shall also provide all other medical services and appoint a health and safety officer at Site if stated in the Specifications. In case of any fatality or serious accident, the

		Contractor shall, in addition, notify the Engineer immediately by the quickest available means."
6.8	Contractor's Superintendence	Insert at the end of sub-paragraph (a) of this Sub-Clause: "or, if not, the Contractor shall make competent interpreters available during all working hours, in a number sufficient for those persons to properly perform their superintendence duties" The following text is added at the end of this Sub-Clause: "The Contractor's authorized representative and his other engineers working at site shall possess valid registration with the Pakistan Engineering Council. The Contractor's authorized representative at Site shall be authorized to exercise adequate administrative and financial powers on behalf of the Contractor so as to achieve completion of the Works as per the Contract."
6.12	Key Personnel	The following is inserted at the end of the last paragraph: "If any of the Key Personnel are not fluent in this language, the Contractor shall make competent interpreters available during all working hours in a number deemed sufficient by the Engineer."
The following Sub-Clauses 6.13 to 6.26 are added at the end of Sub-Clause 6.12:		
6.13	Foreign Personnel	Not Applicable.
6.14	Supply of Foodstuffs	The Contractor shall arrange for the provision of a sufficient supply of suitable food as may be stated in the Specification at reasonable prices for the Contractor's Personnel for the purposes of or in connection with the Contract.
6.15	Supply of Water	The Contractor shall, having regard to local conditions, provide on the Site an adequate supply of drinking and other water for the use of the Contractor's Personnel.
6.16	Measures against Insect and Pest Nuisance	The Contractor shall at all times take the necessary precautions to protect the Contractor's Personnel employed on the Site from insect and pest nuisance, and to reduce the danger to their health. The Contractor shall comply with all the regulations of the local health authorities, including use of appropriate insecticide.
6.17	Alcoholic Liquor or Drugs	The Contractor shall not, otherwise than in accordance with the Laws of the Country, import, sell, give, barter or otherwise dispose of any alcoholic liquor or drugs, or permit

		or allow importation, sale, gift, barter or disposal thereto by Contractor's Personnel.
6.18	Arms and Ammunition	The Contractor shall not give, barter, or otherwise dispose of, to any person, any arms or ammunition of any kind, or allow Contractor's Personnel to do so.
6.19	Festivals and Religious Customs	The Contractor shall respect the Country's recognized festivals, days of rest and religious or other customs.
6.20	Funeral Arrangements	The Contractor shall be responsible, to the extent required by local regulations, for making any funeral arrangements for any of its local employees who may die while engaged upon the Works.
6.21	Forced Labour	The Contractor, including its Subcontractors, shall not employ or engage forced labour which consists of any work or service, not voluntarily performed, that is exacted from an individual under threat of force or penalty, and includes any kind of involuntary or compulsory labour, such as indentured labour, bonded labour or similar labour-contracting arrangements.
6.22	Child Labour	The Contractor, including its Subcontractors, shall not employ or engage child labour in accordance with relevant law(s) in force in Islamic Republic of Pakistan.
6.23	Employment Records of Workers	The Contractor shall keep complete and accurate records of the employment of labour at the Site. The records shall include the names, ages, genders, hours worked and wages paid to all workers. These records shall be summarized on a monthly basis and submitted to the Engineer. These records shall be included in the details to be submitted by the Contractor under Sub-Clause 6.10 [Contractor's Records].
6.24	Workers' Organizations	The Contractor shall comply with the relevant labour laws of Pakistan which recognize workers' rights to form and to join workers' organizations/Trade Union of their choosing and to bargain collectively without interference.
6.25	Non-Discrimination and Equal Opportunity	The Contractor shall not make decisions relating to the employment or treatment of Contractor's Personnel on the basis of personal characteristics unrelated to inherent job requirements. The Contractor shall base the employment of Contractor's Personnel on the principle of equal opportunity and fair treatment, and shall not discriminate with respect to any aspects of the employment relationship, including recruitment and hiring, compensation (including wages and benefits), working conditions and terms of employment, access to training, job assignment, promotion, termination of employment or retirement, and disciplinary practices.

		Special measures of protection or assistance to remedy past discrimination or selection for a particular job based on the inherent requirements of the job shall not be deemed discrimination. The Contractor shall provide protection and assistance as necessary to ensure nondiscrimination and equal opportunity, including for specific groups such as women, persons with disabilities, migrant workers and children (of working age in accordance with Sub-Clause 6.22).
6.26	Epidemics	In the event of any out-break of illness of epidemic nature, the Contractor shall comply with and carry out such regulations, orders and requirements as may be made by the Government or the local medical or sanitary authorities for the purpose of overcoming the same.
7.7	Ownership of Plant and Materials	The following is added before the first paragraph: “Except as otherwise provided in the Contract,” The following is added at the end of the Sub-Clause: "No Plant and/or Materials that is the property of the Employer shall be removed from the Site. If it becomes necessary to: (i) remove any item of such Plant from the Site for the purposes of repair, the Contractor shall give a Notice, with reasons, to the Engineer requesting consent to remove the defective or damaged item off the Site. This Notice shall clearly identify the item of defective or damaged Plant, and shall give details of: the defect or damage to be repaired; the place to which defective or damaged item of Plant is to be taken for repair; the transportation to be used (and insurance cover for such transportation); the proposed inspections and testing off the Site; and the planned duration required before the repaired item of Plant shall be returned to the Site. The Contractor shall also provide any further details that the Employer may reasonably require; or (ii) replace any item(s) of such Plant and/or Materials, the Contractor shall give a Notice, with reasons, to the Engineer clearly identifying the item(s) of Plant and/or Materials to be replaced, and giving details of the due date of delivery to the Site of the replacement item(s). Where any item of Plant and/or Materials has become the property of the Employer under this Sub-Clause before it has

		been delivered to the Site, the Contractor shall ensure that such an item is not moved except for its delivery to the Site. The Contractor shall indemnify and hold the Employer harmless against and from the consequences of any defect in title or encumbrance or charge (except any reasonable restriction arising from the intellectual property rights of the manufacturer or producer) on any item of Plant and/or Materials that has become the property of the Employer under this Sub-Clause."
The following Sub-Clause 7.9 is added after Sub Clause 7.8:		
7.9	Use of Pakistani Materials and Services	The Contractor shall, so far as may be consistent with the Contract, make the maximum use of materials, supplies, plant and equipment indigenous to or produced or fabricated in Pakistan and services available in Pakistan provided such materials, supplies, plant, equipment and services shall be of required standard.
8.1	Commencement of Works	The following is added before the first paragraph: "After signing of the Contract Agreement by both Parties," and thereafter the word "The" is replaced with the word "the".
8.5	Extension of Time for Completion	The following is added after paragraph (c): "for last five years".
The following Sub-Clause 8.14 is added after Sub-Clause 8.13:		
8.14	Incentives For Early Completion	Not Applicable.
The following Sub-Clause 11.12 is added after Sub-Clause 11.11:		
11.12	Supervisory Assistance During DNP	If provided under the Schedule of Prices/ Bill of Quantities, the Contractor shall provide supervisory assistance to the Employer during the DNP for the Works. Such supervisory assistance shall be as described in the Specification for the purpose of supporting the Employer's operation and maintenance of the Plant for the period specified in the Bill of Quantities after the Date of Completion.
12.2	Method of Measurement	The following paragraph is added at the end of the Sub-Clause: "Summary of measured quantity for payment shall be delineated item-wise under four heads namely; "Price Bill of Quantity", "Quantity Executed To-date", "Quantity Certified Previously" and "Net Quantity Executed under this Certificate".

12.3	Valuation of the Works	The following text is added at the end of fifth paragraph of the Sub-Clause: “Sum of overhead charges, profit and taxes for sub-paragraph (a) shall be twenty-three-point five percent (23.5%). If the valuation will be carried out on the basis of actual with the application of current market rates for labour, material etc. No Price Adjustment on account of material, labour, POL etc. shall be allowed on such items if the valuation is carried out on the basis of current market rates”
13.4	Provisional Sums	The following paragraph is inserted as the penultimate paragraph: “The Provisional Sum shall be used to cover the Employer’s share of the DAAB members’ fees and expenses, in accordance with Clause 21. No prior instruction of the Engineer shall be required with respect to the work of the DAAB. The Contractor shall submit the DAAB members’ invoices and the satisfactory evidence of having paid 100% of such invoices as part of the substantiation of those Statements submitted under Sub-Clause 14.3.
13.6	Adjustments for Changes in Laws	The following paragraphs are added at the end of the Sub-Clause: “Notwithstanding the foregoing, the Contractor shall not be entitled to an extension of time if the relevant delay has already been taken into account in the determination of a previous extension of time and such Cost shall not be separately paid if the same shall already have been taken into account in the indexing of any inputs to the Table of Adjustment Data in accordance with the provisions of Sub-Clause 13.7 [Adjustments for Changes in Cost].”
14.2	Advance Payment	<u>14.2.1 Advance Payment Guarantee.</u> An interest-free Advance Payment for Mobilization up to ten percent (10%) of the Contract Price stated in the Letter of Acceptance less Provisional Sums, shall be paid by the Employer to the Contractor in two equal parts upon submission by the Contractor of an Advance Payment Guarantee for the full amount of the Advance in the specified form from a Scheduled Bank in Pakistan. The Advance Payment Guarantee shall remain valid one month beyond the stipulated date of completion of project. The Advance Payment Guarantee shall be progressively reduced to the balance amount of Advance Payment indicated in the IPCs certified by the Engineer. First part within fourteen (14) days after signing of the Agreement or date of receipt of Engineer’s Notice to

		Commence, whichever is earlier; and Second part within forty-two (42) days from the date of payment of the first part, subject to the satisfaction of the Engineer as to the state of the following: (i) delivery at Site of Minimum Mandatory Equipment and deployment of Minimum Mandatory Staff as per the requirements mentioned in Qualification Criteria; (ii) having completed his contractual obligations as per the requirements of Construction Camp and Housing facilities to Bid; and (iii) having completed at least 2% of the permanent works (to be accessed by the engineer.
14.6	Issue of IPC	<u>14.6.1 The IPC</u> In the first line of the 1st paragraph the words “28 days” are substituted by “14 days”.
14.7	Payment	The words “or through crossed cheque in favour of the Contractor.
14.8	Delayed Payment	Not Applicable.
15.2	Termination for Contractor’ Default	<u>15.2.1 Notice</u> Following text is added at the end of sub-paragraph (b) of this Sub-Clause: “and/or despite previous warning from the Engineer, in writing, is otherwise persistently or flagrantly neglecting to comply with any of his obligations under the Contract”. Following text is added at the end of sub-paragraph (h) of this Sub-Clause: “For the purposes of this Contract, corrupt and fraudulent practices have been defined in Public Procurement Rules 2004.” <u>15.2.3 After Termination</u> The word “and” at the end of sub-paragraph (ii) of paragraph (b) is deleted. The following paragraph is added after sub-paragraph (iii): “(iv) all Employer-Supplied Materials and/or Employer’s Equipment made available to the Contractor in accordance with Sub-Clause 2.6 [Employer-Supplied Materials and Employer’s Equipment], and”

15.4	Payment after Termination for Contractor's Default	The following text is added at the end of this Sub-Clause: "The Employer shall be entitled to sell any of the Contractor's Equipment, Temporary Works and unused materials and apply the proceeds of sale towards payment of any debt due from the Contractor to the Employer under this Clause including any outstanding payments to the Subcontractors."
16.2	Termination by Contractor	<u>16.2.1 Notice</u> The sub-paragraph (j) is deleted in its entirety. At the end of sub-paragraph (i) "; or" is replaced with "." and at the end of sub-paragraph (h) "," is replaced with "; or". In sub-paragraph (f) "84 days" are replaced with "180 days" and text "for reasons not attributable to the Contractor" is added at the end.
16.3	Contractor's Obligations After Termination	Sub-paragraph (b) is deleted and replaced with: "(b) deliver to the Engineer all Employer-Supplied Materials and/or Employer's Equipment made available to the Contractor in accordance with Sub-Clause 2.6 [Employer-Supplied Materials and Employer's Equipment]; and (c) remove all other Goods from the Site, except as necessary for safety, and leave the Site."
17.1	Responsibility for Care of the Works	After the two instances of "Goods" in the last paragraph, the words "Employer-Supplied Materials and/or Employer's Equipment" are added.
The following Sub-Clause 17.7 is added after Sub-Clause 17.6:		
17.7	Use of Employer's Accommodation / Facilities	The Contractor shall take full responsibility for the care of the items of the Employer's facilities and/or accommodation, if any, as detailed in the Specification, from the date of use and/or occupation by the Contractor until the date on which such use and/or occupation is re-vested in the Employer. If any loss or damage happens to any of the above items during a time while the Contractor is responsible for its care, arising from any cause other than a cause for which the Employer is responsible or liable, the Contractor shall promptly rectify the loss or damage at the Contractor's risk and cost.
18.1	Exceptional Events	The words "or disorder" are replaced with "disorder or sabotage" in sub-paragraph (c) of the Clause.

18.4	Consequences of an Exceptional Event	The following is added at the end of sub-paragraph (b) after deleting the “.”: “, including the costs of rectifying or replacing the Works and/or Goods damaged or destroyed by Exceptional Events, to the extent they are not indemnified through the insurance policy referred to in Sub-Clause 19.2 [Insurance to be provided by the Contractor].”
18.5	Optional Termination	In sub-paragraph (c), the words “and necessarily” are added after the words “was reasonably”.
19.1	General Requirements	Following text is added at the end of first paragraph: “The Contractor shall immediately after the date of the Letter of Acceptance submit the draft of insurance policies for the Employer’s consent.” Following text is added at the end of third paragraph: “The Contractor shall, within the respective periods stated in the Contract Data submit to the Engineer and the Employer a) evidence that the insurances described in this Clause have been effected, and b) copies of policies of the insurances described in Sub-Clauses 19.2.1, 19.2.4 and 19.2.5.”
19.2	Insurance to be provided by the Contractor	<u>19.2.5 Injury to employees</u> The words “sickness, disease” are deleted in the third line of first paragraph. The following Sub-Clause is added after Sub-Clause 19.2.6: <u>19.2.7 Insurance Company</u> “The Contractor shall be obliged to place all insurances described in this Clause with insurers listed in the Contract Data with min. rating of AA by PACRA/VIS.
21.6	Arbitration	The word “international” is deleted in the sixth line of first paragraph. The text of sub-paragraph (a) is substituted with the following: “the Dispute shall be finally settled under the Rules of Arbitration, specified in the Contract Data;”
The following Clauses are added after Clause 21		
22	Custom Duty	The Contractor shall be liable to pay custom duty arising out of the Contract. The rates and prices as stated in the contract shall be deemed to cover all such duties.

23	Taxes	The Contractor, Subcontractors and their employees shall be liable to pay income tax, withholding tax, super tax and other taxes on income arising out of the Contract. The rates and prices as stated in the contract shall be deemed to cover all such taxes.
24	Integrity Part	If it is found and established at any stage that the Contractor or any of his Subcontractors, agents or servants have violated or involved in violation of the Integrity Pact signed by the Contractor then the Employer shall be entitled to : (a) recover from the Contractor an amount equivalent to ten times the sum of any commission, gratification, bribe, finder's fee or kickback given by the Contractor or any of his Subcontractors, agent or servants; (b) terminate the Contract; and (c) recover from the Contractor any loss or damage to the Employer as a result of such termination or of any other corrupt business practices of the Contractor or any of his Subcontractors, agent or servants. The termination under sub-paragraph (b) of this Sub-Clause shall proceed in the manner prescribed under Sub-Clause 15.1 to 15.4 and the payment under Sub-Clause 15.4 shall be made after having deducted the amounts due to the Employer under sub- paragraph (a) and (c) of this Sub-Clause.

SECTION-X: 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) Contract Agreement;
 - (b) Letter of Acceptance;
 - (c) Volume-I;
 - Letter of Bid (Technical Proposal);
 - Works Requirements & Technical Proposal;
 - Appendices
 - General Conditions;
 - Special Conditions of the Contract;
 - Part-A: Contract Data;
 - Part-B: Special Provisions (Particular Conditions);
 - Specific Provisions;
 - (d) Volume-II;
 - Technical Specifications;
 - (e) Volume-III;
 - Drawings;
 - (f) Volume-IV;
 - Letter of Bid (Financial Proposal);
 - Preamble to Bill of Quantities / Engineer's Estimate;
 - Priced Bill of Quantities / Engineer's Estimate;
 - Integrity Pact;
 - (g) Addenda Nos. _____ dated _____ issued by the Employer / Engineer, (if any);
 - (h) Performance Security (Bank Guarantee (Unconditional));
 - (i) Advance Payment Guarantee (Bank Guarantee);
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 times 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]

SECTION-XI: SPECIFIC PROVISIONS

SECTION XI: SPECIFIC PROVISIONS

1. GENERAL

- 1.1 Specific Provisions shall form an integral part of Bid and the Contract Documents.
- 1.2 The Contractor shall notify all sub-contractors of the provisions of these Special Provisions.
- 1.3 All the items under Special Provisions are to be provided/ arranged by the Contractor within one (1) month after award of works (during mobilization period) without any additional cost to the Employer. No payment shall be made to the Contractor for the provision of these items, and the cost shall be deemed to have been included in the quoted rates and prices of other items of BOQ.

2. DESCRIPTION OF PROJECT, WORKS INVOLVED AND SITE

University of Buner is executing the PSDP Project titled “Development of University of Buner (Phase-I)” through Higher Education Commission (HEC), Government of Pakistan. The Project covers the construction of buildings namely Academic Block-A, Administration Block, Faculty & Staff Hostel and Girls Hostel along with External Development Works.

Project Director, University of Buner, intends to construct some Ancillary Works for functional requirements of the Swari Campus. The scope of Works comprises construction of civil, plumbing and electrical works and related works lying within the contract limits shown on the Drawings and any such additional areas adjacent thereto as may be designated by the Engineer from time to time for the construction to be performed under the Contract, and all such areas and additional areas shall comprise the Site.

3. CODES, STANDARDS AND CERTIFICATES

A. Applicable Standards

Except as otherwise provided by these Specifications or the Drawings, all materials, equipment and fabrication and testing thereof shall conform to the latest applicable standards and codes referred in the Specifications by use of the abbreviations explained below:

ASCE	-	American Society of Civil Engineers
ASA	-	American Standard Association
ACI	-	American Concrete Institute (USA)
AISI	-	American Iron and Steel Institute (USA)
AISC	-	American Institute of Steel Construction (USA)
ANSI	-	American National Standard Institute (USA)
ASTM	-	American Society for Testing and Materials (USA)
AASHTO	-	American Association of State Highway & Transportation Officials.
AWS	-	American Welding Society (USA)
BS	-	British Standards (UK)
CP	-	Codes of Practice (UK)
ICAO	-	International Civil Aviation Organization
BSICP	-	British Standard Institute Code of Practice
PS	-	Pakistan Standards (Pak)

PCA	-	Portland Cement Association
PSI	-	Pakistan Standard Institute
SSPC	-	Steel Structures Painting Council (USA)
UBC	-	Uniform Building Code (USA)
USBR	-	United States Bureau of Reclamation (USA)

If the Contractor, at any time and for any reason, wishes to deviate from the above standards or desires to use material or equipment not covered by the above standards, he shall state the exact nature of the changes, the reason for making the change and shall submit complete specifications of the materials and equipment to the Engineer for approval.

B. Standards other than those Specified

Where requirements for materials or equipment are specified by reference to a standard which has its origin in one country, it is not the intention to restrict the requirements solely to that standard and that country. Other standards, including standards of other countries, will be accepted provided the requirements thereof, in the sole opinion of the Engineer, are at least equal to the requirements of the standard specified. The Contractor may propose to the Engineer an equivalent standard other than that specified, in which case he shall submit the proposed standard and all other information required and shall submit written proof that his proposed standard is equivalent in all significant respects to the standard specified. All submissions must be made in the English language.

C. Codes and Standards at Site

The Contractor shall supply and have at his site office:-

- a) Copies of all latest editions of codes and standards referred to in these Specifications or equivalent codes and standards as approved by the Engineer.
- b) Catalogues and published recommendations from manufacturers supplying products and materials for the project.
- c) The Contractor shall provide manufacturer's or supplier's materials which must meet the requirements of a specific code or standard as stated in these Specifications.

4. MANUFACTURER'S RECOMMENDATIONS

Installation of manufactured items shall be in accordance with procedures recommended by the manufacturer or as approved by the Engineer.

5. UNITS OF MEASUREMENTS

The FPS System of Units shall be used throughout the Project.

6. EXISTING CONDITION AT SITE

Drawings and information pertaining to existing project conditions are furnished for reference.

Neither the Employer nor the Engineer warrants the adequacy or correctness of these. The Contractor's are encouraged to visit the project site to assess the existing site conditions.

7. PROTECTION AND PRECAUTIONS

The Contractor and his sub-contractors shall afford all necessary protection to existing structures and will be required to make good at his own expense any damage done to such structures through his own or his representatives or subcontractors' fault and negligence.

The Contractor and his sub-contractors shall afford all necessary protection to existing roads in the area. He will clear and make good at his own expense any damage to or debris on these roads through his own fault and negligence. He must at all-time ensure the free and normal flow of traffic and shall not cause obstruction to the traffic system. The Contractor and his sub-contractors shall provide and maintain necessary protection and precautionary measures to properly cordon off the worksite using barricades, fencing, warning signs, and other suitable protective measures to prevent unauthorized access, accidents and ensure public safety. The following requirements shall be adhered to:

- (a) **Barricading and Signage:** The worksite shall be enclosed with durable barricades or fencing of sufficient height and strength to prevent unauthorized entry. Clear warning signs, including hazard notifications and restricted area markers, shall be placed at strategic locations.
- (b) **Lighting and Visibility:** Adequate lighting shall be provided around the worksite, especially in low-visibility areas, to prevent accidents. Reflective markers and warning tape shall be used as necessary.
- (c) **Access Control:** Entry to the worksite shall be restricted to authorized personnel only. The Contractor shall implement a controlled access system to monitor entry and exit points.
- (d) **Protection of Pedestrians and Traffic:** If construction activities affect pedestrian walkways or roads, appropriate diversions, temporary walkways, and traffic management measures shall be implemented to ensure safe movement.
- (e) **Regular Inspection and Maintenance:** The Contractor shall inspect and maintain all safety and protective measures regularly to ensure their effectiveness. Any damaged barricades, signage, or protective elements shall be immediately repaired or replaced.

The Contractor shall promptly correct all such damage to original condition at no additional expense to the Employer.

The Contractor shall cooperate with trades performing work under other Contracts as necessary for completion.

8. SEQUENCE OF CONSTRUCTION

The Contractor shall submit his proposal for approval of the Engineer the sequence of Construction, prior to starting the works. The works shall be executed as per approved sequence of construction.

9. LINES AND LEVELS

Survey control points will be established by the Engineer. The Contractor shall be responsible for verifying these and shall be responsible for all requirements necessary for the execution of any work to the locations, lines, and levels specified or shown on the drawings, subject to such modifications as the Engineer may require as work progresses.

10. PLANT, EQUIPMENT AND TOOLS

The Contractor shall provide at his cost modern plant, equipment and tools, adequate and befitting to the nature, magnitude and size of this Contract, in strict compliance with the requirements of the General Conditions of Contract, Conditions of Particular Applications and Technical Specifications.

11. PARTIAL POSSESSION

Whenever, as determined by the Employer any portion of work performed by the Contractor is in a condition suitable for use, the Employer may take possession of or use such portion.

Such use by the Employer shall in no instance be construed as constituting final acceptance, and shall neither relieve the Contractor of any of his responsibilities under the Contract, nor acts a waiver by the Employer of any of the conditions thereof, provided that the Contractor shall not be liable for the cost of repairs, re-work, or renewals which may be required due to ordinary wear and tear resulting from such use. However, if such use increases the cost or delays to the completion of remaining portions of work, the Contractor will be entitled to an equitable adjustment.

If, as a result of the Contractor's failure to comply with the provision of the Contract, such use proves to be unsatisfactory, the Employer will have the right to continue such use until such portion of the work can, without injury to the Employer, be taken out of service for correction of defects, errors, omissions, or replacement of unsatisfactory materials or equipment, as necessary for such work to comply with the Contract; provided that the period of such operation or use pending completion of appropriate remedial action shall not exceed twelve months unless otherwise mutually agreed upon in writing between the parties.

12. EXISTING SERVICES

The Contractor shall search for, find, locate and protect any wiring, cable, duct, pipework, etc., within or immediately adjoining the site area.

The Contractor shall take full responsibility for safety of existing service lines, utilities and utility structures uncovered or encountered during excavation and construction operations.

The Contractor shall take full responsibility for damaging any such service lines, utility/utility structure and any cost and/or expense that arises or issues from any such damage shall be borne directly by himself. Should any damage to any such service occur the Contractor shall forthwith take remedial action, initiate safety precautions, install temporary services and carryout repair all at his own cost and expense and inform the Engineer and notify all relevant authorities.

Existing utilities which are to remain in service for or after the works are to be determined by the Contractor. If any existing service lines, utilities and utility structures which are to remain in

service are uncovered or encountered during these operations, they shall be safeguarded, protected from damage, and supported. The Contractor shall preserve, maintain and keep in perfect working conditions, any existing facilities required to be preserved by the Employer/the Engineer.

13. CONSTRUCTION AREA AND ACCESS

The Employer will provide the Contractor possible space within or nearby the area of site of works for the storage of plant, equipment and materials and for Contractor's temporary office, during the currency of the Contract. In case the adjacent area as required by the Contractor is not available within the Project boundary for storage of plant, equipment and machines then the Contractor shall arrange at his own expense possible space for storage of plant, equipment and machines at his own cost and expense. On no account shall such temporary installations conflict/interfere with any of the permanent installations, services and any operational function of Employer. The handling and storage of all plants, equipment and materials at site shall be the sole responsibility of the Contractor and at no risk and cost to the Employer.

The Contractor shall protect all material against corrosion, mechanical damage or deterioration during storage and erection on site. The protection methods shall be to the approval of the Engineer

14. CONSTRUCTION & CHECKING AT SITE

The Contractor shall submit to the Engineer in due time for approval and discussion, his proposals and plans as to the method and procedure to be adopted for the temporary and permanent works involved.

The submitting to these suggestions and arrangements, and the approval thereof by the Engineer shall not relieve the Contractor of his responsibilities and duties under the Contract.

The carrying out of all work included in the Contract is to be supervised by a sufficient number of qualified representatives of the Contractor and full facilities and assistance are to be afforded by the Contractor for the Engineer or his Representative to check & examine the execution of the work.

The Engineer reserves the right to inspect all parts of the works but may at his discretion waive inspection on certain items. This shall in no way absolve the Contractor from his responsibilities. This particularly applies to the checking of materials, the accurate setting out of foundations, and to the leveling, setting and aligning of the various parts, and to the proper fitting and adjustment of manufactured and finished materials and fixtures in position.

If the Engineer or his Representative find that the work progress is slow in such a way that the works or parts thereof will not be completed in the time specified, then he shall order the Contractor to work overtime or in shifts and the Contractor shall comply. These arrangements will be free of all financial encumbrances and at no additional costs to the Employer.

In the event of night work, the Contractor shall provide sufficient and adequate lighting to the satisfaction of the Engineer or his Representative and shall supply the necessary manpower for satisfactory continuation of the work after normal hours.

15. STORAGE & HANDLING FACILITIES

The Contractor shall make his own arrangements for providing the necessary space for the storage of plant, equipment and materials and for Contractor's temporary office, in and around the site of works, during the currency of the Contract.

16. PRODUCT DATA

Manufacturer's standard schematic drawings shall be modified or deleted to indicate only information which is applicable to the project. Such standard information shall be supplemented to provide all additional applicable information.

Manufacturer's catalogue sheets, brochures, diagrams, schedules, performance charts, illustrations and other standard descriptive literature shall be clearly marked to identify pertinent materials products or models. Dimensions and required clearances shall be indicated. Shop performance characteristics and capacities shall be noted.

The Contractor shall ensure that all technical submittals are complete, accurate, and in full compliance with the Contract Documents prior to initial submission. Re-submissions shall be limited strictly to incorporating comments issued by the Engineer on the preceding submission.

The Contractor shall not make unnecessary, repetitive re-submissions of previously reviewed and accepted or rejected submittals without valid justification. Any re-submission that does not adequately address prior comments, or includes unjustified revisions, shall be liable for rejection without review.

In the event of excessive or unjustified re-submissions, the Engineer reserves the right to:

- (a) return such submittals without review; and/or
- (b) recover any additional administrative or review costs incurred.

17. PRODUCT QUALITY AND HANDLING

Suppliers of local and foreign products and installations specified shall have been regularly engaged in the business of manufacturing, fabricating, installing and / or servicing work required for a period not less than 5 years. In addition, the Engineer may request as appropriate a:

- list of similar installations that describes project, scope and date of completion.
- complete literature, performance data, and technical data.
- list of services record within Pakistan.
- location of service office from which this installation could be maintained.

For the actual fabrication, installation and testing of the specified work use only thoroughly trained and experienced workmen completely familiar with the items required and with the manufacturers recommended methods of installation. In acceptance or rejection, no allowance will be made for the lack of skill on the part of workmen.

Use all means necessary to protect materials before, during and after installation and to protect the installed work and materials of all other trades. In the event of damage, immediately make all repairs and replacement necessary for approval and at no additional cost to the Employer.

18. INSPECTION & TESTS REPORTS

All equipment and materials furnished under these specifications and all work performed in connection therewith will be subject to rigid inspection by the Engineer or the Engineer's Representative. Acceptance of equipment and material or the waiving off inspection thereof shall in no way relieve the Contractor of his responsibility for meeting the requirements of the Contract.

The Contractor shall furnish the Engineer with certified true copies of test reports of all materials used in the manufacture and fabrication of all equipment and material including metal work, steel pipes, fire bricks etc. The result of these test shall be in such form as to show compliance with the applicable Specifications, standards and codes for the material used.

19. FIELD LABORATORY AND TESTING

19.1 General

The Contractor shall provide and maintain a field laboratory equipped with approved equipment to perform all the tests required by the Engineer. The quality control testing shall be performed by the Contractor's competent personnel in accordance with a site testing and quality control programme to be established by the Contractor and approved by the Engineer. The Engineer may however, require certain tests to be performed in any other laboratory designated by him.

The Contractor shall provide laboratory helpers to the Engineer for testing. The laboratory shall be run by a qualified material Engineer and Laboratory Technician to be employed by the Contractor.

The Field Laboratory, including all equipment and staff shall be placed at the disposal and direction of the Engineer during the Contract.

The Contractor shall keep a complete record of all quality tests performed on site.

All quality control and tests shall be carried out in accordance with applicable standards and codes. In addition to routine field testing, the contractor shall undertake soil studies for water storage structures etc as directed by the engineer, and furnish a report for evaluation of structural designs of hydraulic and retaining structures where applicable with no additional payment to contractor.

19.2. Field Laboratory Equipment Requirements

The Laboratory shall be equipped with new unused and latest Equipment to perform tests as per Technical Specifications and General Conditions of Contract. Additional equipment / materials shall be supplied by the Contractor as and when required by the Engineer to perform any specified test, at no additional cost to the Employer.

The laboratory shall also be equipped with new unused furniture, fittings and fixtures. If any equipment, furniture, fitting or fixture becomes unserviceable for any reason what so ever, the Contractor shall promptly replace the same as and when directed by the Engineer. List of minimum equipment for the laboratory is as under:

- (a) Concrete Cube Testing Machine (with 04 Sets of Cubes, each Set having 06 Cubes)

- (b) Equipment for Concrete Slump Test (Minimum 03 Nos.)
- (c) Set of Sieves for Sieve Analysis (Minimum 02 Sets)
- (d) Electric Oven (Minimum 01-No.)
- (e) Proctor Mould with Hammer (Minimum 01 Set)
- (f) Field Density Test Apparatus (Minimum 01-No.)
- (g) Balance (Minimum 01-No.)
- (h) Thermometer (Minimum 03-Nos.)

19.3. Testing Laboratory Certificates

The Engineer may accept a certificate from a commercial testing laboratory, satisfactory to him, certifying that the product has been tested within a period acceptable to the Engineer and that it conforms to the requirements of these specifications.

19.4. Method of Payment

The cost of providing running and maintenance of the laboratory, equipment, materials and staff, testing charges for materials supplied by the Employer and all other tests to be performed in any other laboratory designated by the Engineer shall be deemed to be included in the price quoted by the Contractor and no separate claim for payment on this account shall be entertained by the Engineer. Furthermore, the cost of any additional laboratory, field and shop tests required through the resubmission of samples because of failure of compliance with Specifications shall be borne by the Contractor.

In case the Contractor does not provide the specified equipment and testing facility, cost of testing plus 100 percent overheads shall be recovered from his bills.

20. SURVEYING INSTRUMENTS

20.1 General

The minimum quantity of survey equipment is stated below which shall be available with the Contractor at site of Works along with qualified Surveyors and Survey Helpers. The equipment shall be maintained throughout the Contract Period and replaced by the Contractor in case of damage or loss. The survey equipment shall be made available to the Engineer when requested. All surveying equipment shall be in good working condition.

20.2 Surveying Equipment Required

The Contractor shall provide and maintain the following surveying equipment at site.

- (a) Total Station with staff 02 No.
- (b) Automatic Levels with tripods & staff 02 No.
- (c) All other miscellaneous tools, equipment and materials required in surveying.

21. APPROVAL OF MATERIALS AND PLANT

21.1 Quality of Materials

All materials, fixtures, fittings, supplies and plant furnished under the Contract shall be new and unused, standard first grade quality and of the best workmanship and design. No inferior or low-grade materials, supplies or articles will be either approved or accepted, and all work of assembly and construction shall be done in a first-class and workmanlike manner. In asking for prices for materials intended for delivery to the Site and incorporation in the Works under any portion of these Specifications, the Contractor shall provide the manufacturer or supplier with complete information as may be necessary to secure compliance to this Clause and, in every case, he shall quote this Clause in full to each such manufacturer or supplier.

21.2 Submission of Samples and Data

- 21.2.1 The Contractor shall furnish for approval of the Engineer with reasonable promptness all samples as directed by the Engineer or specifically called for in the Specifications and in accordance with the time schedule provided in the schedule of submittals. The Engineer shall check and approve such samples with reasonable promptness only for conformance with the design concept of the Works and for compliance with the information given in the Contract Documents. All work shall be in accordance with approved samples.
- 21.2.2 Samples shall be furnished so as not to delay fabrication, allowing the Engineer reasonable time for consideration of the sample submitted.
- 21.2.3 Each sample shall be properly labeled with the name and quality of the material, manufacturer's name, name of the project, the Contractor's name and the date of submission, and the Specifications Article number to which the sample refers.
- 21.2.4 The manufacturer's installation directions shall be provided with each sample. The Contractor shall pay all transportation costs and deliver samples to the Engineer's office, Site or testing laboratory as directed by the Engineer.
- 21.2.5 Samples shall be of adequate size to permit proper evaluation of the material by the Engineer. Where variations in colour, texture, dimensions or other characteristics are to be expected, the Contractor shall submit samples showing the maximum range of variation. Materials exceeding the range of variation of the approved samples shall not be used on the Work.
- 21.2.6 In order to permit coordinated selection of colours and finishes, the Contractor shall deliver samples of all related items to the Engineer at one time. Samples of such materials will not be approved until all related samples have been submitted.
- 21.2.7 If both Shop Drawings and samples are required for the same item, the Engineer may require both to be submitted before approving either.
- 21.2.8 The Contractor shall erect Mock-up samples of finished items where specifically called for in the documents or as directed by the Engineer. The Mock-up samples shall be preserved/protected by the Contractor till the end of the project or as directed by the Engineer.

21.2.9 No acceptance or approval of any Shop Drawings or sample, or any indication or request by the Engineer on any Shop Drawings shall constitute an authorization for any increase in the Contract Sum.

21.3 Inspection

All material and Plant furnished and all work performed under this Contract will be subject to inspection by the Engineer at all times and in all states of completion both off-Site and on-Site. The Contractor shall furnish promptly without additional charge, all facilities, labour and materials reasonably needed for performing such inspection and testing as may be required by the Engineer.

21.4 Approved Sample at Site

The Contractor shall, at all times, keep on the Site approved samples. All such samples shall be made available to the Engineer as and when required.

22. BAR BENDING SCHEDULE

Bar bending (reinforcement bars) schedule of all structural drawings shall be prepared by the Contractor and submitted in triplicate to the Engineer for approval.

23. DRAWINGS

23.1 Bid Drawings

Bid Drawings issued with the Bid Documents, called the Bid Drawings, show scope of the work to be performed by the Contractor. The Drawings are generally in sufficient detail so as to be used as a basis for construction, fabrication and for placing orders for materials subject to corrections based on the future issue of supplementary Drawings as provided under Sub-Clause 12.2 hereof.

23.2 Construction Drawings, Supplementary Drawings

Upon commencement of the works and furnishing by the Contractor stake out survey plan & natural ground levels, the Engineer shall issue Construction Drawings to the Contractor. The Construction drawings may be issued in stages, where necessary.

The Engineer shall have authority to issue to the Contractor, from time to time, such supplementary Drawings and instructions as shall be necessary for the purpose of the proper and adequate execution and completion of the Works and the remedying of any defects therein. The Contractor shall follow these drawings.

When additional information regarding the geological formations or other conditions becomes available, the Engineer may find it desirable to change dimensions or design of one or more of the features of the Works to conform to the newly disclosed conditions. The Engineer reserves the right to make such reasonable changes, and the Contractor's operations shall be conducted so as to accommodate any such reasonable changes in the Works.

23.3 Definition of Term Drawings

The term Drawings as used in the Specifications means the Drawings referred in Clauses 12.1 and 12.2 above.

23.4 Checking of Drawings

The Contractor shall check all Drawings carefully as soon as practicable after receipt thereof, and shall promptly notify the Engineer of any errors discovered.

23.5 Copies of Drawings

Drawings will be issued to the Contractor as described below:

23.5.1 Construction Drawings

Two (2) sets of the Construction Drawings will be issued to the Contractor as stated above, free of charge. Additional sets will be provided at cost of reproduction upon written request of the Contractor.

23.5.2 Supplementary Drawings

Two (2) prints of each supplementary Drawing will be issued to the Contractor free of charge. Additional sets will be provided at cost of reproduction upon written request of the Contractor.

23.6 Drawings to Be Furnished By the Contractor

The Contractor shall submit to the Engineer for review, such drawings as are required under the Contract, sufficiently in advance of the work intended to be executed.

23.6.1 Reinforcement Drawings

Reinforcement placement drawings and bar bending schedules (to be provided by the Contractor as per clause 11 above) of all RCC work shall be prepared by the Contractor and submitted in triplicate to the Engineer for approval, sufficiently in advance of the works in which they are intended to be used.

23.6.2 Shop Drawings

- (a) The Contractor shall submit to the Engineer for review three (3) copies of all drawings to be issued for setting out, fabrication, supply order and construction; based on data, requirements, dimensions, details, codes, standards and design provided in the drawings issued by the Engineer. Such drawings shall be submitted at least twenty-eight (28) days before they are required for use. If within a period of fourteen (14) days after submission, the Engineer notifies the Contractor that a drawing fails to comply with the relevant requirement of the Contract, it shall be rectified and resubmitted for approval at the Contractor's cost. Fabrication or construction shall not commence on any part of the Works until the shop drawings or construction drawings for that part of the Works have been approved by the Engineer.

The Works shall be executed in accordance with the drawings as approved by the Engineer. If the Contractor wishes to modify any approved drawings, he shall immediately notify the Engineer and submit revised drawings for approval. If the Engineer instructs that further drawings are necessary for executing the Works, the Contractor shall prepare such drawings and submit them for approval.

The Contractor at his cost shall rectify errors, omission, ambiguities, inadequacies and other defects.

Approval by the Engineer, in accordance with this paragraph, shall not relieve the Contractor of any of his responsibilities under the Contract.

- (b) The shop drawings shall be properly identified indicating the part of the Works, the name of the contractor / supplier etc., the date of preparation and the dates of all revisions. The Shop Drawings shall be complete and shall show the design dimensions, proposed materials to be used, finishes, type of shop paint and all other details in connection thereto.
- (c) Where adjoining work requires shop drawings, the Contractor shall prepare and submit composite shop drawings, which shall show and define the work under all affected trades. If the Contractor executes work before coordinating with other trades so as to cause interference with work of those trades, he shall make changes necessary to correct the conditions without extra cost to the Employer.
- (d) No changes shall be made by the Contractor in the resubmitted shop drawings in excess of the corrections spelled out by the Engineer and in a separate note on the shop drawings.
- (e) No work in the shop shall be started and no material or plant ordered until the Engineer has approved the shop drawings. It shall be the responsibility of the Contractor to submit the shop drawings on a schedule that allows reasonable time for checking and approval and subsequent fabrication. Failure to submit shop drawings in ample time for checking, correcting, and rechecking will not justify extension of time for completion of the Works.
- (f) The Contractor shall also check and verify all site measurements whenever requested by other Specialist Contractors or by other Sub-Contractors to enable them to prepare their own shop drawings and pass on the information with sufficient promptness, so as not to delay the work in any way. A copy of all such information passed on shall be given to the Engineer.

23.6.3 As-Built Drawings

The Contractor shall, at all times, keep on Site a separate set of prints of all drawings on which all significant changes between the work shown on the Drawings and that which is actually constructed, shall be noted neatly, accurately and promptly as the work progresses. The Contractor shall also regularly update BIM-Revit Model and share with the Engineer. Such drawings

shall show the exact physical location and configuration of the works as actually installed.

The Contractor shall, within fourteen (14) days of issuance of Taking-Over Certificate for whole of the Works, furnish to the Engineer for his approval two (2) copies of such marked up drawings. One (1) copy of each of the marked up drawings approved by the Engineer shall be returned to the Contractor by the Engineer and these shall be used for the preparation of the As - Built Drawings.

The Contractor shall furnish to the Engineer six (6) complete sets and one reproducible copy of all As -Built Drawings (Auto CAD Drawings of all services) within twenty-eight (28) days of receipt of drawings stated above, from the Engineer.

24. PROTECTION OF THE WORKS

The Contractor shall whenever necessary cover up and protect the works from weather and damage by his own or other workmen performing subsequent operation. The Contractor shall provide all necessary dustsheets, barriers and guard rails and clear away the same at completion.

25. RESTORATION AND CLEANING

Upon completion of the works the Contractor shall restore all items covered by the Contract to the satisfaction of the Engineer.

The Contractor shall do regular cleaning and clear away all rubbish and excess materials that may accumulate from time to time on completion and before handing over. Upon completion of the works he shall obliterate all signs of temporary construction facilities such as work areas, structures, foundations of temporary structures, stock piles of excess or waste materials, or any other vestiges of construction, as directed by the Engineer. All buildings shall be cleaned; floors and paving scrubbed and the works and site shall be left in a clean and satisfactory state for immediate use and occupation. Care shall be taken not to use any cleaning materials, which may cause damage to the surface to be cleaned.

The Contractor shall also take all necessary precautions to keep the works and site free from vermin during construction and he shall leave the works vermin free on completion. Application of pest control agents shall not commence until the specific product, name, method and extent of application have been submitted to and approved of by the Engineer.

26. SITE OFFICE AND TEMPORARY FACILITIES TO BE PROVIDED BY THE CONTRACTOR

26.1 Contractor's Office, Facilities Etc.

The Contractor shall establish and maintain a Site office. The Contractor shall provide all facilities in connection with the execution, completion, of the Works, remedying defects therein and maintenance of the utilities services. The facilities shall not be limited to the Contractor's Site Office, labour camps, work yard and storage areas, temporary water supply, waste water disposal, temporary electricity, medical unit, temporary roads, fire protection and firefighting equipment etc. The Contractor shall be solely responsible for arranging all utilities and the Contractor shall setup, maintain and operate an architectural and engineering facility at site with adequate number of technical and support staff as well as equipment required for particular nature of job

covered under the Contract to prepare drawings/shop drawings for approval of the Engineer.

The Contractor shall arrange his labour camp, work yard, storage area and site office.

26.2 Temporary Roads

The Contractor shall prepare and maintain such temporary roads as may be necessary, from the site to the nearest road and also within the plot. Such roads shall be positioned strictly in accordance with the Engineer's instructions and the Contractor shall reduce or control any dust nuisance by regularly spraying water and compaction as directed.

26.3 Temporary Services

26.3.1 Temporary Water Supply

The Contractor shall supply in sufficient quantity all necessary potable and other water for construction purposes for all trades at points within a reasonable distance of any building being constructed. The Contractor shall make arrangements and pay charges for water service installation, maintenance and removal thereof, and pay the costs of water for all trades.

At completion of the work, the temporary water services equipment and piping shall be removed by the Contractor at his own expense.

26.3.2 Temporary Electricity

The Contractor shall make all the necessary arrangements for a temporary electricity service, pay all expense in connection with the installation, operation and removal thereof and pay the costs of electricity consumed by all trades. The Contractor shall arrange and furnish an Electric Power Generating set at site and maintain the generating set in perfect working condition through-out the duration of Contract. The generating power of the set shall be sufficient to operate all plant and equipment as well as the camps and offices of the Contractor and the offices of the Engineer/Employer, during construction at site. Should the set fail to meet the required demand at site or fail to function or operate, the Contractor shall immediately replace the same with other generating set/sets to the satisfaction of the Employer as well as the Engineer.

A temporary lighting system shall be furnished, installed and maintained by the Contractor as required to satisfy the minimum requirements for safety and security and to the satisfaction of the Engineer.

When the permanent electrical power and lighting systems are in an operating condition, they may be used for temporary power and lighting for construction purposes provided that the Contractor obtains the written approval of the Engineer and the Employer and assumes full responsibility for the entire power and lighting system and pays all costs for operation and maintenance of the system.

At completion of construction work, or at such time as the Contractor makes use of permanent electrical equipment and devices, temporary electricity services shall be removed by the Contractor at his own expense.

26.3.3 Waste Disposal

The Contractor shall make such temporary provisions as may be required in order to dispose of any chemicals, fuels, oils, grease, bituminous materials, waste and soil waste and the like without causing pollution to either the site or the environment. Disposal of any materials, wastes, effluent, garbage, oil, grease, chemicals and the like shall be in areas specified by the concerned local authority proposed by the Contractor and subject to the approval of the Engineer. If any waste material is dumped in unauthorized areas the Contractor shall remove the material and restore the area to the condition of the adjacent undisturbed area. If necessary, contaminated ground shall be excavated, disposed off as directed by the Engineer and replaced with suitable fill material compacted and finished with topsoil all at the expense of the Contractor.

26.3.4 Fire Protection

The Contractor shall provide and maintain adequate fire protection in the form of barrels of water with buckets, fire bucket tanks, fire extinguisher, or other effective means ready for instant use, distributed around the project and in and about temporary inflammable structures during construction of the works.

Gasoline and other flammable liquids shall be stored in and dispensed from safety containers approved by the Engineer and storage shall not be within building.

Torch-cutting and welding operations performed by the Contractor shall have the approval of the Engineer before such work is started and a chemical extinguisher is to be available at the location where such work is in progress.

The Contractor shall follow the instructions and specifications of the Civil Defense Department or any other local department concerned with such activities.

27. CONSTRUCTION SCHEDULE

A Construction schedule shall be maintained in accordance with the provisions of the General Conditions of Contract.

The schedule shall be accompanied with sufficient data and information including all necessary particulars of constructional plant, equipment machinery, temporary Works, arrival of plant, equipment at site and their installation, method of operation, work forces employed, etc., for an activities of the Works.

Should the Engineer consider any alteration or addition in the programme and time schedule, the Contractor shall conform thereto without any cost to the Employer.

Whenever necessary and wherever the progress of the actual work shows departure, the programme and time schedule shall be undated and submitted to the Engineer for his approval.

28. SUBMISSION REQUIREMENTS

- 28.1 Schedule submission at least sixty days before the dates when reviewed submittals will be needed.
- 28.2 Submit Shop Drawings as per provision given in Sub-Clause 19.5 (a) and number of copies of Product Data which the Contractor requires for distribution plus four copies which will be retained by the Engineer.
- 28.3 Submit three samples unless otherwise specified.
- 28.4 Accompany submittals with transmittal letter, in duplicate, containing:
- Date
 - Project title and number
 - Contractor's name and address
 - The number of each Shop Drawing, Product Data and the Sample submitted.
 - Notification of deviations from Contract Documents.
 - Other pertinent data.

29. RESUBMISSION REQUIREMENTS

Shop Drawings:

- Revise initial drawings as required and resubmit as specified for initial submittal.
- Indicate on drawings any changes which have been made by the Engineer.
- Product Data and Samples: Submit new data and samples as required for initial submittal.

30. MONTHLY PROGRESS REPORT AND PHOTOGRAPHS

- 30.1 During the continuance of the Contract, the Contractor shall submit monthly progress on forms as approved by the Engineer.

Such monthly reports shall show the actual progress completed as of date of the report plotted against the schedule as given by the Contractor at the start of work and shall be broken down so as to indicate status of all activities associated with mobilization design, material procurement, manufacture, surveys works, tests with regard to the agreed contract programme.

- 30.2 The Employer and the Engineer reserve the right to coordinate the schedules of this Contractor and other Contractors working at the Site, and to adjust and/or change any and all such schedules as required during the course of construction in order to achieve a coordinated project in harmony with the Employer's completion date.
- 30.3 Commencing after the first month of construction, and continuing every month until completion, the Contractor shall take and submit photographs to the Engineer's Representative, to show progress of his work and completion of each structure or major feature.

31. CONTRACTOR TO NOTIFY DELAYS ETC.

Any delay which will affect the completion of Works shall be detailed by the Contractor who shall state the action he is taking for effective completion of the Contract programme.

The Contractor shall submit a report in respect of the various sections of the Works, the equipment in use or held in readiness, a return of labour and supervisory staff, and details of any matters arising which may generally affect the progress of the work.

The Contractor shall give a summary of the detailed progress report giving the position with regard to the agreed Contract programme.

The progress reports shall be set out in a format to the approval of the Engineer, and forwarded promptly so that on receipt the information contained therein is not more than 21 days out of date.

If during execution of the Contract, the Employer considers the progress position of any section of the work to be unsatisfactory, or for any other reason relating to the Contract, he will be at liberty to convene a meeting and the Contractor's Representatives are to attend such meeting.

The Contractor's Site Office shall prepare and submit 6 copies of a weekly progress report to the Employer and Engineer's Site Office. This report shall summarize site activities and record and details where difficulties in maintaining the agreed programme are being experienced or are likely to cause subsequent delay.

The Contractor's Site Office shall also prepare and submit to the Engineer's Site Office 2 copies of Daily Activity Report summarizing the main activities to be undertaken each day, noting special activities such as tests, alignment checks, etc. The Contractor shall be responsible for expediting the delivery of all material and equipment to be provided by him and his subcontractors.

32. PHOTOGRAPHS

As soon as work commences on Site, the Contractor shall provide at least 10 to 12 photographs (along with soft copy) of the works from positions to be selected by the Engineer. Each photographic print shall not be less than 10x8 inch and shall bear a printed description, a serial number and the date when taken.

The soft copy of all photographs shall be held at the Contractor's Site Office, numbered and handed over to the Employer at the completion of the Contract.

33. SIGN BOARD

The Contractor shall erect and maintain at the Site in a location to be approved by the Engineer two (2) Sign Boards of dimensions approved by the Employer. The Sign Boards shall be made of metal. It shall be mounted on steel posts securely anchored and braced. The Contractor shall paint on the Sign Boards, the name of the Works, and the names of the Employer, Engineer and the Contractor both in English and Urdu Language.

34. SITE OFFICE FOR ENGINEER'S STAFF & EMPLOYER STAFF

The Contractor shall provide below mentioned minimum facilities for Engineer's Staff & Employer's Staff within 28 days from the Commencement date till Completion of Works, subject to the approval of the Engineer & Employer.

(a) Furnished Site office for Engineer's Staff

The Contractor shall construct / provide, furnish and maintain for Engineer, a Site Office as per design provided in these documents along with adequate utilities and services including electricity, water supply, telephone landline and internet connection and stabilized access road / path.

Site office shall at least comprise of one room with attached toilet for Resident Engineer (R.E.), one room with attached toilet for Staff, one room large enough for site meetings. The Contractor shall be responsible for the daily cleaning, as well as the running and maintenance of the site office. Site Office shall be connected to the electrical power supply / system, potable water supply system and sewage disposal system. Contractor shall also be responsible for payment of utilities bills for the services provided.

The Contractor shall provide two (02) Office Tables with drawers, two (02) Revolving Chairs, one (01) Side Table for printers etc., four (04) Visitor's Chairs, Meeting Room Table with 08-10 Chairs, File Racks (02-Nos.), one (01) Electrical Kettle, and sufficient crockery for serving of tea and refreshments etc.

(b) Computer, Printer and Other Office Facilities for Engineer's Staff

The Contractor shall provide an exclusive internet connection through land line or Wireless Internet Device (up to an average billing of Rs. 3,000/- per month), One (01) laptop computer (minimum Core i7 10th Generation with 8 GB Ram and 512 GB SSD Hard disk, optical mouse with windows operating system, carrying bag etc.), one (01) USB flash drive / data traveler of at-least 32 GB capacity each, an A3 size inkjet colour printer, an A3 size Photocopier (or arrangement of photocopy of documents as and when required), an A4 size laser printer, stationery, UPS, stabilizers, air conditioner, refrigerator etc.

(c) Furnished Site office for Employer's Staff

Site office shall comprise of one room with attached toilet for Employer's Staff. The Contractor shall be responsible for the daily cleaning, as well as the running and maintenance of the site office. Site Office shall be connected to the electrical power supply / system, potable water supply system and sewage disposal system. Contractor shall also be responsible for payment of utilities bills for the services provided.

The Contractor shall provide one (01) Office Table with drawers, one (01) Revolving Chair, two (02) Visitor's Chairs, File Racks File Racks (02-Nos.), one (01) Electrical Kettle, and sufficient crockery for serving of tea and refreshments etc.

The Contractor shall maintain a pantry along with staff at the Site Office for the Employer and the Engineer during the entire construction period.

The Contractor shall provide replacement of the equipment(s) and furniture, if any of the above-mentioned equipment(s) and furniture is temporarily or permanently rendered unserviceable for any reason(s) or declared to be beyond repair by the Engineer/Engineer's staff at no additional cost to the Employer.

The said offices shall be provided by the Contractor within fourteen (14) days of the signing of the Contract Agreement or seven (07) days of the payment of the first half of the Mobilization Advance, whichever earlier.

The Contractor shall also be responsible for the complete security of the Site Offices and their contents at all times.

The site office shall be maintained by the Contractor up to a period of three hundred sixty-four (364) days after the Issuance of Taking Over Certificate by the Engineer.

The Site Office along with furniture and furnishing shall become the property of the Contractor after the completion of the project and shall be removed from the Site. The area shall be developed in accordance with the drawings as per direction of the Engineer.

No payment shall be made to the Contractor for the works involved under this Sub-Clause. The cost therefore shall be deemed to have been included in the Bid Price quoted by the Contractor.

All the above-mentioned facilities mentioned under Clause 34 shall be made available by the Contractor twenty-eight (28) days of the receipt by the Contractor of Engineer's Notice to Commence or twenty-one (21) days of the payment of the first half of the Mobilization Advance, whichever earlier.

In case of failure of the Contractor to provide any of facilities stipulated under Clause 34, the same will be arranged by the Engineer / Employer from the open market at the Contractor's risk and cost and the actual charges so incurred Plus 10% shall be payable by the Contractor and shall be recovered from the Contractor through Interim Payment Certificates. The Engineer's certificate about the charges so incurred and recoverable from the Contractor shall be conclusive and binding.

35. TRANSPORT FOR THE EMPLOYER / ENGINEER

The Contractor shall provide, operate and maintain a vehicle having 1000 CC engine capacity (Suzuki Cultus or approved equivalent), Air-Conditioned, for the exclusive use of the Engineer's Staff & Employer's Engineer to meet the transportation needs in connection with the project. The vehicle model shall not be older than five (05) years as on the commencement date and registered in Peshawar / any settled district.

The Contractor shall furnish supply and provide, as many be necessary without specific direction of the Engineer's Staff & Employer's Engineer, all fuels, lubricants, tyres and other supplies, all maintenance, repairs, comprehensive insurance cover and running costs and suitably qualified drivers at all times for running of vehicles not exceeding 3,000 km per month and will provide a substitute vehicle in case of break down exceeding two days.

The Contractor shall provide replacement vehicle if the vehicle is temporarily or permanently rendered unserviceable for any reason(s) or declared to be beyond repair by the Engineer's staff at no additional cost to the Employer.

The said vehicles shall be provided by the Contractor within fourteen (14) days of the signing of the Contract Agreement or seven (07) days of the payment of the first half of the Mobilization Advance, whichever earlier.

The Contractor shall maintain the vehicles till the issuance of Defects Liability Certificate. The vehicles shall become the property of the Contractor after the issuance of Defects Liability Certificate.

No separate payment shall be made to the Contractor for the facilities involved under this sub-clause. The cost thereof shall be deemed to have been included in the total price quoted by the Contractor for the works.

In case of failure of the Contractor to provide any of facilities stipulated under Clause 35, the same will be arranged by the Engineer / Employer from the open market at the Contractor's risk and cost and the actual charges so incurred Plus 10% shall be payable by the Contractor and shall be recovered from the Contractor through Interim Payment Certificates. The Engineer's certificate about the charges so incurred and recoverable from the Contractor shall be conclusive and binding.

36. COORDINATION OF WORK AT SITE

The Contractor shall take cognizance that during the execution of the project, other Contractor will be working concurrently on this site.

All works of his responsibility shall be coordinated by the Contractor so as to give the necessary facilities to other Contractor or their workman or any other employ, who execute or supervise any work on the site.

The Contractor shall ensure that the necessary safety precaution will be observed and interferences shall be avoided specially for the works executed side by side by different Contractors.

Due consideration must be given to permit access to sections of the work as required by other Contractors for the extension of their works. With a view to coordinate the works, the Engineer may from time to time direct the order of the works to be carried out.

No payment shall be made to the Contractor for the works involved under this sub clause.

37. SITE FACILITIES TO BE PROVIDED BY THE CONTRACTOR

37.1 General

Without prejudice to the generality of the various clauses of the Contract, particular attention is drawn to the obligation of the Contractor to make his own arrangement at his own expense for the following.

37.2 Labour Camps and Staff Residences

The Contractor shall provide, operate and maintain labour camps and staff residences and are required for the proper and efficient progress of the work to house his own employees. For the purposes of operation and maintenance of the Camps and

Residences, the Contractor shall comply with the rules of Pakistan Labour Camp Rules 1960 and all other applicable provisions of the Pakistan Labour Laws.

37.3 Administrative and Field Office

The Contractor shall provide, operate and maintain administrative and field offices required for his staff and would be responsible for Operation and Maintenance, furniture, equipment, appliances, janitor services and security of the same.

37.4 Work yards and Storage Areas

The Contractor shall provide, operate and maintain all sheds, fencing, foundations and all above ground structures required to store material or equipment brought on to the site by him. The Contractor shall be responsible for the security of his entire camps, residence, site and field offices work yard and storage area.

37.5 Water Supply, Sewerage System and Electricity

The Contractor shall make his own arrangement, at his own expense for provision, operation and maintenance of electric supply, reasonable supplies of raw and potable water and sewerage system at the site of works and his labour camps, staff residences and offices. The Contractor shall pay all fees, and charges (including bills) of whatsoever nature to the concerned departments (if any) in order to procure connections of the above facilities and thereafter using these facilities.

37.6 Medical Care

The Contractor shall arrange provision of adequate medical facilities for his employees.

Adequately equipped and properly staffed first aid stations or dispensaries shall be provided by the Contractor at camps and other strategic locations, to administer first aid treatment at all times free of charge to all persons on the Site, including personnel of the Engineer and the Employer. The nature, number and location of facilities furnished and the Contractor's staff for administering first-aid treatment shall meet the requirements of the Health Services of the Government of Pakistan and of Section III of the Manual "Safety Requirements for Construction by Contract", published by the Employer, and shall be subject to approval by the Engineer.

37.7 Other Facilities

The Contractor shall also be responsible for providing at his own cost other facilities for his own staff and labour such as educational, recreational, transport, telephone and catering if required.

38. CONSTRUCTION PROCEDURES

The Contractor shall advise the Engineer of proposed construction procedures in accordance with the General Conditions of Contract.

If the Engineer shall see that the work progress is slow in such a way that the work will not be completed in the time specified, then he shall order the Contractor to work overtime or in more

shifts and the Contractor shall obey these orders without any additional payments and without any objections or request for compensation.

39. NOTIFICATION TO ENGINEER

The Engineer shall be notified daily in writing of the nature and location of the Works the Contractor intends to perform the next day so as to enable necessary inspection and measurement to be carried out. The Engineer may, if necessary, direct that longer notice be given of certain operations.

40. NIGHT WORK

When work is done at night the Contractor shall maintain from sunset to sunrise such lights on or about his work and plant as the Engineer may deem necessary for the proper observations of the work and the efficient execution thereof.

41. WEATHER

No work is to be undertaken when, in the opinion of the Engineer, the weather is so unsuitable that proper protection of the work cannot be ensured.

42. CO-ORDINATION WITH OTHER CONTRACTORS

It shall be the responsibility of the Contractor to keep-up good relations with other Contractors employed on site by the Employer. The Contractor shall cooperate and coordinate his work with that of the other Contractors working at the Site, to whatever extent may be necessary to complete the Project in accordance with the approved programme of the Works and in accordance with the Engineer's instructions. Should a disagreement or dispute arise between the Contractor and other contractors, the same shall be referred without delay to the Engineer for his decision. Upon such decision, the Contractor shall proceed with the work in accordance therewith. In case the access to the works of other contractors is through the Site area of the Contractor, the Contractor shall coordinate with and permit all reasonable access to other Contractors.

43. ACCIDENT PREVENTION, SAFETY MEASURES AND PROTECTIVE EQUIPMENT

The Contractor shall comply and enforce compliance by all his sub- contractors with the highest standards of safety and accident prevention in accordance with international standards and in compliance with all applicable laws, ordinances and statutory provisions.

All requisite barriers, fences, warning signs, lights and other safety precautions as required for the protection of persons and property on or adjacent to the site shall be provided at the Contractor's cost.

All false work, scaffolding and handrails shall be well constructed and secured at all times. Where overhead work is being carried out, warning signs shall be installed at ground level clearly warning of the overhead work.

All warning signs shall be in two languages, English and Urdu, and shall at all times be maintained in a clean and legible condition, to the satisfaction of the Engineer.

Trash shall be removed at frequent intervals to the satisfaction of the Engineer. Netting shall be provided at all levels where work is in progress, all around the building.

44. SETTING OUT OF WORK AND SURVEY

44.1 Reference Points, Lines

The Contractor shall establish benchmarks and / or reference line at the Site in accordance with the instructions of the Engineer. The Contractor shall set out its work from these benchmarks and lines. The Contractor shall supply plant, equipment, materials and labour for checking if required of the survey control by the Engineer. Slope stakes will be set by the Contractor before commencement of excavation and will be re-established as required during progress of work using established benchmarks and reference points.

44.2 Verification

The Engineer may make checks as the work progress to verify lines and grades established by the Contractor and to determine the conformance of the work as it progresses with the requirements of the Drawings and Specifications. Such checking by the Engineer shall not relieve the Contractor of his responsibility to perform all work in accordance with the Drawings and Specifications and the lines and grades given therein.

Based upon the basic control, the Contractor shall provide his own primary control points, as needed for the Works, and shall preserve and maintain them until otherwise authorized.

The Contractor shall be responsible for maintaining all survey markers/monuments, and property corners. If any markers/monuments are destroyed by the Contractor, the Contractor shall arrange, at his own cost, to retrace and replace them to the entire satisfaction of the Engineer. If a monument cannot be replaced in its original position, the Contractor shall install a witness corner. The Contractor shall complete and file monument reference cards on all monuments as per instructions of the Engineer.

The Contractor shall provide experienced construction surveyors with adequate experience in the construction surveys similar in nature as required by this Contract.

Based upon established basic control monuments the Contractor shall establish all lines and grades necessary to control the Works, and shall be responsible for all measurements that may be required for execution of the Works to the tolerance prescribed below.

The Contractor shall perform such surveys and computations as are necessary to determine quantities of work performed or placed during each progress payment period, and shall also perform all surveys necessary for the Engineer to determine final quantities of work in place. The Engineer will determine final quantities based on original ground levels determined by the Contractor and agreed by the Engineer.

The Contractor shall notify the Engineer at least 24 hours before performing a quantity survey and, unless specifically waived, quantity surveys shall be performed in the presence of an authorized representative of the Engineer.

Degree of accuracy for the survey works shall satisfy the following specified tolerances:

- (a) Structure points shall be set within 0.01 foot accuracy from point to point, except where tighter tolerances are required.
- (b) Cross-section points shall be located within 0.10 foot, horizontally and 0.01 foot vertically.
- (c) Permissible closing error for a levelling line meant for establishing Temporary Bench Mark (TBMs) shall not exceed $0.045 \times \sqrt{M}$ foot, where M is in miles. The permissible closing error shall be duly adjusted.

The Contractor shall provide all materials, equipment and labour required for surveying work, including, but not limited to, instruments, stakes, spikes, steel pins, templates, platforms, and tools, and except as required to be incorporated in the work or left in place, all such materials and equipment, shall remain the property of the Contractor. Surveying instruments shall be in perfect working condition and shall be subject to rigid inspection for proper operation at least after every two weeks of use. Defective instruments shall be promptly replaced or repaired and adjusted to the satisfaction of the Engineer.

Survey data shall be recorded in accordance with recognized professional surveying standards. Original field notes, computations, and other surveying data shall be recorded in the Contractor furnished field books. Notes or data not in accordance with standard formats will be rejected. Illegible notes or data, or use of erasures on any page of a field book will be considered sufficient cause for rejection of part or the entire field book. Copied notes or data will not be permitted; therefore, rejection of part or all of a field book may necessitate re-surveying. Corrections by ruling or lining out errors will be satisfactory.

45. NON-COMPLIANCE TO THE SPECIFIC PROVISIONS AND PENALTIES

If the Contractor fails to provide any facilities, services, or tests required for quality control, supervision, or contract administration as specified in the relevant Clauses of the Specific Provisions, within the period notified by the Employer or the Engineer, the Employer may arrange for such facilities, services, or tests at the Contractor's risk and expense. The costs incurred by the Employer shall be deducted from the Contractor's payments, along with 10% handling and overhead charges, without the Contractor having any claim in this regard. Such arrangements shall not absolve the Contractor of their obligations under the Contract.

In addition, failure to comply with safety and site protection requirements, including proper cordoning off of the worksite, provision of safety equipment, or implementation of protective measures, may result in penalties, suspension of work, or other remedial actions as deemed necessary by the Employer. The Employer reserves the right to conduct inspections at any stage of the project to verify compliance to Health, Safety and Environmental Standards.

This Clause shall be binding on the Contractor and all subcontractors engaged in the execution of the Works, without prejudice to any other rights or remedies available to the Employer under the Contract.

46. PAYMENT OF WORK

No payment shall be made for the works involved within the scope of this section of specification unless otherwise specifically stated in the Bills of Quantities or herein. The cost thereof shall be deemed to have been included in the total price quoted by the Contractor.

47. ENVIRONMENTAL PROTECTION

The Contractor shall exercise care to protect the natural landscape and shall conduct his construction operations so as to prevent any unnecessary destruction, scarring or defacing of the natural surroundings in the vicinity of works. Except where clearing is required for the Permanent works, approved construction roads and the Temporary Works, and for excavation operations, all trees and native vegetation shall be preserved and shall be protected from damage which may be caused by the Contractor's construction operations and equipment. On completion of the works, all work areas shall be smoothed and graded in a manner to conform to the natural appearance of the landscape. Where unnecessary destruction, scarring, damage or defacing may occur as a result of the Contractor's operations, it shall be repaired, replanted, or otherwise corrected as directed by the Engineer at no additional cost to the Employer.



UNIVERSITY OF BUNER SWARI, DISTRICT BUNER

DEVELOPMENT OF UNIVERSITY OF BUNER AT SWARI (PHASE-I)

CONSTRUCTION OF BUILDINGS AND INFRASTRUCTURE WORKS AT SWARI CAMPUS OF UNIVERSITY OF BUNER (PACKAGE-5)

CONSTRUCTION OF ANCILLARY WORKS

TECHNICAL BID

BIDDING DOCUMENTS (VOLUME – II)

TECHNICAL SPECIFICATIONS (NON-SCHEDULED ITEMS)

SEPTEMBER 2026



**NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
NESPAK HOUSE, SECTOR G-5/2, ISLAMABAD**

Clearance Code 4010/321/BD/57(26)	Doc No. 4010-26-03	Revision No. 0
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PLUMBING WORKS

SECTION - 5100

PLUMBING

- 1.0 SCOPE**
- 2.0 APPLICABLE STANDARDS**
- 3.0 SUBMITTALS AND SHOP DRAWINGS**
- 4.0 MATERIAL AND EQUIPMENT**
- 5.0 EXECUTION**
- 6.0 TESTING AND COMMISSIONING**
- 7.0 MEASUREMENT AND PAYMENT**

1.0 SCOPE

The work under this section consists of providing all material and equipment and performing all the work necessary for the complete execution (jointing, clamping, cleaning, painting etc. both above and underground and embedded in walls) and completion, including testing and commissioning of all systems of plumbing works as shown on the Drawings and/or as specified herein and/or as directed by the Engineer. The system includes plumbing works as follows:

- i) Cold and Hot Water Supply
- ii) Building Drainage
- ii) Rain Water Drainage

All the above named systems shall be completed in all respects including extension of these internal systems upto the specified limits outside the building as indicated on the drawings.

2.0 APPLICABLE STANDARDS

G. I. Pipes	BS- 1387 (1985) Medium duty
Polypropylene Random (PPR) pipes	DIN 8077-78
C. I. Pipes	BS- 416 & 2494
uPVC Pipes (Building)	ISO- 3633 & BS- 4514/ 5255.
uPVC Pipes (External)	BS-5481/ BS-4660 (EN-1401)

3.0 SUBMITTALS & SHOP DRAWINGS

All the materials and equipment shall be of the specifications mentioned herein and the Contractor shall submit the sample, necessary catalogues, sketches, the name of manufacturer and guarantee if necessary, before installation. The system shall be installed after the Engineer approves it. All material and equipment shall be new and unused.

It is specifically intended and must be agreed to by each Contractor submitting a bid, that any material or labor which is usually furnished as a part of such equipment and which is necessary for its proper completion and best operation shall be furnished as a part of this Contract without any additional cost whether or not shown in detail on the drawings or described in detail, in the specifications.

Approval of material and equipment by the Engineer shall not absolve the Contractor of the responsibility of furnishing the same of proper size, quantity, quality and all performance characteristics to efficiently fulfill the requirements and intent of the Contract Documents.

Prior to commencement of works on site and at least 3 weeks in advance of all the drawing being required for actual execution the Contractor shall submit on larger scale as approved by Engineer, shop drawings in triplicate for approval to the Engineer. The Engineer shall review the drawing and (i) approve the drawing or, (ii) approve the drawing with comments or, (iii) disapproved the drawings with comments for rectification/revision of the drawing and resubmit 3 copies to the Consultant for approval. On a drawing being approved, the Contractor shall submit 6 copies for formal approval and distribution to relevant offices.

All drawings shall have plan and section and with sufficient details to clearly reflect the installation of the system. All material specifications shall be provided on the drawings. All information required for preparing suitable foundation, for providing suitable access to the system, for making openings in building structure, for coordination with electrical, air-conditioning and other designs etc., shall be clearly provided.

Installation shall not be allowed to commence unless approved shop drawings are in possession of the Contractor, for which purpose shop drawings shall be submitted by the Contractor to the Engineer sufficiently in advance of actual requirements to allow for ample time in checking and approval and no claim for extension of the contract time will be considered by reason of the Contractor's failure to submit the drawings on time.

Each shop drawing submitted by the Contractor shall include a certificate by the Contractor that all related conditions on site relevant to that particular installation have been checked and that no conflict exists.

Any expenses resulting from an error mistake or omission in or delay in delivery of the drawings and information mentioned above shall be borne by the Contractor.

Drawings approved shall not be departed from except on the instructions of the Engineer.

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

Relevant specified imported item, model cuts will be available with the authority concern for execution of work for contractor to check the models for fabrication or import.

4.0 MATERIAL & EQUIPMENT

4.1 G.I. COLD, HOT WATER PIPES AND FITTINGS

The galvanized pipes shall be of medium grade and conform to British Standard Specifications 1387 for "Steel Tubes and Tubular suitable for screwing to BS 21 pipe threads".

All screwed tubes and sockets shall have BS pipes thread in accordance with BS 21. In order to prevent damage to the leading thread, the ends of the sockets shall be chamfered internally.

A complete and uniform adherent coating of zinc will be provided for galvanized pipes.

Every tube shall be tested at the manufacturer's works to a hydraulic test pressure of 4.90 MPa (710psi) and shall be maintained at the test pressure sufficiently long for proof and inspection.

Tubes which are bundled shall be secured together by rope or soft iron or other suitable material.

The threads of all tubes shall be effectively covered with a good quality grease or other suitable compound, and each tube above 50 mm nominal bore shall have a protecting ring affixed to the unsocketed screwed end.

All pipe fittings upto 75 mm dia. shall conform to BS 21 and shall be of malleable cast iron. Pipe fittings above 75 mm dia. shall be of approved material and specifications as decided by the Engineer.

4.2 POLYPROPYLENE RANDOM (PPR) PIPES AND FITTINGS

Polypropylene Random Pipes and fittings shall conform to the following standard

DIN	8077-8078	Resistible to all chemical elements
DIN	16961	Smooth inner surface
DIN	19560	Usability for hot water all levels
DIN	4279	Durable to inner pressure
DIN	16962	Conforms to connections by welding process

4.3 SOIL, WASTE, VENT & RAIN WATER DRAINAGE PIPES & PIPE FITTINGS (C.I. & uPVC)

a. Cast Iron (CI) PIPES & FITTINGS

The cast iron pipe shall conform to British Standard Specifications No.416 for "Cast Iron spigot and socket soil, waste and vent pipes and fittings with spigot and socket or hubless ends. The joint shall be lead caulked or elastomeric (Rubber rings) to BS- 2494.

Cast iron pipes shall be centrifugally (SPUN) cast.

The quality of material shall be according to B.S.S. No.1452 for Grade 10.

The contractor shall supply coated pipes and fittings. The coating composition shall be of tar basis or a mixture of natural bitumen with a suitable hardener and natural asphalt. The coatings shall be smooth, tenacious, sufficiently hard, not to flow when exposed to a temperature of 63 Degrees Celsius and not so brittle at zero degrees Celsius that it chips soft when scribed lightly with the point of a pen knife.

Every pipe shall be tested at the manufacturer's work to a hydraulic test pressure of 0.07 MPa (10psi). Every pipe and fitting shall ring clearly when tested for soundness by being struck all over with a light hammer.

b. uPVC PIPES & FITTINGS

The material shall substantially consist of un-plasticized poly vinyl chloride (PVC) as per the requirements of aforesaid standard. Pipes

and fittings shall be sufficiently stabilized against thermal ageing and ultraviolet (UV) light.

uPVC Pipes

- There are two types of pipes and fittings, type A and type B, as per ISO 3633 for drainage systems. Only type B shall be used for soil, waste and venting systems.
- As per BS4514/5255, sanitary pipes and fittings shall be class "A" wall thickness 3.2mm.

uPVC Fittings

All fittings shall be compatible with the pipe material as recommended by the pipe manufacturer. However, there are two types of fittings available as per ISO 3633:

- uPVC fittings with Solvent Cement (SC) socket joint conforming to ISO 3633:1991.
- uPVC fittings with rubber ring socket joint conforming to DIN 19560, which is compatible with ISO 3633/PS 3214.

Rubber Rings

The rubber rings may either be Synthetic or natural conforming to PS 1915:1987 & ISO 4633/1983 (E).

The material shall consist substantially of poly vinyl chloride (PVC) to which may be added only those additives that are needed to facilitate the manufacture of pipes and fittings having good mechanical strength and opacity.

The pipes and fittings shall be tested mechanically and physically in accordance with the relevant Standards as and when directed by the Engineer, before and during installation.

4.4 PLUMBING FIXTURES

4.4.1 General Requirements

Materials shall conform to the latest referenced standard specifications and other provisions stipulated herein and shall be new and unused.

All fixtures shall be of the best quality and finish.

Prior to procurement of the materials, the Contractor shall be required to prepare and submit to the Engineer for his approval, a complete schedule of materials to be used in the works together with a list of the names and addresses of the manufacturers and the trade names of the materials. The schedule shall include diagrams, drawings and such other technical data as may be required by the Engineer to satisfy himself as to the suitability, durability, quality and usefulness of the material to be purchased.

Approval of the schedule shall not be construed as authorizing any deviations from the specifications unless the attention of the Engineer has been invited to the specific changes. If the material or equipment offered under this provision is, in the opinion of the Engineer, equal to or better than specified, it will be given consideration.

Plumbing fixtures shall have smooth impervious surfaces, be free from defects and concealed fouling surface. They shall be true to line, angles, curves and colour etc. Normally they shall be of local make and of the best quality available, provided.

All taps and cocks to be installed with plumbing fixtures shall be chrome plated (CP) and shall be of appropriate class to work without damage or leakage on the specified pressure of potable water system, which is 0.88 MPa (128 psi). The taps and cocks shall be of the best quality locally manufactured.

When any fixture is provided with an overflow, the waste shall be so arranged that the standing water in the fixture cannot rise in the over flow when the stopper is closed or remain in the overflow when the fixture is empty.

Plumbing fixtures shall be installed in a manner to afford easy access for cleaning. The space between the fixture and the wall shall be closely fitted and pointed so that there is no chance for dirt or vermin to collect.

When practical, all pipes from fixtures shall be run to the nearest wall. Where fixture comes in contact with wall and floors, the joint shall be watertight.

Wall hung fixtures shall be rigidly supported by metal supporting members so that no strain is transmitted to the connections. Flush tanks and similar appurtenances shall be secured by approved non-corrosive screws or bolts.

Fixtures shall be set level and in proper alignment with reference to adjacent walls. No water closet shall be set closer than 400 mm from its centre to any side wall. No urinal shall be set neither closer than 300 mm from its centre to any side wall or partition nor closer than 600 mm centre to centre. The supply lines or fittings for every plumbing fixture shall be so installed as to prevent backflow. All cuttings, making holes etc. and making it good shall be included in the work.

Other physical/chemical properties of the fixtures are as below:

S. No.	Physical/Chemical Properties	Pakistan Standards	European Standards
1	Water absorption	Less than 0.50%	Maximum 0.50%
2	Scratch Resistance	Maximum 5.5 MOH's scale	Maximum 5 MOH's scale
3	Resistance to Chemicals	Resistant to acids, alkalies, bases & other household cleaning chemicals	Resistant to chemicals.
4	Crazing Resistance	Crazing "NIL"	Crazing "NIL"
5	Warpage	Maximum 5.5-6mm	Maximum 6mm
6	Strength against bending	More than 700 kg/cm	450kg/cm - 700 kg/cm
7	Thermal shock	More than 10 cycles of thermal shock from hot to cold water 15°C-200°C	More than 2 cycles of thermal shock from hot to cold water 20°C-110°C
8	Durability	Permanently durable	Durable for ever

4.4.2 Wash Basins

Wash basin shall be vitreous China, best quality, local make of colour, size and type as approved by the Engineer. It shall be installed as a complete unit including 15 mm mixer for hot and cold water supply or CP brass faucet for cold water only, 15 mm stop-cocks, C.P brass chain with 32 mm rubber plug, C.P brass bottle trap for individual wash basin and C.P brass P trap for battery of wash basins as applicable, C.P brass strainer, heavy duty cast iron brackets with bolts, screws etc. approved water inlet connection pipe, waste pipe, jointing and sealing material, etc., with all other minor accessories required to complete the job in all respect.

4.4.3 Vanity Wash Basins & laboratory sink

Wash basin Vanity type & Laboratory Sink shall be vitreous China, best quality, local make of colour, size and type as approved by the Engineer. Other necessary fittings shall be same as described for above Wash basin.

4.4.4 Water Closets (European type)

European type water closet shall be best quality local make of colour, size and type as approved by the Engineer. It shall be installed as a complete unit including all accessories. Flush tank (13.5 liters) shall be of low level type - it shall be fitted with either

single push button or double push button type. Trap shall be cast integral with pan. The seat shall be of smooth non-combustible non-absorbent materials like Bakulite and of the open front type fixed to the pan with hinges. The fittings shall also include approved water inlet connection pipe, nuts bolts, 15mm dia stop cock etc. required for complete installation.

4.4.5 Water Closets (Orissa)

Squatting (Asian/Orissa) type water closet shall be vitreous China, best quality local make of colour, size and type approved by the Engineer. It shall be installed as a complete unit including, 15 mm stop cock, approved water inlet connection pipe, low level or high level Flush tank (13.5 liters), as required. All fittings shall be installed at low level, or high level as required including interconnecting flush piping. Foot rests, cast iron P trap, making joints, jointing and sealing materials, 15mm dia stop cock etc. with all other minor accessories for complete installation.

4.4.6 Kitchen Sinks

Kitchen sink shall be stainless steel of best quality local make of colour, and type as approved by the Engineer, single bowl or double bowl with integral drain board of at least 1000 x 500 mm size. It shall be installed as a complete unit with arrangement for both cold and hot water supply, 15 mm C.P. mixer for cold and hot water, approved water inlet connection C.P. brass strainer, waste outlet pipe, heavy duty cast iron brackets with bolts screws etc., jointing & sealing material, etc., with all other minor accessories required for complete installation.

4.4.7 Shower Tray

Shower trays shall be of glass reinforced polyester with hard glass finish best quality local make of colour and type as approved by the Engineer. It shall be installed as a complete unit including C.P. brass strainer, waste outlet pipe, bolts screws, jointing & sealing material, etc.

4.4.8 Shower Head

Shower head shall be installed on the wall at a suitable height including installation of chromium plated extension pipe, C.P. brass Mixer for cold & hot water etc. with all other minor accessories required for complete installation.

4.4.9 Bath Tub

Bath Tub shall be of the approved material such as Fiberglass, cast iron or acrylic. It shall be installed as a complete unit including chromium plated brass overflow sluice 1-1/4" in dia., chromium plated waste 1-1/2" dia. with chromium plated chain & rubber stopper (Plug), etc. complete in all respects for complete installation. Its colour shall match with that of other fixtures in the toilet.

4.4.10 Urinals

Urinals shall be vitreous China of approved make and size and of wall hung type either with integral water seal trap or with separate brass P-Trap. The complete unit shall be installed including 15mm Tee-stop cock, plastic water inlet/outlet connections, CP Flush Valve or 13.5 liters flushing cistern, heavy duty CI brackets, bolts, screws, and all internal accessories or; CP steel flush pipe. CP steel waste pipe, joints, jointing and sealing materials etc. with all other minor accessories.

4.5 MISCELLANEOUS ITEMS

4.5.1 Taps and Cocks

All taps and cocks shall be of brass, gun metal or other equally suitable corrosion resisting alloy conforming to BS 1010 and shall be best quality local make. The nominal size specified shall be the nominal bore of the seating. Washers for cold water cocks shall be of specially selected leather, rubber asbestos composition or other equally suitable material. Washers for hot water cocks shall be of good quality fiber, rubber - asbestos composition or other equally suitable material. Every tap/cock shall be tested, complete with its component parts, to a hydraulic pressure of at least 1.96 MPa (284.4 psi) During test it shall neither leak nor sweat.

4.5.2 Floor traps/drains

Floor traps/drains shall be of cast iron or uPVC or of other anti-corrosive material, compatible with the material of pipe. They shall have minimum water seal of 40 mm and shall be provided with removable metal/uPVC strainers. The traps shall be of self-clearing type. The open area of the strainer shall be greater than the cross section area of the drain line to which it connects. Floor traps shall be well set in position so that there is no leakage at the joint between trap and the floor.

4.5.3 Roof Drains

Roof drains shall be of bitumen coated cast iron, compatible with the material of pipe. They shall have strainers extending at least 15 mm above the roof surface immediately adjacent to them, when installed on flat part. Bottom of strainer shall be flush with the roof surface, when installed on vertical part. Strainer shall have an available inlet area, above roof level, of not less than 1-1/2 times the area of the down-pipe to which the drain is connected.

The connection between roof and roof drain shall be made watertight by the use of proper flashing material.

4.5.4 Cleanouts

Cleanout shall be of the same nominal size as that of the pipe on which it is installed. Cast Iron Cleanout shall consist of tapped

heavy duty cast iron ferrule caulked into cast iron fitting and heavy duty brass tapered even plug. uPVC cleanout shall consist of either two 45° bends or one long radius bend both with a removable end cap and other necessary fittings/material for complete installation in floor. Cleanouts shall be turned up through floors by long sweep fittings, wherever the space so permits. Top finish of cleanout shall be flush with the floor by means of finished metal plate secured in position and screwed firmly to the plug. Cleanout shall be so installed that there is a clearance of at least 300 mm for pipes less than 75 mm diameter and at least 457 mm for pipes of 75 mm and larger diameter, for the purpose of Roding.

Pipe used with cleanout shall be measured and paid under pipe item. All other work of ferrule, plug, concrete work, frame and cover etc. shall be measured and paid under cleanout item.

4.5.5 Grease Trap/Interceptor

- a. The grease trap shall be of stainless steel of specified capacity with cover, baffles and strainers to separate grease from water effectively. The grease trap shall be of approved make or equivalent and installed in the position as shown on drawings or as specified by the Engineer.

or

- b. The grease interceptor shall be built in masonry or reinforced cement concrete as per relevant drawings including excavation, RCC class "C", steel reinforcement, PCC class "E", 15mm thick cement sand plaster in 1:3 c/s, 15mm thick C.I. trap & plate having holes (screen) 25mm c/c of standard diameter, 20mm G.I. pipe for lifting trap, inlet & outlet connections, 600x600 mm C.I. cover with frame, 25mm legs for supporting screen system, painting three coats to steel works with synthetic enamel paint, nuts, bolts etc. complete in all respects as desired by the engineer.

4.5.6 Glass Mirror

The glass mirror shall be of specified size, 5 mm thick, securely fixed on hard board packing and of best quality Belgium make. The mirror shall be fixed on wall as shown on the drawing or as directed by the Engineer. All accessories required for complete fixing of mirror on wall shall be included in Contractor's scope of work.

4.5.7 Towel Rail, Toilet Paper Holder, Soap Trays, Mirror Trays

The towel rail, toilet paper holder, soap trays & mirror trays shall be of best quality. All accessories for complete installation of towel rail, toilet paper holder, soap tray and mirror tray shall be included in the Contractor's scope of work.

4.5.8 Gully Trap

Gully trap shall be of cast iron with specified size outlet. The inlet shall be provided with cast iron, medium duty grating. The open area of the grating shall be at least 1-1/2 times the area of the outlet. The trap shall be of P-Type with a minimum water seal of 50 mm. It shall be installed as a complete unit including all civil works as shown on relevant details and drawings.

4.5.9 Cast Iron Grating

Cast iron grating shall be of the specified size. The specified size shall mean the clear span. Cast iron grating shall be complete with frame. They shall be of Light/medium duty type to resist normal traffic loads, the casting shall be sound and free from all defects. The frame shall be set in place at the time of pouring of concrete. Openings in grating shall be in approved pattern.

4.5.10 Electric Water Cooler

Cabinet shall be of heavy gauge mild steel construction painted with non-corrosive paint from inside and with special hammer finish paint from outside.

Push button type water taps shall be chrome plated. Drain pot shall be made of hard plastic with stain-less steel tray. Back panel shall be easily remove-able for cleaning and servicing top cover shall be of scratch proof Formica.

Water storage tank shall be either of stainless steel or copper alloy, tinned inside and outside with present insulation to maintain water temperature, with special arrangement for cleaning the tank.

Condensing unit shall be heavy duty, hermetically sealed with thermal overload protection for refrigerant F-12 and capillary expansion with valves for easy gas charging. Thermostat and other control necessary for proper functioning of the unit shall be provided. The thermostat shall control the temperature of cooled water between + 11°C & + 20°C.

4.5.11 Water Filters

Water filters shall be installed on wall near the water coolers. Each filter shall have a crystal housing of a durable material. The flow rate shall be 2 to 6 gpm with a maximum pressure of 70psi and a temperature of 35°F to 100°F.

Stage 1:- Stage 1 shall use a "poly propylene Yarn Indepth Sediment filter cartridge", for removal of dust, rust, silt, scale and unseen suspended particles. It shall have a filtration rating of 5-micron.

Stage 2:- In this stage a "Granular Activated Carbon (GAC) cartridge" equipped with a post-filter of 1-micron is recommended, for removal of chemicals and unpleasant taste and odor.

Stage 3:- This stage must provide 30,000 MW.sec/sq.cm energy to guarantee 100% sterilization and ensure effective control of microbiological contamination.

4.5.12 Gas or Electric Water Heaters

Water heater shall be of automatic storage type Electric or Gas operated, including all necessary fittings for complete installation & operation. The heater shall be of best quality, local make as approved by the Engineer.

The working and test pressure of the heater to be of 6 bar and 10 bar respectively and shall deliver water at 150 °F. It shall be capable to reach the peak demand, storage capacity.

Heater shall be provided with following accessories.

- i) Thermostatic control
- ii) Temperature & pressure relief valve
High limit Control.

Other specifications of **Water Heater** are as given below:

Inner tank shall be extra heavy gauge anti-rust G.I. sheet metal to hold maximum inside water pressure. As an insulation, imported genuine glass wool shall be used to maintain the desired temperature that controls the lighting up of the burner. The outer body shall be made of requisite gauge M.S. sheet shaped into reinforced circumference. Flow and delivery pipes shall be of high quality G.I. pipes fabricated with heavy gauge anti-rust baffle plate. *The thermostat shall be of Robersshaw (U.S.A) make or approved equivalent.* The burner shall be made of cast iron with drilled ports. It shall be easy to be detached. Special anti-rust-baked primer-heavy coated stoved enamel paint with high gloss automotive shine shall be used on sheet metal.

Standard type gas water heaters shall have following specs:

Capacity	Inner Tank	Outer body
8-15 gallons	G.I. sheet 14-16 swg	M.S sheet painted 22 swg
30 gallons	G.I. sheet 14-16 swg	M.S sheet painted 22 swg
50 gallons	G.I. sheet 14 swg	M.S sheet painted 22 swg
100 gallons	G.I. sheet 8-10 swg	M.S sheet painted 22 swg

5.0 EXECUTION

5.1 GENERAL

The Contractor shall be responsible for his work until its completion and final acceptance, and shall replace any of those that may be damaged, lost or stolen without any additional cost.

All openings left in floor for passage of lines of water supply, soil, waste, vent, etc. shall be covered and protected.

All open ends of pipes shall be properly plugged to prevent any foreign material from entering the pipe. Misuse of plumbing fixtures to be

installed under this Contract is prohibited during the currency of the contract.

All metal fixture trimmings shall be thoroughly covered with non-corrosive grease which shall be maintained until all work is completed.

Upon the completion of work, all fixtures and trimmings shall be thoroughly cleaned, polished and left in first class condition.

Before erection, all pipes, valves, fittings, etc. shall be thoroughly cleaned of oil, grease or other material.

All special tools for proper operation and maintenance of the equipment provided under this Contract shall be delivered at no additional cost.

The Contractor shall allow in his bid for cost of all cutting, making holes and subsequent making it good to the desired finish as per approval of the Engineer. No separate payment shall be made for this item.

The Contractor shall allow in his bid for the cost of providing protective painting or coating as specified in the relevant sections and no claim shall be entertained for this item.

All pipes shall be properly installed as shown on the drawings and/or as directed by the Engineer, and shall be as straight as possible forming right angles and parallel lines with the walls and other pipelines. The position, gradients, alignment and inverts shall be as shown on the drawings and/or as directed in writing and set out by the Engineer.

The arrangement, positions and connections of pipe fittings and appurtenances shall be as shown on the drawings. The Engineer reserves the right to change the location etc. Special precautions shall be taken for the installation of concealed pipes as shown on the drawings and/or as required. Should it be necessary to correct piping so installed, the Contractor shall be held liable for any injury caused to other works in the correction of piping. The Contractor shall closely coordinate with other works during the entire stage of execution.

A minimum distance between different services shall be maintained as shown on the Drawings and/or as approved by the Engineer.

Pipes should be installed in such a manner that minimum distance should always be maintained between pipe and wall, beams, columns, etc. Pipes shall be supported on hangers and brackets as shown on the drawings or as directed by the Engineer.

Waste-water outlet from each fixture shall be individually trapped. Each vent terminal shall extend to the outer air and be so installed as to minimize the possibilities of clogging and the return of foul air to the building.

When the roughing-in is completed, the plumbing system shall be subjected to test prior to concealing the roughing-in, in order to ascertain that all threads and connections are watertight.

Cast iron soil and drainage fittings for change in direction shall be used as follows:-

*Vertical to horizontal: short sweep or long-turn for diameter 75 mm and larger; long sweep or extra-long-turn for less than 75 mm. dia.

*Horizontal to vertical: quarter bend or short turn.

All fittings with hubs shall be aligned so that the hub faces upstream. No drainage or vent piping shall be drilled.

All exterior openings provided for the passage of piping shall be properly sealed with snugly fitting collars of metal or other approved rodent-proof material securely fastened into place.

Joints at the roof, around vent pipes, shall be made water-tight by the use of lead, copper, galvanized iron, or other approved flashing or flashing material. Exterior wall openings shall be made watertight.

Each length of pipe & each pipe fitting, trap, fixture, & device used in a plumbing system shall have cast, stamped or indelibly marked on it the maker's mark or name, the weight, type & classes of the product, when such marking is required by the approved standard that applies.

Where different sizes of pipes, or pipes and fittings are to be connected, the proper size increasers or reducers or reduced fittings shall be used between the two sizes.

Any fitting or connection which has an enlargement, chamber, or recess with a ledge, shoulder, or reduction of pipe area that offers an obstruction to flow through the drain pipe is prohibited. The vertical distance from the fixture outlet to the trap weir shall not exceed 600 mm. Each fixture trap shall have a water seal of not less than 50 mm and not more than 100 mm.

Full S, bell, crown vented traps and traps/depending for their seal upon the action of movable parts are prohibited. No fixture shall be double trapped. Where fixture comes in contact with wall and floors, the joint shall be water-tight. Piping in ground shall be laid on a firm bed for its entire length.

Piping in the plumbing system shall be installed without undue strains and stresses. Vertical piping shall be securely held to keep the pipe in alignment and carry the weight of the pipe and contents. Horizontal piping shall be supported to keep it in alignment and prevent sagging. Hangers and anchors shall be of metal of sufficient strength to maintain their proportional share of pipe alignments and prevent rattling. Hangers and anchors shall be securely attached to the building under construction. It must be clearly understood that the Contractor shall be fully responsible for hangers and supports and shall obtain prior approval of design as to the shape, material, dimensions, spacing etc.

Piping in concrete or masonry walls or footings shall be placed or installed in sleeves which will permit access to the piping for repair or replacement.

5.2 G.I. COLD, HOT WATER PIPES AND FITTINGS

The run and arrangement of all pipes shall be as shown on the Drawings and as directed during installation. All vertical pipes shall be erected plumb and shall be parallel to wall and other pipes. All horizontal runs of piping shall be kept close to walls. If required to change the location etc. during the currency of the work, the Contractor will do so at no additional cost. Screwed joints in G.I. pipes shall be made perfectly tight, without the use of any filler except approved jointing compound or tape. Wherever required to make flanged joints, they shall conform to BS 10 Table D.

Furnish and install all pipe passing through floors and walls with sleeves of G.I. sheet, 18 gauge, the inside dia. of which shall be at least 1/2" greater than the outside dia of the pipe passing through it. Sleeves in exterior walls and pits shall have anchor flanges and space between pipe and sleeve shall be caulked and sealed watertight. At waterproof locations, an approved water-proof type pipe sleeve shall be provided.

All embedded water supply piping shall be wrapped with approved anti-corrosion polyethylene tape. All exposed piping shall be painted with two coats of enamel paint over a coat of red oxide.

Pipes laid in trenches (external) shall be protected by applying coating of primer grade 10/20 bitumin+hyacinth cloth mopped with bitumen (50% grade 80/100 & 50% grade 10/20).

Insulation

All hot water supply and return piping shall be insulated as specified herein. Prior to insulation the pipes shall be hydraulically tested and cleaned.

Nominal Pipe Dia. (mm)	Thickness of per-form Fiber glass pipe insulation. (mm)
15 (1/2")	25
20 (3/4")	25
25 (1")	25
32 (1-1/4")	25
40 (1-1/2")	25
50 (2")	25
65 (2-1/2")	25
75 (3")	25

Insulation shall consist of pre-formed fiberglass pipe insulation, with factory applied reinforced aluminum vapor barrier, single layer in semi-circular halves, consisting of long, fine glass fibers, bonded with a temperature resistant binder, free from shot or coarse fibers, damage resistant, light in weight, easy to handle, cut and fit. The product shall comply with the requirements of B.S. 3958: Part 4. The insulation shall be rotproof, odorless, non-hygroscopic, and shall not sustain vermin. The fiberglass insulation shall be covered with a layer of approved polyethylene tape in the field. Further reinforcement shall be provided by the use of 20 mm wide soft aluminum bands, generally spaced at 457

mm and on either side of elbows and tees. All butt joints shall be sealed with self-adhesive type of approved quality adhesive tape.

All trimmed sections shall be secured by wrapping of approved type of self adhesive tape to form a complete waterproof seal. All work shall be done in a neat and workmanlike manner, and should reflect recommended practice.

All Hot water and Hot water return lines concealed in walls only, shall be provided with Glass wool blanket insulation.

Pipe work Supports

All supports, clips, steel rods and hangers shall be of mild steel painted with two coats of approved metallic zinc primer. All clips and brackets shall be equipped with 9 mm sectional rubber liners (shore-hardness A 40+5°).

Pipe work supports shall be installed in order to allow free movement due to expansions and contraction. Supports shall be arranged adjacent to joints, changes of direction and branches. Each support shall carry the overall weight of pipe work and water to be borne by it. The intervals between pipe supports shall not exceed the following:

Maximum interval between supports (metres)

Steel pipes		
Nominal Dia mm	Horizontal	Vertical
10	1.7	1.7
15	2.0	2.0
20	2.4	2.4
25	2.7	2.7
32	2.7	2.7
40	3.0	3.5
50	3.4	3.9
65	3.7	4.3
80	3.7	4.3
100	4.1	4.6

Dimensions of Support Materials

Nominal Dia mm	Flat iron bands mm	Support rods mm	U-bolts mm
10	25 x 3	6	6
15	25 x 3	6	6
20	25 x 3	6	6
25	25 x 3	6	6
32	40 x 5	10	10
40	40 x 5	10	10
50	40 x 5	10	10
65	50 x 6	12	12

80	50 x 6	12	12
100	50 x 6	12	12

Single pipes hung from floor slabs shall be supported on rod hangers. Where two or more pipes are involved a channel or angle iron shall be fitted to the underside of slab by two hangers and the pipes shall be supported from the channel iron by rod hangers and flat iron bands.

All hanger rods shall have double nuts and beveled washers to allow the hanger rod to swing.

Multiple pipe runs along walls shall be supported on purpose made substantial angle and channel frames securely fixed to the wall, floor and ceiling as necessary. All pipes shall be arranged to slide on the steel supports and U-bolts shall be provided to form a rigid guide.

Exposed pipe work shall be supported on channel, angle iron or with U-bolts to form a rigid guide.

All U-bolts, except used as anchors, shall have a pair of nut and washers on each leg with the supporting steel flange clamped tight between the pair of nuts to form a rigid guide and allowing the pipe to slide axially. U-bolts shall be provided on alternate pipe bracket.

Small pipe work running along skirting shall be supported by standard built-in or screw-on type clips.

Pipes shall be individually supported. Pipes shall not hung from other pipes.

Points at which pipes pass through walls, floors, connections to plant, equipment and heat emitters, etc. do not constitute points of supports for the pipes.

Vertical pipes shall be supported at the base or at anchor points to withstand the total weight of the riser. Brackets from risers shall not be used as a means-of support for the riser.

Vibration isolators to be provided with the hangers as approved by the Engineer.

5.3 POLYPROPYLENE RANDOM PIPES & JOINTING

5.3.1 Jointing Techniques

The surfaces of the pipes and fittings must be clean and without impurities. Pipe ends must be clean, cut at right angles. It is recommended to cut 1cm from the pipe ends in order to prevent possible micro-cracking due to incautious handling.

Before carrying out the welding, check that the poly-fusion device operates correctly and that it reaches the required welding temperature ($260^{\circ}\text{C} \pm 5$).

Jointing is done by heat fusion (welding) by means of welding machine. Welding is carried out by means of heating simultaneously the male and female parts to be joined together, once the welding temperature is reached the joint is made and held for cooling time. (see table I below)

5.3.2 Welding Instructions Using Socket Welding Machine

- i. Check whether the welding tool corresponds to the size you need to join.
- ii. The welding tool/device has reached the necessary operating temperature of $260^{\circ}\text{C} \pm 10$
- iii. Cut the pipe at right angles to the pipe axis by using cutter or a hack saw.
- iv. Clean the pipe from burrs, cutting and chips
- v. Mark the welding depths at the end of pipe
- vi. Push the end of pipe up to the marked welding depths in the welding tool, at the same time push the fitting, into the welding tool.
- vii. After the stipulated heating time quickly remove pipe and fitting from the welding tools and join them immediately, forcing the pipe into the fitting until the marked welding depth is covered by the bead of Polypropylene from the fitting
- viii. The joint elements have to be fixed and aligned within the specified assembly time.
- ix. After the cooling time the fused joint is ready for use. The heating time starts when pipe and fitting have been pushed to the correct welding depth in the welding tool

Est. Diameter (mm)	Welding Depth (mm)	Heating Time DVS 2207* (sc).		Heating time (sc.)	Cooling Time (min.)
20	14.0	5	8	4	2
25	15.0	7	11	4	2
32	16.5	8	12	6	4
40	18.0	12	18	6	4
50	20.0	18	27	6	4
63	24.0	24	36	8	6

The heating time have to be increased 50% if average temperature is under $+ 5^{\circ}\text{C}$

5.3.3 Welding of PPR Pipes

- i. Cutting of pipe at right angle with a cutter.
- ii. Marking of welding depth on the pipe end.
- iii. Simultaneous heating of both pipe and fittings according to required heating time (as per given data).
- iv. Pushing of pipe end into the fitting and alignment of the assembly within specified time period
- v. Finish joint.

5.3.4 Installation Principles

5.3.4.1 Fastening technique for open installation

The selection of fastening material and its application have to be determined as:-

- Fixed Point
- Sliding Point

Pipe clamps are such as to meet all requirements and ensure that no mechanical damage on the pipe surface can occur.

5.3.4.2 Fixed Point

Valves and connections resisting to bending stresses have to be fastened by means of points. In particular cases the fixed points are to be positioned closed to branches or wall passages. The axial expansion will be compensated between two points. To assess the resistance of the fixed points one has to take into account the stresses to which they will be subjected, caused by linear expansion, weight of the piping and weight of the transportation fluid. Fixed points should be delimited on both sides of the clamp, availing oneself of the rim fittings or valves.

5.3.4.3 Sliding Point

The sliding points must keep the system aligned and support it, and allow the axial sliding of the piping as well. The sliding are to be firmly mounted in order to prevent vibration and transmission of noise.

Distance between the supports points in cm.

Pipe diameter	Temperature in °C		
	20	50	80
20mm	85	70	60
25mm	85	80	70
32mm	100	85	85
40mm	110	100	90
50mm	125	110	90
65mm	140	125	105

5.4 WATER PIPES AND FITTINGS OUTSIDE BUILDING (EXTERNAL WORKS)

5.4.1 Handling

Pipe and accessories shall be handled in such a manner as to ensure their delivery to the trench in sound, un-damaged condition. If any pipe or fitting is damaged, the repair or

replacement shall be made by the Contractor at his expenses in a satisfactory manner. No other pipe or material of any kind shall be placed inside of a pipe or fittings. Pipe shall be carried into position and not dragged. The interior of pipe and accessories shall be thoroughly cleaned of foreign matter before being lowered into the trench and shall be kept clean during laying operations by plugging or other approved method. Before installation, the pipe shall be inspected for defects. Material found to be defective before or after laying shall be replaced with sound material without additional expense to the Employer. Rubber gaskets that are not to be installed immediately shall be stored in a cool dark place and protected against the direct rays of the sun.

5.4.2 Cutting of Pipe

This shall be done in a neat and workman-like manner without damage to the pipe. Unless otherwise authorized by the Engineer or recommended by the manufacturer, cutting shall be done with a mechanical cutter of approved type. Wheel cutters shall be used wherever practicable.

5.4.3 Location

Where the location of the water pipe is not clearly defined by dimensions on the Drawings, the water pipe shall be located as directed by the Engineer.

5.4.4 Deflection

Maximum allowable deflections from a straight line or grade, as required by vertical curves, horizontal curves, or offsets will be 2° degrees unless otherwise recommended by the manufacturer. If the alignment requires deflections in excess of the specified limitations, special bends or a sufficient number of shorter lengths of pipe shall be furnished to provide angular deflections within the limit set forth, as approved.

5.4.5 Placing and Laying

Pipe and accessories shall be carefully lowered into the trench by means of derrick ropes, belt slings, or other suitable equipment. Under no circumstances shall any of the water line materials be dropped or dumped into the trench. Care shall be taken to avoid abrasion of the pipe coating. Poles used as levers shall be of wood and shall have broad flat faces to prevent damage to the pipe. Except where necessary in making connections with other lines or authorized by the Engineer pipe shall be laid with the bells facing in the direction of laying. The full length of each section of pipe shall rest solidly upon the pipe bed, with recesses excavated to accommodate bell coupling and joints. Pipe that has the grade or the joint disturbed after laying shall be taken out and re-laid. Pipe shall not be laid in water shall be kept out of the trench until the materials in the joints have hardened or until caulking or jointing is completed. When work is not in progress, open ends of

pipe, fittings, and valves shall be securely closed so that no trench water, earth, or other substances will enter the pipes or fittings. Where any part of a coating or lining is damaged, the repair shall be made by the Contractor at his expense in a satisfactory manner. Pipes shall be installed in accordance with recommendations of the pipe manufacturer. Pipe ends left for future connections shall be valved, plugged or capped, and anchored, as shown or as directed, where connections shall be made by using specials and fittings to suit the actual conditions.

5.4.6 Jointing

The joints shall be in accordance with the recommendations of the manufacturer or as approved by the Engineer.

Connections between different types of pipes and accessories shall be made with transition fittings where recommended by the pipe manufacturer.

Service connections shall be made as indicated and in accordance with the recommendations of the pipe manufacturer.

5.4.7 Thrust Blocks

Plugs, caps, tees, bends and fire hydrants shall be provided with concrete thrust blocks. Backing shall be placed between solid ground and the hydrant or fitting to be anchored. The area of bearing shall be as shown on the Drawing. The backing shall be so placed that fitting joints shall be accessible for repair. The concrete shall be class C plain cement concrete.

5.4.8 Pipe Bedding

Fine sand as pipe bedding material shall be used for bedding of pipes and fittings. The sand shall be free from clay, silt, salts, organic impurities and debris. Approval of pipe bedding materials shall be obtained by the site Engineer prior to placing.

5.4.9 Flushing

The Contractor shall provide facilities for flushing the line. Water for flushing the line shall be arranged by the Contractor. Flushing of line shall be done section by section. For each valved section of pipeline the Contractor shall make a temporary hose connection between the water pipeline and the pipeline under test. Water shall be pumped into the section flushed. Other arrangements for storing and pumping of water shall be subject to the approval of Engineer. Due precautions shall be taken by the Contractor for the disposal of water. The pipeline shall be flushed by keeping all the branching pipes open. Flushing shall be continued until clean water starts flowing through the other end. Section by section, the entire pipeline shall be flushed at a minimum flushing velocity of 2.5 ft./sec.

5.4.10 Pipeline Disinfection

The Contractor shall furnish all equipment, labour and material for the proper disinfection of the pipeline. Disinfection shall be accomplished by chlorination after the lines have been tested for leakage but before they have been connected to the main system. Disinfections of the pipelines shall be done in the presence of the Engineer's representative with equipment approved by him.

- **Chlorination** A chlorine and water mixture shall be supplied by means of a solution feed chlorination device. The chlorine solution shall be applied at one end of the pipeline through a trap, in such a manner that as the pipeline is filled with water, the dosage applied to the water entering the pipe shall be at least (25 p.p.m) or enough to meet the requirements given hereinafter.
- **Retention Period** Chlorination water shall be retained in the pipeline for a period of at least 24 hours. After the chlorine treated water has been retained for the required time, the chlorine residual at the pipe extremities and at such other representative points shall be at least 10 parts per million. This procedure shall be repeated until the required residual chlorine concentration is obtained.
- **Chlorination of Valves** During the process of chlorination the pipeline, all valves or other appurtenances shall be operated while the pipeline is filled with the heavily chlorinated water.

5.4.11 Final Flushing

Following complete disinfection of the pipeline, all treated water shall be thoroughly flushed from the pipeline at its extremities. Treated water and water used for flushing the pipelines shall be disposed of in a manner instructed by the Engineer. Fresh treated water shall be filled in the line and water tested from presence of coliform. The test result should indicate negative coliform presence. If the test indicates any positive coliform, the entire process of disinfection shall be repeated or improved upon until coliform free samples are obtained.

5.4.12 Sampling And Testing

Disinfection of the pipeline and appurtenances shall be the responsibility of the Contractor. The first set of samples will be collected for analysis by the Engineer. Should the samples reveal presence of coliform the Contractor shall again disinfect the pipeline and appurtenances at no extra cost to the Employer for sampling and testing for subsequent retests until coliform free samples are obtained? The charges for re-sampling and retesting shall be recovered from the Contractor.

5.4.13 Clean-Up

Upon completion of the installation of the water supply lines, distribution system and appurtenances, all debris and surplus materials resulting from the work will be removed and disposed off in a manner satisfactory to the Engineer

5.5 SOIL, WASTE, VENT & RAIN WATER DRAINAGE PIPES & PIPE FITTINGS (C. I. & uPVC)

All cast iron soil pipes and fittings shall be installed to the lines and grades shown on the drawings or as directed by the Engineer. When required to be installed above ground floor level, suitable and substantial number of hangers and supports of approved type and make shall be provided. No piping shall be hung from the piping of other systems. Clamps shall be provided on not more than 1.5 meter centres or a minimum of one hanger per each length of pipe whichever is smaller. Where excessive numbers of fittings are installed, additional clamps will be provided.

All steel clamps, hangers and support etc. shall be given one coat of red oxide primer and two coats of synthetic enamel paint. All exposed C.I. soil/vent pipes shall be given two coats of synthetic enamel paint. Materials for painting shall be high quality product of well-known manufacturer and will be approved by the Engineer before using. The instructions of the manufacturer regarding all painting work shall strictly be adhered to. Pipes passing through walls, floors, etc. shall be provided with sleeves of approved design. All vent pipes to be installed in the system shall be provided with approved cowl and will rise at least 0.70 meter above the roof.

Caulked joints for cast iron bell-and-spigot soil pipe shall be firmly packed with oakum or kemp and filled with molten lead not less than 22 mm deep and not to extend more than 3 mm below the rim of the hub. Rubber ring joints shall also be allowed. No paint, varnish, or other coatings shall be permitted on the jointing material unit after the joint has been tested and approved

Pipes passing through walls, floors, etc. shall be provided with sleeves of approved design. All vent pipe to be installed in the system shall be provided with approved cowl and will rise at least 0.70 meter above the roof.

Special requirements for uPVC pipes and fittings are as under:

Maximum Interval between Supports (m)
(Support centers for uPVC pipe work systems)*

Nominal Diameter, d_e	Pipe Works	
	Horizontal (10 $\times$ d_e)	Vertical
(mm)	(m)	(m)
40	0.40	1.2
50	0.50	1.5
75	0.75	2.0
110	1.10	2.0

* The values shown are for general installations only. Attention is drawn to special requirements that may be needed in more demanding applications.

All steel clamps, hangers, supports etc. shall be given one coat of red oxide primer and two coats of synthetic enamel paint.

All exposed uPVC pipes shall be given two coats of approved colour water based emulsion paint (note that oil based paints must be avoided).

PRECAUTIONS

Following points describe how an uPVC must be cared of:

- a. The depth of concrete cover above uPVC pipe depends on the pipe gradient. However, a minimum of 1 (one) inch concrete cover must be provided.
- b. When using cemented joints, the adhesive should be given sufficient opportunity to harden before the pipe is concreted in.
- c. Horizontal lines that are concreted-in should be anchored against upward movement and should be adequately secured while the concrete is being poured.
- d. During the pouring and setting of concrete, necessary care shall be taken to prevent physical damage to the pipes.
- e. When using heated concrete or when steaming the concrete, the sensitivity of uPVC material to temperature changes should be borne in mind.
- f. Concrete mortar that is used before concreting-in shall include no sharp-edged material.
- g. Avoid excessive misalignment of the pipes.
- h. Avoid excessive tightness of joints.
- i. Provide sufficient expansion joints to allow thermal movement or regression.
- j. Use only allowed cleaning & descaling techniques for different situations & locations (as described in ISO/TR 7024-1985E) when a pipeline gets choked or blocked.

DELIVERY CONDITIONS

The internal and external surfaces of pipes and fittings shall be smooth and free from grooving, blistering and any other surface defect. The materials shall not contain visible impurities or pores. Pipe ends shall be cleanly cut, and the ends of pipes and fittings shall be square with the axis of the pipe

MARKINGS

Pipes, fittings and sealing rings shall be marked clearly and indelibly so that legibility is maintained for the life of products under normal conditions of storage, weather and use.

The markings may be integral with the product or on a label. The markings shall not damage the product.

PIPES

Pipes shall be marked with at least the following information:

- a. Manufacturer's name or trade mark;
- b. Pipe material;
- c. Nominal diameter of pipe;
- d. Nominal wall thickness of pipe
- e. Manufacturing information, in plain text or in code, providing tractability of the production period to within the year and month and the production site if the manufacturer is producing at several national or international sites.
- f. The number of this International Standard.

Pipes with a nominal laying length up to and including z_2 meters shall be marked with at least once. Pipes with a nominal laying length greater than z_2 meters shall be marked at intervals of z_3 meters at the most. The values of z_2 and z_3 shall be as specified by the authorities in each country.

FITTINGS

Fittings shall be marked with at least the following information:

- a. Manufacturer's name or trade mark;
- b. Fitting material (may be given on packing only in the case of PVC, provided this information is not required on each article by national authorities);
- c. Nominal diameter of fitting;
- d. Classification (where applicable)
- e. Values of angles, if any;
- f. Manufacturing information, in plain text or in code, providing tractability of the production period to within the year and month and the production site if the manufacturer is producing at several national or international sites (may be given on packing only, provided this information is not required on each article by national authorities);
- g. The number of this International Standard (may be given on packing only, provided this information is not required on each article by national authorities).

SEALING RINGS

Sealing rings shall be marked with at least the following information:

- a. Manufacturer's name or trade mark;
- b. Nominal diameter of ring;
- c. Manufacturing information, in plain text or in code, providing traceability of the production period to within the year and month and the production site if the manufacturer is producing at several national or international sites.

6.0 TESTING AND COMMISSIONING

6.1 G.I. & PPR COLD AND HOT WATER PIPES

All water distribution system shall be tested whole or in part to 2 times the working pressure with a minimum test pressure of 100psi. The contractor shall pay for all device, materials, supplies, labor and power required for the test. The test will be run for two hours at the specified pressure and there should be no leakage in the system. Defects revealed by the test shall be repaired and the whole test rerun until the system proves to be satisfactory.

After all the pipes and fixtures have been properly laid and tested, they shall be flushed clean with water and then disinfected with water solution of chlorine of at least 50 ppm strength for a contact period of 6 hours. The system will be finally flushed with clean water.

6.2 SOIL, WASTE, VENT & RAIN WATER DRAINAGE PIPES & PIPE FITTINGS (C. I. & uPVC)

The entire system of drains, waste, and vent piping inside the building shall be tested by this Contractor under a water test. Every portion of the system shall be tested to a hydrostatic pressure equivalent to at least 3-meter head of water. After filling this Contractor shall shut off water supply and shall allow it to stand two hours, under test during which time there shall be no loss or leakage.

The Contractor shall furnish and pay for all devices, materials, supplies, labor and power required in connection with all tests. All tests shall be made in the presence of and to the satisfaction of the Engineer.

The Contractor shall also be responsible for the repair of this work & other trades work that may be damaged or disturbed by the tests. Defects disclosed by the tests repaired. Work shall be replaced with new work without extra cost to the Employer. Tests shall be repeated as directed, until all work is proven satisfactory.

All fixtures shall be tested for soundness, stability, support and satisfactory operation.

7.0 MEASUREMENT AND PAYMENT

7.1 COLD & HOT WATER PIPE

7.1.1 Measurement

Measurement for acceptably completed works of supply and installation of cold and hot water pipes shall be in running meter length.

- a. In building works, no measurement shall be made for earthworks, pipe fittings, jointing, hangers, clamps, brackets, sleeves, insulation, cutting and breaking concrete and then making it good, applying protective painting, coating, cleaning, testing and disinfecting etc. and the measurement will be for the full work specified herein.

- b. In external works, no measurement shall be made for pipe fittings, jointing, insulation, cutting and breaking concrete and then making it good, applying protective painting, coating, cleaning, flushing, testing and disinfecting etc. and the measurement will be for the full work specified herein. However, earthworks (excavation, backfilling, sand bedding), and thrust blocks shall be paid separately as specified in Bill of Quantities.

7.1.2 Payment

Payment for acceptable measured quantity will be made at the unit rate per running Foot length of cold and hot water pipes quoted in the Bill of Quantities. The amount bid shall be the full payment for completion of the work in all respects as specified herein.

7.2 uPVC and C.I. SOIL, WASTE & VENT PIPES

7.2.1 Measurement

Measurement for acceptably completed works of supply and installation of uPVC & C.I. pipes, will be in running Feet length and the work to be done shall include all pipe fittings, jointing, hangers, clamps, brackets, sleeves, cutting and breaking concrete and then making it good, applying protective painting, coating, cleaning and testing.

7.2.2 Payment

Payment will be made at the unit rate of bid per running Feet length of pipe acceptably supplied and installed. The amount bid shall be full payment for the work specified herein.

7.3 PLUMBING FIXTURES

7.3.1 Measurement

Measurement for plumbing fixtures will be made as per actual number acceptably installed. The Contractor's bid against these items shall include installation of complete unit as specified herein, inclusive of all work from inlet connection of water supply to outlet connection with the sanitary system, complete as per Contract Documents and/or as directed by the Engineer.

7.3.2 Payment

Payment for plumbing fixtures shall be made at the applicable unit price per number bid for the respective item in the Bill of Quantities. The amount bid shall be full payment for the work specified herein.

7.4 MISCELLANEOUS ITEMS

7.4.1 Measurement

Measurement for acceptably completed works of floor drains, roof drains, cleanouts, glass mirror, towel rail, toilet paper holder, soap

trays, mirror trays, water coolers, water heaters, etc. shall be made on the basis of actual number acceptably installed in position. The Contractor's bid against these items shall include installation complete as specified herein and/or as shown on the Drawings.

7.4.2 Payment

Payment for acceptably measured quantity of floor drains, roof drains, cleanouts, glass mirrors, towel rails, toilet paper holders, soap trays, mirror trays electric water coolers, water heaters, etc. shall be made at the applicable unit rate per number quoted in the Bill of Quantities. The bid amount shall be full payment for the works specified herein and as shown on the Drawings.

*** End of Section 5100 ***

ELECTRICAL WORKS

SECTION – 8001

GENERAL SPECIFICATIONS FOR ELECTRICAL WORKS

- 1.0 SCOPE OF WORK**
- 2.0 RULES & REGULATIONS**
- 3.0 AMBIENT CONDITIONS**
- 4.0 STANDARDS**
- 5.0 SYSTEM DATA**
- 6.0 EQUIPMENT**
- 7.0 DRAWINGS AND DATA TO BE FURNISHED BY THE CONTRACTOR**
- 8.0 MANUFACTURER'S INSTRUCTIONS**
- 9.0 GUARANTEE**
- 10.0 DANGER BOARDS WITH SIGNS, DESIGNATION AND SHOCK / FIRST AID CHARTS AND FIRE FIGHTING EQUIPMENT**
- 11.0 ASSOCIATED CIVIL WORKS**
- 12.0 INSTALLATION INSTRUCTIONS - GENERAL**
- 13.0 FACTORY TESTS**
- 14.0 TESTING - GENERAL**
- 15.0 APPENDICES TO BE FILLED IN BY THE BIDDER**
- 16.0 PAYMENT**

1.0 SCOPE OF WORK

The works related to the electrical system which is included in the Scope of this Contract as shown on the Drawings, stated in the Specifications and Bill of Quantities and explained in these Specifications. The works shall broadly include but not limited to the following:

- General Specifications for Electrical Works
- Low Voltage D.G. Set
- Power Transformer
- H.T. Switchboards
- L.T Switchboards
- LT Distribution Boards
- Motor Control Centre
- Light Fixtures
- Low Tension Cables
- Wiring Accessories
- Conduits and Pipes
- Earthing
- Lightning Protection System
- Miscellaneous Items
- Structured Cabling Network
- Fire Alarm System
- Closed Circuit Television System
- Public Address System
- Cable Antenna TV System

The Contractor shall also be responsible to supply any other equipment not specifically mentioned in these Documents but which is necessary for proper operation of the works/system included in the scope of this Contract. The Contractor shall solely be responsible for ensuring proper functional requirements of different equipment. He shall also be responsible for furnishing any additional piece of equipment and for making modification in the equipment as desired and/or approved by the Engineer to achieve proper co-ordination with various equipment offered in the bid and also with those installed by others.

2.0 RULES & REGULATIONS

The entire electrical installation/work shall be carried out by licensed Contractor, authorised to undertake such work under the provisions of the Electricity Act 1910 and The Electricity Rules 1937 as adopted and modified upto date by the Government of Pakistan.

All works shall be carried out in accordance with the latest edition of the Regulations of the Electrical Equipment of Buildings issued by the Institute of Electrical Engineers-London, the Contract Documents, The Electricity Rules 1937 and bye-laws that are in force from time to time. Any discrepancy between these Specifications and any other rules and regulations shall be brought to the

notice of Engineer for his instructions and the discussion of the accepting/controlling shall be final and conclusive.

The Contractor shall be responsible for completing all formalities and submitting the test certificates as per prevailing rules and regulations, and shall have the installation passed by the Government Electric Inspector of that region. All requirements of the Electric Inspector and the WAPDA / MEPCO shall be complied with.

3.0 AMBIENT CONDITIONS

All material and equipment supplied and installed shall be designed, manufactured and tested to meet the following ambient conditions unless specifically stated otherwise for any material/ equipment.

Maximum indoors ambient temperature	:	45-Degree Celsius
Minimum indoors ambient temperature	:	Zero Degrees Celsius
Maximum outdoors-ambient temperature	:	50-Degree Celsius
Minimum outdoors-ambient temperature	:	Zero Degrees Celsius
Maximum Relative humidity	:	100 Percent
Maximum Altitude of project	:	1000meters above the mean

sea level.

The atmospheric conditions are tropical and highly humid.

4.0 STANDARDS

The latest standards and codes of reputable organisations shall be applicable for the material and equipment specified herein and for installation work. Such organisations to be BSS, VDE, NFPA 99, NEC Article 517 etc. In case the Specifications laid down herein differ from those given in the standards, then the equivalent or better specifications shall govern. Wherever applicable the equipment shall also conform to the requirements of Pakistan Standard Institution (PSI).

Contractor shall maintain at the site office one copy of the standards / codes applicable to the works.

5.0 SYSTEM DATA

Unless otherwise specified elsewhere, all equipment and material shall be designed to operate satisfactorily with the following minimum requirements without any de-rating.

a) Voltage rating of equipment :	HT :	11 kV, 3 phase, +/- 10%
	LT :	400 V, 3 phase, +/- 10%
		230 V, 1 phase, +/- 10%

b) Frequency : 50Hz $\pm$ 2Hz

In general, the electrical colour coding of switchgear cubicles, control panels, desks etc., shall be in accordance with the respective IEC Recommendations.

Live parts of electrical connections shall be colour coded according to IEC 446 as follows:

	Conductor Designation	Coding Alphanumeric	Colour
A.C. Network	Phase 1	L 1	red
	Phase 2	L 2	yellow
	Phase 3	L 3	blue
	Neutral	N	black
D.C. Network	Positive	L+	white
	Negative	L-	black
Earthing	Protective Earth	PE	green/yellow
	Earth	E	green/yellow

The colour coding for the secondary circuits of isolated power panel board is as follows:

Orange-Isolated Phase Conductor
Brown- Isolated Neutral Conductor
Green-Isolated Ground Conductor

Conductor insulation of secondary circuits of isolated power panel board shall be XLPE and PVC sheathed.

Control Cables

The Control Cables shall be manufactured according to specifications for L.T. Cables. The Control Cables shall be of multi-core, PVC insulated type withstanding without deterioration the conditions prevailing at the place of installation. The cross section of cable shall be as per the requirement of the system.

All the cores should be numbered and/or colour coded or otherwise properly identified. At-least 20% spare cores shall be provided in all Control Cables.

No separate payment is admissible for supplying, installing, testing and commissioning of control cables and is deemed to have been included in the BOQ rates of the respective equipment.

Distance in between power, communication and control cables shall be kept as per requirements laid down by NEC800, NFPA 70 and EN50174-2.

6.0 EQUIPMENT

6.1 IP Degree of Protection

The equipment shall have IP degree of protection as follows, unless mentioned otherwise:

- IP 20 for indoor areas
- IP 42 for indoor damp areas
- IP 54 for outdoor areas

If properly rated equipment is not available, the Contractor shall provide field enclosures to attain the required IP degree of protection. If necessary cooling/exhaust fans and / or anti condensate heaters shall also be provided. No separate payment shall be made to attain the required IP degree of protection.

6.2 Identification & Labelling

All devices, meters, cabling, wiring and auxiliaries shall be properly labeled for identification. Labeling of equipment shall be done by means of flameproof material using indelible ink/markings. The labeling shall be such as to ensure uniformity and shall facilitate study of control diagrams/ drawings during operation and maintenance.

All labeling shall be of suitable size to be visible from the operating conditions/positions at site.

6.3 Lamp Test Facility

All equipment / switchboards, etc. shall be provided with common lamp test facility.

7.0 DRAWINGS AND DATA TO BE FURNISHED BY THE CONTRACTOR

The shop drawings, as-built drawings and/or technical data to be furnished by the Contractor for each electrical equipment, LT cable distribution layout & shall include, but not limited to the following:

- (a) Structural drawings showing foundations, RCC details dimensional plans,

elevation and sections on a suitable scale.

(b) Electrical drawings showing:

- Line diagrams of Switchboards, Motor Control Centres, distribution boards and isolated power panels with detailed wiring diagrams, elevations/internal component layout and other standard details.
- LT Cabling, Grounding/Earthing including all cable routing and support details.
- Necessary execution details such as no. of cable/wires, size of conduits, cable routes, cable trays and cable trenches, etc.
- Substation and Generator Room Equipment installation detail.
- Manhole/Duct works.

(c) Layouts of all LT cable routes with coordinates and levels.

(d) Technical literature and manufacturer's characteristic data with the description of materials and weights of all equipment as instructed by the Engineer.

At least three (3) copies of the shop drawings and/or technical data of the equipment shall be submitted to the Engineer for checking and approval.

8.0 MANUFACTURER'S INSTRUCTIONS

The Contractor shall supply to the Engineer in properly bound form six (6) copies of manufacturer's instruction manuals for installation, testing, commissioning, operation and maintenance of the specified equipment including manuals of spare parts and tools of the equipment. At least two copies of the documents shall be submitted in original. The installation instructions shall be submitted 2 weeks prior to commencement of installation of each equipment, and operation and maintenance instruction at the time of commissioning. If the Contractor fails to provide the documents the Engineer shall withhold issuance of requisite certificates and deduct suitable amount from the payments to the Contractor.

9.0 GUARANTEE

The Contractor shall furnish written guarantee of the manufacturer or supplier with respect to satisfactory performance of each equipment. Guarantee shall be given for replacement and repair of part or whole of the equipment, which may be found defective in material or workmanship. The guarantee shall cover the duration of Maintenance Period as defined in the Conditions of Contract. This guarantee shall not relieve the Contractor of his obligations and he will be fully

responsible for the repair or replacement of any defective material in time, so as not to cause any undue delay in carrying out the repairs and/or replacements.

10.0 DANGER BOARDS WITH SIGNS, DESIGNATION AND SHOCK / FIRST AID CHARTS AND FIRE FIGHTING EQUIPMENT

Danger Boards having signs and designation of the room shall be installed on the external door of HT, LT, Power transformer, Low Voltage DG Set Rooms. Shock/First Aid Charts shall be installed in H.T, L.T and Low Voltage DG Set Rooms.

Potable fire fighting extinguisher suitable to control electrical fire shall be provided in H.T, L.T, Power Transformer and Low Voltage DG Set Rooms.

All the above items shall also be provided, wherever required to comply the requirements of the Pakistan Electricity Rules/Electric Inspector.

Laminated single line and adequate detail drawings on proper boards highlighting the main system features shall be displayed/ fixed in respective electrical and communication rooms.

11.0 ASSOCIATED CIVIL WORKS

Except where separately stated in the Bill of Quantities the cost of all civil works associated with any BOQ item of electrical works, such as excavation and back filling of earth, compaction of the earth, foundation pads, chiselling, making openings, etc. shall be included in the price quoted against respective items. No separate payment for such works will be made. Such works will also include repair of any damage to civil works caused by the Contractor during electrical installation.

12.0 INSTALLATION INSTRUCTIONS - GENERAL

The Contractor shall furnish all labour, materials, tools and equipment required to install, connect, test and commission all electrical equipment specified herein, whether or not such equipment is furnished by him or by others.

For all equipment to be installed by the Contractor, the Contractor shall supply and install all erection materials such as foundation bolts, washers, nuts, etc. as required and without any additional costs.

The Contractor shall set out the works himself as per Specifications and Drawings and shall properly position the equipment on specified foundation/location. In general, the manufacturer's instructions for installation shall be followed. Any defect or faulty operation of equipment due to the Contractor not following the manufacturer's instructions shall be corrected and repaired by the Contractor at his own cost.

For any deviation from the working drawings or specification that is deemed necessary by the Contractor due to site conditions, he shall submit the details and obtain the Engineer approval before starting such works.

13.0 FACTORY TESTS

All type and routine tests on Low Voltage D.G Set, Power Transformer, H.T Switchboards, LT Switchboards, Motor Control Centre, H.T Cables, LT Cables, and all other equipment shall be performed at the manufacturer's works in the presence of the Engineer or his Representative. Type tests may be waived off in case test certificates are submitted as certified by an Engineer approved standard laboratory of international repute; but merely producing the test type certificates will not relieve the manufacturer to carry out the required standard/routine tests.

The Contractor shall inform the Engineer about the date and time of test of each equipment at least two weeks in advance. This shall, however, be done after the Contractor has got the test procedures duly approved by the Engineer. The witnessing of test by the Engineer and the Employer shall not absolve the Contractor from his responsibility for the proper functioning of the equipment, and for furnishing the guarantees referred to in clause 9.0. All test results shall be supplied in quadruplicate. All expenses for carrying out the tests as incurred by the Engineer and the Employer to witness it shall be borne by the Contractor and deemed to have been included in the bid. Provision for at least two person's visit for Factory Acceptance Tests shall be made to include one representative each from the Employer and the Consultant/Engineer. The contractor shall undertake all formalities as may be required for the Engineer or his representative to enable him make the visit.

14.0 TESTING - GENERAL

14.1 Scope

Upon completion of the installation, the Contractor shall perform field tests on all equipment, materials and systems. All tests shall be conducted in the presence of the Engineer for the purpose of demonstrating equipment or system compliance with Specifications. The Contractor shall submit for Engineer's approval complete details of tests to be performed describing the procedure, test observations and expected results.

The Contractor shall furnish all tools, instruments, test equipment, materials, etc., and all qualified personnel required for the testing, setting and adjustment of all electrical equipment and material including putting the same into operation.

All tests shall be made with proper regard for the protection of the personnel and equipment and the Contractor shall be responsible for

adequate protection of all personnel and equipment during such tests. The cost of any damages or rectification work due to any accident during the tests shall be the sole responsibility of Contractor.

The Contractor shall record all test values of the tests made by him on all equipment. Four (4) copies of all test data and results certified by the Engineer shall be given to the Engineer for record purposes. These shall also include details of testing method, testing equipment, diagrams, etc.

The witnessing of any tests by the Engineer does not relieve the Contractor of his guarantees for materials, equipment and workmanship, or as any other obligations of Contract.

14.2 **Low Voltage D.G. Set**

Prior to the tests, the contractor shall submit manufacturer's recommended detailed description of the test procedures to be conducted for Engineer's approval.

The Contractor shall carry out full site load and no load tests in accordance with IEC, ISO or BS Specifications for site commissioning. The inspection and tests shall include but not be limited to:

Basic Tests:	Insulation Resistance Earth Continuity Earth Loop Impedance Polarity Phase Rotation Voltage and Frequency Starting System Protection Equipment
Battery:	Nominal Voltage Discharge Voltage Specific Gravity of Electrolyte Level of Electrolyte Charging System
Lubrication:	Check as required by manufacturer
Operational Check at Start-up	Oil Pressure Fuel Oil Leaks Operation of Safety Devices Operational Speed Automatic Control Instrument Check Exhaust Check Undue Vibration

Operational Check	Oil Pressure	
After one hour's run:	Oil Leaks	
	Cooling System	
	Oil Temperature	
Commissioning Test:	25% of full load	2 hrs.
	50% of full load	5 hrs.
	75% of full load	8 hrs.
	100% of full load	8 hrs.
	110% of full load	1 hr.

All commissioning and test results shall be recorded and compared with design data. A retest/commissioning shall take place if results are not satisfactory. All the tools, labour, POL, required for the testing and commissioning shall be provided by the Contractor at no extra cost. If required load is not available at site for testing the generators, the Contractor shall provide dummy load at site at no extra cost to the Employer. The correct functioning of the control equipment shall also be proved.

Battery Charger

Battery charger shall be static type and shall provide for both trickle and boost charging of the batteries when the engine is not in operation. The charger shall be of suitable capacity to fully recharge the completely discharged batteries within four hours at boost charge.

Control Panel

The Control Panel shall provide all the necessary control and monitoring devices of the Diesel Generating Sets. All the control and monitoring of the safety devices, alarms, protections, meters, lamps, etc. as mentioned in this Specifications and required as per good engineering practices for such an installation shall be provided in the Control Panel.

14.3 Transformer Tests

In addition to the insulation resistance test of the transformer, a polarity and phase rotation test shall also be made. Buchholz relay shall be tested for proper operation. Di-electric test shall be carried out on transformer oil prior to putting the same in operation.

14.4 HT / LT Switchboards

Each circuit breaker shall be operated electrically and mechanically. All interlocks and control circuits shall be checked for proper connections in accordance with the wiring diagrams given by the manufacturer.

The Contractor shall properly identify the phases of all switchgear and cables for connections to give proper phase sequence.

Trip circuits shall be checked for correct operation and rating of equipment served. The correct size and function of fuses, disconnect switches, number of interlocks, indicating lights, alarms and remote control devices shall be in accordance with approved manufacturer drawings. Nameplates shall be checked for proper designation of equipment served. Protective relays shall be tested and set at site prior to commissioning of the equipment.

14.5 Insulation Resistance Test

Insulation resistance test shall be made on all electrical equipment by using a meggar of 500 volts for circuits upto 250 volts and 1000 volt for circuits between 250 and 500 volts. For testing of 11 kV circuits, upto 5 kV meggar shall be used; the exact voltage shall be as advised by the equipment manufacturer unless otherwise advised by the Engineer.

The insulation resistance values of cables, transformer, switchgears, etc., shall be as per BSS, IEEE, NEC, ICEA and Pakistan Electricity Rules.

Before making connections at the ends of each cable run or joint between cables, the insulation resistance test of each cable section shall be made. H.T. cables shall be subjected to high voltage test as per recommendations of standard to which the cable is manufactured. Each conductor of a multi-core cable shall be tested individually with each of the other conductor of the group and also with 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 tests repeated on new cable. If cable joint is provided, then each cable section shall be tested, and joint made only after the tests have been made satisfactorily. Finally the completed cable length including the joints shall be tested.

The transformer and switchgears shall be given an insulation resistance measurement test 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 the specified value, the cause 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 are carried out, the insulation resistance readings shall be taken after the correction has been made and repeated twice at 12 hours interval. The maximum range for each reading in the three successive tests shall not exceed 20% of the average value. After all tests have been

made, the equipment shall be reconnected as required. Polarity test shall be made on single pole switching devices.

14.6 **Earth Resistance Test**

The Contractor shall make Earth resistance tests on the Earthing system, separating and reconnecting each earth connection.

If it is indicated that soil treatment or other corrective measures are required to lower the ground resistance values, the Engineer will determine the extent of such corrective measures.

The electrical resistance of the ECC together with the resistance of the Earthing leads measured from the connection with earth electrode to any other position in the complete installation shall not exceed one ohm.

Earth resistance test shall be performed as per Electrical Inspector's requirements. Where more than one earth electrodes are installed, the earth resistance test of each electrode shall be measured by means of resistance bridge instrument.

The complete lightning protection system shall be tested for continuity and earth resistance. The combined earth resistance at any point in the lightning protection system shall not exceed 10 ohms.

14.7 **Completed Tests**

After any equipment has been tested, checked for operation, etc., and is accepted by the Engineer the Contractor shall be responsible for the proper protection of that equipment so that subsequent testing of other equipment do not cause any damage to the already tested equipment.

14.8 **Expenses**

All expenses, i.e., travelling, boarding and lodging for carrying out the tests and witnessing by the Engineer shall be borne by the Contractor and are deemed to have been included in the BOQ rates of the respective equipment(s) by the Contractor.

14.9 **Spare Parts**

Contractor shall provide spare parts as identified in relevant appendix. The cost of each spare parts shall be carried over to relevant BOQ item and no extra payment shall be admissible in this regard.

14.10 Special Tools

Contractor shall provide special tools as indicated in Appendix-IV and as may be deemed essential for assembly, adjustment, dismantling, installation and maintenance reasons.

No separate payment shall be made for any special tools and cost shall be deemed to be included in the cost of the Contract.

15.0 APPENDICES TO BE FILLED IN BY THE BIDDER

The details regarding equipment manufacturers, deviations, etc., are to be furnished in the appendices attached with form of Bids, in accordance with the provisions of the clause "Requirements of Electrical Works" given in the instructions to Bidder, Volume - I.

16.0 PAYMENT

No separate payment shall be made for work involved within the scope of this section unless specifically stated in the Bill of Quantities or herein.

*** End of Section 8001 ***

SECTION – 8133

LT DISTRIBUTION BOARDS

- 1.0 SCOPE OF WORK**
- 2.0 GENERAL**
- 3.0 APPLICABLE STANDARDS/CODES**
- 4.0 MATERIAL**
- 5.0 INSTALLATIONS**
- 6.0 MEASUREMENT AND PAYMENT**

1.0 SCOPE OF WORK

The work under this section consists of supplying, installing, testing, and commissioning of all material and services of the complete Low Tension (LT) Distribution Boards as specified herein and/or shown on the Bidding Drawings and stated in the Bill of Quantities.

The Contractor shall discuss the electrical layout with the Engineer and co-ordinate at site with other services for exact location and position of the each L.T. Distribution Board.

The Low Tension Distribution Board with accessories shall also comply with the General Specifications for Electrical Works, Section - 8001 and with other relevant provisions of the Bidding Document.

2.0 GENERAL

The Low Tension Distribution Board (DB) shall be sheet steel fabricated suitable for surface/recessed mounting on wall or floor standing totally enclosed, dust tight and vermin proof. It shall be complete in all respect with material and accessories, factory assembled, type-tested and finished according to the Specifications and to the normal requirements. The LT Distribution Board shall have protection class IP-20 for indoor installation, class IP-42 for indoor damp areas and class IP-54 for outdoor area.

The Low Tension Distribution Board shall be front operation type and shall:

- have a rated service short circuit breaking capacity (Ics), conforming to IEC 60947-2 and as shown on the drawings.
- be provided with adequate clearance from live parts so that the flashovers can not be caused by switching, vermin, pests etc.
- be suitable for 400 Volts, 3 phase 4 wire, 50 Hz system.
- be designed for flush mounting of all instruments on the front side.
- have incoming and outgoing cable termination arrangement, terminal block/line up terminals.
- be provided with stainless steel name plate on the front side of door.
- have all incoming and outgoing connections from top or bottom as per requirement of site conditions.
- have door grounded by flexible copper strip/cable.
- have wiring diagram in the pocket inside the door of Distribution Board

3.0 APPLICABLE STANDARDS/CODES

The latest editions of the following standards and codes shall be applicable for the materials specified within the scope for this section:

IEC 60051	-	Direct setting electrical measuring instruments
IEC 60073	-	Colours for indicator lights and push buttons
IEC 60947-2	-	Low voltage switchgear and control gear
IEC 60439	-	Low Voltage Switchgear and Control gear Assemblies.
BS 4752	-	Circuit Breaker
BS 3871	-	Miniature & Moulded Case Circuit Breakers
BS 88	-	HRC fuses
BS 89/90	-	Ammeters and Voltmeters
BS 3938	-	Low voltage current transformers
BS 1432	-	Bus Bars

4.0 MATERIAL

4.1 Sheet Metal Work

The Low Tension Distribution Board (DB) shall be fabricated with 16 SWG/14SWG sheet steel recess / surface mounting as approved by the Engineer. All the components shall be installed on a common component mounting plate inside the enclosure and protected from the front with screwed sheet steel front plate. The enclosure shall be provided with rubber gasketing and a lockable hinged door with cam fastener.

The distribution board shall be supplied complete with all installation materials as recommended by the manufacturer. The incoming and outgoing cable connections shall be according to the wiring requirements. If required, an adapter box for accommodating the cables and conduits may be provided. The box shall be of the same material and finish as the DB. All holes, cut-out etc. shall be tool and free from burrs and rough edges.

The cabling inside the DB shall be suitably harnessed by means of straps or cords. Colour sleeves shall be provided on each cable lugs connected to the bus bars, circuit breakers or terminals for phase identification. An

earth bar shall be provided for connection of incoming and outgoing earth conductors. The earth bar shall be permanently connected to the body of DB at two points. Flexible copper strip shall be provided for earthing of the door of DB.

Circuit numbers/ designation on all circuits shall be conspicuously marked to facilitate connection and maintenance.

All metal work of the DB shall be cleaned down to bare shining metal phosphated and the surfaces chemically prepared for powder coating. Then these shall be coated with powder of colour RAL 7032 and then baked in oven. The thickness of powder coating shall not be less than 120 microns.

4.2 Components

The Low Tension Distribution Boards (DB) shall be provided with components as specified, as shown on the Bidding Drawings and required for the satisfactory operation of the distribution board and of the electrical system. Typical component specifications are given below:

4.2.1 Bus Bars

The Bus bars shall be made of 99.99% pure high conductivity electrolytic tinned copper and shall be completely isolated and mechanically braced for the specified fault level. The identification of bus bars shall be by providing colours sleeves on bus bar ends and these shall be red, yellow and blue for phases and black for neutral. The earth bus bar shall be green.

The bus bars shall be for three phase, neutral and earth and shall be of appropriate size to meet the electrical and mechanical requirements of the system. The temperature rise shall not exceed 30°C at rated current.

4.2.2 Moulded Case Circuit Breaker (MCCB)

The MCCBs shall be moulded case triple pole 440 Volts or single/double pole 250 Volts of current ratings as shown on the drawings. These shall have fixed magnetic short circuit and adjustable/fixed thermal overload protection.

Under voltage and shunt trip etc. shall also be provided when so required for safe operation and interlock.

The MCCBs shall be installed such that their switching levers are accessible through the front plate for operation.

The single and triple pole MCCBs shall have short circuit rupturing capacity suitable for the distribution system as approved by the Engineer or as shown on the drawings. The MCCBs shall be suitable for working on lighting and power circuits.

4.2.3 Ammeters and Voltmeters

All meters shall be flush mounting, moving iron, spring controlled. The front dimensions shall be 96 x 96 mm for meters.

The meters shall be of accuracy class 1.5 according to BS-89 and 90. The ammeter shall be suitable for connection to 5 Amps secondary of current transformers or directly through shunt as shown on drawings. The ammeters and voltmeters shall have measuring range as indicated on the drawings.

4.2.4 Current Transformers

Air cooled, ring type current transformers shall be provided having transformation ratio as indicated on the drawings. The current transformers shall be of suitable burden having accuracy class 1.0 according to BS 3938. The current transformers shall have 5 amps secondary.

4.2.5 Selector Switches

The ammeter and voltmeter selector switches shall be complete with front plate, grip handle, R-Y-B and OFF position for ammeters, and RY-YB-BR-RN-YN-BN and OFF position for voltmeters shall be marked on the respective selector switches.

4.2.6 Air Break Contactors

The contactors shall be air break, triple pole 400 VAC type and suitable for the type of duty (at least utilization Category AC3) to be performed. The main contacts shall be silver tipped, butt type with double break per pole. Each contactor shall be provided with single phase 230 VAC operating coil and minimum one spare normally open and one normally closed auxiliary contact. The number of working auxiliary contacts shall be provided according to the system requirements.

4.2.7 Push Buttons

The push buttons shall be illuminated, momentary make/break contact type or latch type (push-on/push-off) as required and approved by the Engineer and suitable for flush mounting. The

push button for ON and OFF switching shall be red and green respectively. They shall be provided as shown on the drawing.

4.2.8 Indicating Lamps

Indicating lamps shall be LED type suitable for flush mounting, complete with base. They shall be suitable for operation on 230 V AC and it shall have rosettes of suitable colours as approved by the Engineer. These shall be provided for R, Y, B phases on each distribution board.

4.2.9 Impulse Relay

Impulse Relay shall be 1 or 2 pole, 250 V rated and be provided with latching mechanism.

4.2.10 Line up Terminals

Line up terminals wherever provided for control or power circuits shall be suitable for voltage and size of conductors as indicated on drawing.

The line-up terminals for controls shall be suitable for channel mounting. All necessary accessories such as end plates, fixing clips, transparent label holder caps and label sheets with marking shall be provided.

5.0 **INSTALLATION**

The location of low tension distribution boards (DB) are shown diagrammatically on the drawings. The actual location shall be determined at site, keeping in view the site conditions and in co-ordination with other equipment, as approved by the Engineer.

Low tension distribution board for recessed mounting in wall shall be installed such that the door shall finish flush with the surface of wall. The recess mounted distribution board shall be installed before the plastering of walls. The DB shall be protected to avoid any damage due to the civil work. Any cuttings, dismantling of the existing wall required for fixing the DB shall be coordinated at site with the approval of Engineer. Any damage done to civil structure shall be made good by the Contractor.

All loose parts dispatched separately with the DB shall be installed as per manufacturer instructions and all adjustments or setting shall be made as required. All screws, nuts and bolts used for fixing the distribution board shall be galvanized.

The distribution boards installation shall include connecting all incoming and outgoing cables. The cable entry in the boards shall be provided from top or bottom as required and/or as approved by the Engineer.

The distribution boards shall be tested as per instructions contained in article "Testing" of General Specifications for Electrical Works, Section-8001 of these Specifications.

6.0 MEASUREMENT AND PAYMENT

6.1 General

The Contractor's bid amount against each item of Bill of Quantities as given below shall include design, fabrication, supply, installation, testing, commissioning and completion for all works specified herein and/or as shown on the Bidding Drawings related to the item.

6.2 LT Distribution Boards (DBs)

6.2.1 Measurement:

Measurement shall be made for the number of each LT Distribution Board acceptably supplied and installed by the Contractor as a complete job.

6.2.2 Payment:

Payment shall be made for the number of jobs measured, as provided above, at the Contract unit price each and shall constitute full compensation for design, fabricating, supplying, installing, connecting, testing and commissioning of the LT Distribution Boards, including fixing arrangement, adapter box and other components/accessories for complete installation.

*** End of Section 8133 ***

SECTION – 8150

LIGHT FIXTURES

1.0 SCOPE OF WORK

2.0 GENERAL

3.0 APPLICABLE STANDARDS/CODES

4.0 MATERIAL

5.0 INSTALLATIONS

6.0 MEASUREMENT AND PAYMENT

1.0 SCOPE OF WORK

The work under this section consists of supplying, installing, testing and commissioning of all material and accessories of the complete Light fixtures as specified herein and/or shown on the Tender drawings and given in the Bill of Quantities.

The Contractor shall discuss the electrical layout with the Engineer and co-ordinate at Site with other services for exact locations and positions of the light fixtures.

The lighting fixtures with accessories shall also comply with the General Specifications for Electrical Works, Section-8001 and with other relevant provisions of the Tender Document.

2.0 GENERAL

The description of light fixtures is given in the bill of quantities, and stated on the drawings, and all relevant material is described in this Section. The determination of quality is based on certified photo-metric data covering the coefficient of utilisation, light distribution curves, construction material, shape, finish, operation, etc.

The Contractor shall submit at least two samples of each and every light fixture specified and obtain approval of the Engineer before purchasing. The quality and finishes of the local make light fixtures (if mentioned in BOQ) shall be same as that of standard manufacturer. The accessories such as ballast, LED drivers, lamps, ignitors, etc., for all type of light fixtures shall be of make as stated in list of approved manufacturers. Approved equivalent against those specified will be accepted if the specified one is/will not be available. For any substitution the Engineer's approval is necessary.

All fixtures shall be finished in standard colour schemes as mentioned in the manufacturer's catalogue for respective fixtures, unless specifically stated in the Specifications, Drawings or Bill of Quantities or directed by the Engineer.

3.0 APPLICABLE STANDARDS/CODES

The latest editions of the following standards/codes shall be applicable to the material specified within the scope of this section:

IEC 60598-2-1-	Particular requirement- Fixed general purpose luminaire
IEC 60598-2-2-	Electrical Insulation Class I
IEC 62471 -	Photo biological Safety of lamps and lamps system
IEC 62031 -	LED modules for general lighting – Safety specifications

IESNA LM80	-	Testing report for LED Chips with TM21 extrapolation graph
IEC 61048 & 61049	-	Capacitors for use in TL, HP mercury and LP sodium vapour discharge lamp circuits.
IEC 60598 & BS EN 60598	-	Luminaires
BS 2560	-	Exit Signs
ISO 7010	-	Signs for the purposes of accident prevention, Fire protection, health hazard information and Emergency evacuation.

4.0 MATERIAL

4.1 LED Essential/Waterproof Batten Light Fixture:

The Contractor shall furnish and install the complete LED Batten luminaires replacement for complete single conventional 1x18W TL-D/1x36W TL-D & double 2x36W TL-D fluorescent batten. The batten light fixtures shall be of proper rating as shown on the drawings. The LED batten light fixture shall be 1200mm long for 36/28watts and 600mm long for 14watts respectively as specified.

The luminaire shall be cool white, with colour rendering and light colour of 840 characteristics. The luminaire shall have such distribution to achieve general lighting application parameters. The luminaire shall use high efficiency diffuser to achieve at least 50% energy savings compared to conventional fluorescent and waterproof light fixture. The luminaire shall offer a composite system efficiency of at least 90 Lumen/Watt for Essential LED batten and at least 100 Lumen/Watt for Waterproof LED batten having an average lumen package of up to:

3800 lumens ($\pm 5\%$) in 36W replacement for 2x36W waterproof TL-D Batten

2700 lumens ($\pm 5\%$) in 28W replacement for 2x36W fluorescent TL-D Batten

1350 lumens ($\pm 5\%$) in 14W replacement for 1x36W fluorescent TL-D Batten

The LED luminaire shall be designed for lumen maintenance of L70 or 70% at the end of useful life at ambient temperature of 25 deg. C. The complete luminaire shall have a useful life of 40,000 burning hours. The luminaire shall be suitable for ambient temperature range of between -20 to +40 degrees Celsius. Third party IEC 60598 Test Report shall be

measured/corrected for $T_a = 25$ degrees Celsius. The luminaire including the driver will include a warranty of at least 3 years against manufacturing defects.

The housing of Essential LED Batten light fixture will include integrated heat sink and optical system. The housing will be made of galvanized sheet having white Powder coated & suitable for indoor & semi-indoor environment. The optical cover made up of Polycarbonate with UV Protected Shielding cover. The fixing mechanism will be through clip made of Stainless steel. Appropriate size bushed wire entry holes, fixing holes, and earth terminal shall be provided. The driver shall be integrated within the luminaire.

The housing of Waterproof LED Batten light fixture will be made of Polycarbonate & extrusion process & suitable for outdoor environment. The optical cover made up of Polycarbonate with UV Protected Shielding cover. The product shall be protected against harsh industry environments IP65 rating for dust & water protection. The luminaire shall have no harmful effect against water projected from any direction. The luminaire shall have impact protection classified as IK07 operating temperature. The driver shall be integrated with the luminaire in a separate gear compartment with similar Index protection.

The internal wiring of LED batten light fixtures shall be done with heat resistant wires at the manufacturer's factory. The internal wiring shall be clipped properly and heat resistant sleeves be provided on cables passing near driver. Connectors suitable for connecting 2.5 sq.mm cable conductors shall be provided for supply connections. An earth terminal for connection to 2.5-sq.mm cable conductor shall be provided.

The light fixtures shall be furnished with Perspex diffusing panels "040 opal acrylic" (minimum sheet thickness 3mm) etc. as specified on the drawings or in BOQ. The luminaire shall have provision of both surface, Suspended mounting with dimension compatible to conventional florescent fixture. Mounting Clips for installation must be available.

IP degree of Protection shall comply with the requirements laid down in Section 8001. Standard luminaries with manufacturer's recommended modifications, such as additional gasket, etc., shall be provided to attain required protection level.

4.2 LED Smart Panel Light Fixture:

The Contractor shall furnish and install the complete LED Panel luminaires as replacement for complete double conventional 2x36W TL-D fluorescent light fixture. The Smart Panel shall be of proper rating as shown on the drawings. The LED Panel shall have dimensions of 297 x 1197 x 75mm/595 x 595 x 75mm for 36 watts respectively as specified.

The luminaire shall be cool white, with colour rendering and light colour of 840 characteristics. The LED shall have a colour consistency preferably within 5 SDCM (standard deviation of colour matching) as defined by McAdam. The colour temperature variation should be restricted as per ANSI C78.377A with CCT variation limiting within 500K for nominal CCT of 4000K / 6500K.

The luminaire shall offer a composite system efficiency of at least 110 Lumen/Watt and a lumen package of up to 3,800 lumens ($\pm 5\%$) in 36W replacement for 2x36W conventional TL-D fluorescent fixture. The luminaire shall use high efficiency diffuser and reflector to achieve at least 50% energy savings compared to conventional fluorescent light fixture.

The system should be designed for fully office lighting & possess higher uniformity to have a smooth white light of high colour consistency & high system efficiency. For the better UGR control one, the luminaire optics should fully comply with lighting norms with UGR value (Unified Glare Rating) < 25. The beam angle of the optic should be around 140°.

The LED luminaire shall be designed for lumen maintenance of L70 or 70% at the end of useful life at ambient temperature of 25 deg. C. The complete luminaire shall have a useful life of 50,000 burning hours. The luminaire shall be suitable for ambient temperature range of between -20 to +40 degrees Celsius. Third party IEC60598 Test Report shall be measured/corrected for $T_a = 25$ degrees Celsius. The luminaire including the driver will include a warranty of at least 3 years against manufacturing defects.

The housing will include integrated heat sink and optical system. The housing will be made of electrogalvanized cold rolled steel sheet, pre-treated, painted and stove enamelled in white colour & the fixture will be provided with a plastic cover that is aesthetical for the environment. The heat sink will design in such way to create better air-flow for better heat transfer. The light cover is made up of PMMA optics lens with PS diffuser & a suitable reflector for the best uniformity. Appropriate size bushed wire entry holes, fixing holes, and earth terminal shall be provided. The driver shall be integrated within the luminaire.

The internal wiring of LED batten light fixtures shall be done with heat resistant wires at the manufacturer's factory. The internal wiring shall be clipped properly and heat resistant sleeves be provided on cables passing near driver. Connectors suitable for connecting 2.5 sq.mm cable conductors shall be provided for supply connections. An earth terminal for connection to 2.5-sq.mm cable conductor shall be provided.

The luminaire shall have provision of recessed, surface or suspended mounting etc. as specified on the drawings or in BOQ with dimension

compatible to conventional florescent fixture. Mounting Clips for installation must be available. Shop drawings shall be submitted by contractor for approval of Engineer.

4.3 **LED Down Light Fixtures**

The Contractor shall furnish and install the surface mounted LED Downlight luminaires as replacement for single 1x18W or double conventional 2x18W PL-C incandescent/ compact fluorescent light fixture. The LED downlights shall be of proper rating as shown on the drawings. The LED Downlights shall have dimensions of 122/167/218mm dia. for 7/11.5/16 watts respectively as specified.

The luminaire shall be cool white, with colour rendering index greater than 80 and light colour of 840 characteristics. The Downlighter must be provided with a polycarbonate diffuser having high haze and light transmission for uniform light output. The beam angle must be in the ranges in between 95 to 100 degrees for better illumination.

The LED downlights shall have minimum system efficacy of at least 95 lm/W with 55% energy-saving as compared with conventional compact fluorescent lamp downlight fixtures and shall have a useful life of 50,000 burning hours for 70% lumen maintenance at the end of useful life at ambient temperature of 25 deg. C.

The downlighter shall have high reflectance white painted polycarbonate front element or High purity aluminium with high reflectance coated reflector along with tempered glass on the front cover. The housing will include integrated heat sink and optical system. The heat sink made with Die Cast Aluminum should be design in such way to create better air-flow for better heat transfer as furnished by the manufacturer or as specified in the drawings or BOQ. The fixing mechanism of recessed down light will be through spring fasteners.

Where surface mounted downlights are used, the housing will be made of Plastic and enclosed in white powder coated die-cast aluminium body for surface mounting installation. The body shall have fins as heat sink.

The types of fixtures with manufacturer's catalogue reference are given on the fixture schedule and in bill of quantities. Equivalent fixture may be acceptable provided that the contractor submits for review all necessary data indicating photometric curves to show that the fixture proposed are of the same type, construction and quality.

4.4 **Compact Fluorescent Light Fixtures**

The compact fluorescent light fixtures shall be as stated on drawings and bill of quantities. The light fixture shall be finished in standard colours

unless otherwise stated on drawings or directed by Engineer. All compact fluorescent light fixtures shall be of international standard and quality.

The lamps for compact fluorescent light fixtures shall be CFL type with normal or electronic control gear and shall be supplied and installed according to the wattage/type as indicated on drawings.

Weatherproof bulkhead incandescent/compact fluorescent light fixture shall comprise of plastic body and gasketed clear glass cover secured to the body by means of wing nuts/screws to give a weatherproof and watertight fit. The gasket shall be weather resistance type. The lamp holder shall be of bi-pin brass having porcelain outer ring or 2/4-pin base for compact fluorescent lamps with normal control gear as per requirements.

The glass shade of the light fixtures shall be opal white or clear as furnished by the manufacturer with the light fixture unless specified and free from any air bubbles or voids. The shade may be spherical, cylindrical, flattened bottom or any other shape as specified in the drawings or BOQ.

4.5 Exit Sign – Emergency Light Fixture

The exit sign emergency light fixture shall be maintained type with self contained, polycarbonate body, Gear Type and sealed nickel metal hydride batteries providing a backup of atleast 3 hours if not mentioned otherwise elsewhere. The light fixture shall have steel body powder coated in perma white finish, complete with screen printed acrylic legend panel. 2 X High Power 1W LED lamp and give 20 m route space. Legend panel shall be bottom entry for case of installation near walls. The legend pictogram shall be green colour and as approved by the Engineer.

4.6 LED Flood Light Fixture

The Contractor shall furnish and install the complete Boundary Wall luminaires maintaining avg. 30 lux for existing outdoor mixed traffic area, fully IP 66 with corrosion resistant die cast aluminum housing, silicon gas kit, thermally hardened glass complete with LED drivers, surge protection and all accessories/ components required for the proper operation of the system. The luminaries shall be fully flexible for future upgrades and easy replacements for maintenance purposes.

The luminaire shall have such distribution to achieve flood lighting application parameters. The luminaire shall offer a composite system efficiency of at least 100 Lumen/Watt and a lumen package of up to 13,000 for 120W+/-5W. The light fixture has three different optical beam angles Symmetric Wide Beam & Asymmetric Medium Beam & Narrow Beam optics according to application.

The LED light fixture should be designed for lumen maintenance of L70 or 70% at the end of useful life at ambient temperature of 45 °C and shall be capable to operate efficiently within the temperature limit of -40 °C to 50 °C. The complete light fixture should have useful life of 50,000 burning hours.

4.7 High Pressure Sodium Lamp

The high-pressure sodium SON-T plus lamp shall be of increased output tubular of rating 70 Watt and 400 watt as shown on the drawings. The base of the lamp shall be E40 with 6600 and 55,000 lumens output for 70 Watt and 400 Watt lamps respectively. The colour-rendering index Ra shall be 23. These lamps shall comply with EN60662.

4.8 Ballast for High Pressure Sodium Lamps

The ballast for high pressure Sodium lamps shall be polyester resin filled, totally encapsulated electromagnetic of copper / iron construction with leak proof body for use in combination with an external ignitor. The ballast shall fully comply with international Standards on Safety and performance, design compliance to IEC 60922/60923. The ballast shall be suitable for application in luminaires or poles under normal humid conditions. The ballast shall conform to the characteristics and wattage of the lamps. The wattage of lamp and ballast and a wiring diagram and other relevant data shall be printed on the body of the ballast. The power loss of the ballast shall not be more than 13.5-Watts for 70-Watts lamp and 28-Watts for 400-Watts lamp. The ballast shall be provided with insulated block of terminals for connecting up to 6 sq.mm cable with separate earth terminal.

4.9 Electronic Ignitors for High Pressure Sodium Lamps

The electronic ignitors for high-pressure sodium lamps shall be compact and light in weight with reliable and smooth starting behaviour. The ignitors shall be suitable for specified wattage of high-pressure sodium lamps and other requirements. The ignitors shall fully comply with IEC 60662 and EN 60926 regulations. The ignitors shall be provided with screw terminal / blocks and simple stud or screw mounting arrangement.

4.10 Capacitors for High Pressure Sodium Lamps

The capacitors for use in combination with high-pressure sodium lamp circuits shall be high-quality electrolytic capacitors for correction of power factor. The capacitors shall be of appropriate rating and type for the relevant lamp wattage. All capacitors shall be fitted with an internal discharge resistor, have a fuse fitted and be of self-healing type. Capacitor shall conform to IEC 61048/61049.

4.11 Flood Light Lanterns

The flood light lanterns shall have lamps of ratings specified in BOQ/ Drawings and shall be fully equipped with high grade reflector, corrosion proof housing with integral gear box, (Double insulation Class-II), compensated electrical control gear etc. complete with all internal wiring.

The flood light lanterns shall have non-corrosive, injection moulded, heat and UV-stabilized body, hammered aluminium reflector brightened and anodised, thermally – hardened 5 mm minimum glass, stainless steel snap-on hinged-clips, stainless steel protractor, hot dipped galvanized steel mounting brackets and stainless steel fixing accessories.

The housing shall be dust proof and jet proof to IP66, such that no internal cleaning shall be required.

4.12 LED Street Light Fixture

The road light fixture shall be an attractive modern appearance, high performance lantern suitable for 90W or 200W LED lamp as given in the BOQ/drawing.

Light fixture shall be provided with solid die cast aluminium housing, heat resistant silicon rubber gasket in optical LED compartment, DME type optic, tampered glass cover and shall be coated with powder of colour RAL 7040 ensuring no discoloration when exposed to UV light.

The light fixture shall be designed to receive power either from the battery or from the AC source. The light fixture shall have the following characteristics:

Voltage	=	220-240 VAC
Surge Protector	=	10 kV
Power Factor	>	0.9 (nominal power)

The light fixture shall have IP 66 protection to ensure long reliable performance and minimize maintenance requirement and an Impact resistance of IK 08 with insulation Class I. Use of chemical glue shall NOT be allowed to avoid probable breakdown of water-proof and dust-proof seal.

The light fixture should have a minimum color rendering index (Ra) of 70 + 5 and a color temperature of 4000K for maximum efficacy with an average output of at least 10,000 lumens for 90 Watt and 22,000 lumens for 200 Watt LED Fixture. The LED should have a color consistency within 5 SDCM (Standard Deviation of Color Matching). The color temperature variation of the LEDs should be restricted as per ANSI

C78.377A with CCT variation limiting within 500K for nominal CCT of 4000K.

The LED light fixture should be designed for lumen maintenance of L70 or 70% at the end of useful life at ambient temperature of 45 °C and shall be capable to operate efficiently within the temperature limit of -40 °C to 55 °C. The complete light fixture should have useful life of 50,000 burning hours.

The light fixture shall be fully compatible with future LED upgrades when they become available. It shall have a modular design to upgrade / replace with new LED modules or LED drivers at site conveniently with minimum effort. All electronic components/drivers shall be mounted on a separate removable gear tray. Light fixture housing shall have a tool less access by opening the cover.

The proposed LED road lighting light fixture shall be provided with in-built surge protection system to protect the electronic driver and LED system. Minimum surge protection rating is 10kV.

The housing shell, under the circuit board, shall be specially designed to ensure perfect contact between the circuit board and the light fixture housing for efficient heat dissipation. Only Metal Core PCBs shall be used to maximize heat transfer process and to offer reinforced electrical insulation via di-electric layer. The Metal Core PCB should be mounted on the housing using a highly efficient thermal interface material.

The optical LED compartment shall have a thermally hardened glass cover and high quality silicon gasket. The Glass cover will be tightly secured with the housing. The light fixture should have flexible optical system to achieve lighting parameters for required class of roads. The light fixture should offer a composite system efficiency of at least 100 lumen/Watt.

Specially designed lens system with unique inner and outer profile for high efficiency LED shall be provided to ensure maximum spacing between the poles and cover higher road widths. Multi layer optics design to ensure adequate luminance and luminance uniformity in the unlikely event of individual LED failure. The light fixture should offer choice of narrow, medium and wide beam light distribution.

The lamp position shall be adjustable to at least three positions to facilitate the changing of photometric distributions.. The photometric data of the lantern shall be authenticated by an Internationally Accredited Lighting Organisation.

Luminance level calculation with average luminance of the road surface, overall uniformity of road luminance, threshold increment, longitudinal

uniformity of road surface luminance and surround ratio achieved shall be submitted by the Contractor / manufacturer for verifying conformance to international lighting standards and approval of the Engineer.

4.13 LED Chips and Driver

The LED chip shall be from Cree / Nichia / Lumileds make or approved equivalent. The LED driver shall be designed to operate large array of high power LED's through current controlled output. The driver shall be suitable for operate up to 250VAC 50/60Hz mains supply. The LED driver shall have an efficiency of at least 90%. Fixed Output LED Driver (PSU) shall be integrated within each LED luminaire. The Driver compartment cavity and gear tray shall be designed with tool-less access for maintenance and replacement.

The light fixtures including the driver will include a warranty of at least 3 years against manufacturing defects. The cost of such provision will deemed to have been respective BOQ item of light fixture and no separate payment shall be admissible in this regard.

The LED driver shall fully conform to following specifications:-

- 1) BS-EN 61347-1 - General and safety requirements.
- 2) BS-EN 61347-2-13 - Particular requirements for DC or AC supplied electronic control gear for LED modules.
- 3) BS EN 55015: 2013 – Emission – Electrical lighting and similar equipment
- 4) BS EN 61547: 2009 – Immunity – Equipment for general lighting purpose
- 5) BS EN 61000-3-2: 2009 – Limits for harmonic currents emissions.
- 6) BS EN 61000-3-3: 2008 – Limits for voltage fluctuation and flicker.
- 7) BS EN 62493 – Assessment of lighting equipment related to human exposure to electromagnetic fields

5.0 INSTALLATION

5.1 General

The mounting heights of light fixtures are indicated on the drawings, and positions of fixtures are according to the mentioned scale.

The Contractor must ensure that the light fixtures are installed uniformly with respect to the dimensions of the area. Any modifications due to site conditions may be made with the approval of Engineer. All fixtures shall be carefully aligned before fixing in position.

The wiring between ceiling rose or terminal box and the fixture shall be carried out with 3-core 1.0 sq.mm and 1.5-sq.mm flexible copper

conductor PVC/PVC cable respectively for circuits protected by 10 amps and 15/20 amps MCBs. The wiring inside light fixture body shall be done with heat resistant cables or PVC insulated cable in heat resistant sleeves as approved by the Engineer.

Glasses, shades, reflectors, diffusers, etc., must be in a clear condition after installation. All light fixtures shall be earthed by an earth wire connected to the earth terminal in the fixture.

5.2 Street Light / Flood Light Fixture

The proposed street light fixture / flood light fixture shall be installed on the light pole/mast as per manufacturer's installation instructions. The road light fixture shall be properly levelled and the lamp adjusted to the appropriate position and all screws, bolts checked for tightness, etc. The light fixture shall be connected to the supply and earth at the proper terminals in the fixture.

5.3 Flood Light Lanterns

The flood light lanterns shall be installed on truss/G.I. bracket as per details shown on the drawing. Manufacturer's installation instructions shall be followed. The G.I. bracket shall be installed on column as shown on drawing. The exact location, rating and tilt/pan angles of light fixtures shall be finalized at site to suit the flood lighting requirements. Engineer's decision will be binding and final.

5.4 LED Batten / Panel Light Fixture:

LED Batten or Panel light fixtures on the surface of ceiling shall be installed with the back of the body flush with the ceiling surface, and in a manner so as to facilitate wiring. Nylon plugs and galvanized steel bolts or screws shall be used for fixing the light fixture to the ceiling. For light fixtures installation on false ceiling the installation method/detail shall be coordinated with ceiling design and submitted for approval of Engineer. Care shall be taken to prevent the weight of the fixture from being transferred to the false ceiling.

Pendant light fixtures shall have two holes in the top of each casing for supporting to the ceiling by a 3/4" dia. galvanized pipe or any other standard method as approved by the Engineer. Wiring from ceiling rose to the fixture shall be done through the pipe. Proper arrangements such as long threads with check nuts, etc. for minor adjustment in the mounting heights of the fixtures shall also be provided.

5.5 LED Down Light Fixture

LED downlight fixtures shall be installed on the surface of ceiling or wall by means of nylon plugs and galvanized steel screws, such that their

back finish flush with the surface for exposed conduits and flush with outlet box for concealed conduit system. Wherever convenient, screws for fixing light fixtures shall be screwed into the holes of the outlet box. The lights on false ceiling shall be installed in a manner as described for LED Panel light fixture.

6.0 MEASUREMENT AND PAYMENT

6.1 General

The Contractor's bid amount against each Bill of Quantities item as given below shall include supply, installation, testing, commissioning and completion for all work specified herein and/or shown on the Bidding Drawings related to the item.

6.2 LED Batten / LED Smart Panel / LED Downlight / LED Exit Light / CFL Bulkhead / LED or Conventional Flood Light/ LED Street Light Fixture

The Contractor's bid amount against each Bill of Quantities item as given below shall include supply, installation, testing, commissioning and completion for all work specified herein and/or shown on the Bidding Drawings related to the item.

6.2.1 Measurement

Measurement shall be made for each type of light fixture including all accessories acceptably supplied and installed by the Contractor as complete unit.

6.2.2 Payment

Payment shall be made for the number of units measured as provided above at the contract unit price each and constitute full compensation for supplying, installing, connecting, testing and completion of LED Battens / LED Smart Panel / LED Downlight / LED Exit Sign / compact fluorescent Bulkhead including all accessories such as capacitors , LED drivers, LED Chips, LED optics, connecting cables & connectors, suspension rods and pendent arrangement, GI pipe bracket, ceiling supports, internal wiring, nuts, bolts, screws, etc., as required and complete in all respects.

6.3 High Pressure Sodium Flood Light/ LED Flood Light / LED Street Light Fixture

The Contractor's bid amount against each Bill of Quantities item as given below shall include supply, installation, testing, commissioning and

completion for all work specified herein and/or shown on the Bidding Drawings related to the item.

6.3.1 Measurement

Measurement shall be made for each type of light fixture including all accessories acceptably supplied and installed by the Contractor as complete unit.

6.3.2 Payment

Payment shall be made for the number of units measured as provided above at the contract unit price each and constitute full compensation for supplying, installing, connecting, testing and completion of High Pressure Sodium Flood Light / LED Flood Light Fixtures/ LED Street lights including all accessories such as ballasts, capacitors, igniters, LED drivers, nuts, bolts, screws, etc., including PVC pipe, foundation etc., as required and complete in all respects.

*** End of Section 8150***

SECTION – 8163

EXTERNAL TELECOMMUNICATION NETWORK

1.0 SCOPE OF WORK

2.0 GENERAL

3.0 APPLICABLE STANDARDS/CODES

4.0 MATERIAL

5.0 MEASUREMENT AND PAYMENT

1.0 SCOPE OF WORK

The work under this section consists of supply, installation, testing and commissioning of all equipment, material, accessories and services for External Telecommunication Network as required for connection of the various buildings of the Project.

The work shall be complete in all respect as described in these specifications, drawings, B.O.Q and in accordance with International Organization for Standardization (ISO) and Telecommunications Industries Association (TIA) recommendations.

The Contractor shall discuss the External Telecommunication Network with the Engineer and co-ordinate at site for exact locations and positioning of the equipment and routing of cables, etc. as required.

2.0 GENERAL

External Telecommunication Network Includes following:

- Distribution Switch
- Regional Telephone Server (RTS) if required.
- Connection of Distribution Switch to Buildings.
- All passive equipment comprising Fiber Optic Cables, Cat 6A Copper Cables, Patch Panels, Patch Cords, Racks as required.
- Uninterruptible Power Supply (UPS) System
- Work Station if required.
- Fibre Optic Cable
- Class D uPVC pipe
- Civil Work as required for underground Class D uPVC Pipes and modules.

3.0 APPLICABLE STANDARDS/CODES

The latest editions of the following standards/codes shall be applicable to the material specified within the scope of this section:

IEEE 802	Class of Service, Multiple VLANs, Spanning tree protocol, Rapid spanning tree protocol, Port aggregation
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ISO	International Organisation for Standard
EIA/TIA	Electronic Industries Association / Telecommunication Industries Association

4.0 MATERIAL

4.1 Copper Cable

Copper cable will be 100 Ohm impedance. The cable will be Category 6A to match the system specification. The cables will be available in 4 pair or 2 x 4 pair.

The cable shall have the following performance:

Conductor diameter	:	23 AWG (0.560 mm)
Conductor resistance at 20°C (max)	:	< 98.6 Ω /km
Dielectric strength at 50 Hz	:	1 kV / 1 min
Insulation resistance (min.)	:	> 5000 m Ω / km
Characteristic impedance	:	100+15% from 1 to 100 MHz
Sheath material	:	LSZH

4.2 Optical Fibre Cable

Optical Fibre cable shall be available with 9um / 125um single mode (OS2) fibre cable. Cable must be available for indoor / outdoor use for campus backbones.

Rodent resistant cable and armoured must be available for use where required. The cable shall have the correct number of pairs appropriate for the position of the cable in the network. For horizontal cabling two pairs of fibres shall be available, for backbone and campus network cable sizes up to 24 fibres shall be available. Individual fibres must be capable of being easily identified by colour coding.

The single mode cable shall operate at both 1310nm and 1550nm with the following minimum performance.

Optical performance of the Cable:

- Single mode 9/125um cable (1310 / 1550nm): $\leq 0,40 / 0,40$ dB / km

Mechanical Performance:

- Cable minimum bend radius
 - Indoor cable: 20 times cable diameter, during installation and 10 times cable diameter, after installation.
 - Indoor / outdoor: 25 times cable diameter, during installation and 20 times cable diameter, after installation.
- Minimum bend radius in the TO : 20mm
- Operating temperature range: 10 to +60° C

4.3 Copper Connectors

The copper jacks must comply with EN 60603-7 and EN 28877 and be of the insulation displacement type. They are must be capable of terminating 0.50 to 0.65 solid and 7 x 0,15 to 0,20 mm stranded wires.

The jacks have the following features

- Tool less assembly
- Capable of being wired to both 568B and 568A
- Flexible cable entry
- UTP version as appropriate
- Category 6A
- Integral shutter

The jacks have the following performance:

- Lead-through resistance $17 \text{ m}\Omega < \text{Resistance} < 20 \text{ m}\Omega$
- Insulation resistance $> 10 \text{ m}\Omega$
- Maximum diameter of the wire sheath 1,60mm
- Cat 6A (at 500 MHz)
 - Attenuation $< 11.2\text{dB}$
 - Return loss $\geq 12.6\text{dB}$
 - NEXT $\geq 32.3\text{dB}$

4.4 Fiber Connectors

The fibre connectors must comply with IEC 61754. The fibre socket must have the following features:

- Small form factor connector
- Duplex
- High density

- Field terminated in under two minutes
- Integral shutter for dust protection and optical safety
- Plastic body parts

4.5 Telecommunication Wall Outlets

Wall outlets must be available to suit the local needs with at least two RJ45 sockets. The wall outlets should be fully shuttered. The copper outlets must be capable of being flush mounted. Wall outlets must have space for visibly labeling each jack or socket.

4.6 Patch Cables

RJ-45 copper patch cords shall be Category 6A. The copper patch cords must be made from stranded wires for full flexibility. They must comply with ISO 11801. The patch cords must be available in a range of lengths to facility easy patch cord management.

The fibre patch cords must be made from duplex ruggedised cable. The fibre core and cladding sizes must be of the same nominal value as the cable to ensure lowest channel loss. The plugs on the ends must be appropriate for those on the permanent link and on the active equipment. The patch cords must be available in a range of lengths to facility easy patch cord management.

4.7 Patch Panels

19" panels must be available to take a minimum of 24 copper loaded RJ45 jacks or 24 duplex fibre connections per IU. Other connection densities must be available.

Copper	:	16, 24, 48 per panel
Fiber	:	12, 24, 48 per panel

The fibre Patch panels will have fibre cable management and slack storage for fibre cables and ensure that the minimum bend radius is not exceeded.

Fibre panels must be able to manage a range of cable sizes form 2 fibre to 96 fibre cables. They must be sliding or front loading to ensure easy access to the fibre.

For fibre wall mounted options for 6, 12 and 24 fibres must be available for SOHO or backbone installation.

Panels must have the facility to label each socket/jack.

Coloured identifiers shall be available in at least 4 colours to allow visible identification of jacks / sockets.

Blanking plugs for unused ports must be available to suit the patch panel colour.

4.8 Patch cord Management

IU Patch cord management panels shall have a minimum of 5 rings to accommodate up to 72 patch cords.

4.9 19" Cabinet / Rack

Cabinet shall be 19 inch, with tie and retainers for cabling system, 800 mm x 600 mm cabinet shall be suitable to install:

- Optical patch panel for fibre optic;
- A cabling guide system in each internal side of the cabinet for the front side;
- A cabling guide system in each internal side of the cabinet for the backside;
- An earthing point, multi-socket strip for supply power to the active equipment;
- Metallic door shall be provided with key locking capabilities.

4.10 Workstation

Latest industrial standard workstation with all required accessories for operation of University Area as specified (if required) shall be provided with wireless keyboards, mouse, video card, sound card, 10/100/1000 Base T Ethernet Port, latest operating system including antivirus software.

4.11 Uninterruptible Power Supply (UPS) System

The ON-LINE uninterruptible double conversion power supply system shall be as per IEC 62040-1, IEC 62040-2 and IEC 62040-2. The UPS system shall be designed to supply uninterrupted, conditioned electrical power to the communication equipment.

The system shall consist of complete UPS units, each comprising a rectifier / charger and inverter, static bypass switch, a maintenance bypass switch and battery panel.

The UPS system shall supply continuous, ON-LINE electrical power within specified tolerance limits to the connected load, upon failure or deterioration of the normal mains supply, ensuring uninterrupted clean electrical power to the load in accordance with the specified battery autonomy.

UPS shall have following minimum technical features:

- Output power factor : 0.9
- Input power : 3 phase
- Output power : single phase
- Efficiency in double conversion (full load): 92%
- Efficiency in double conversion (half load): 90%
- Efficiency in high Efficiency mode: up to 98%
- Nominal Voltage rating (Input): 400 Volt / 50 Hz
- Nominal Voltage rating (output): 220 Volt / 50 Hz
- Battery type: Maintenance free VRLA Batteries, NiCd (or as specified in BOQ).

5.0 MEASUREMENT AND PAYMENT

5.1 General

The Contractor's bid amount against each Bill of Quantities item as given below shall include supply, installation, testing, commissioning and completion for all work specified.

5.2 Layer-3 Managed Distribution Switch

5.2.1 Measurement

Measurement shall be made for each type of Layer-3 Managed Distribution Switch with supervisor, dual power supply, loaded with 24 x 10/100/1000 RJ45 copper transceivers card, (SFP) transceiver module loaded in 24 port Giga E (SFP) card, 10 Giga E BASE-LX/LH uplinks ports with Slot chassis, fans and power sockets as required complete in all respect acceptably supplied and installed by the Contractor.

5.2.2 Payment

Payment shall be made for each type of Layer-3 Managed Distribution Switch with supervisor, dual power supply, loaded with 24 x 10/100/1000 RJ45 copper transceivers card, 1000 BASE-LX/LH (SFP) transceiver module loaded in 24 port Giga E (SFP) card, 10 Giga E BASE-LX/LH uplinks ports with Slot chassis, fans and power sockets as required complete in all respect measured as provided above at the Contract unit price and shall constitute full compensation for supply, installing, programming, configuration software license, testing and commissioning of the each type of Layer-3 Managed Distribution Switch with supervisor, dual power supply, loaded with 24 x 10/100/1000 RJ45 copper transceivers card, 1000 BASE-LX/LH (SFP) transceiver module loaded in 24 port Giga E (SFP) card, 10 Giga E BASE-LX/LH uplinks ports with Slot chassis, fans and power sockets and connection of Distribution as required complete in all respect including all accessories as specified.

5.3 **Single Mode 9um / 125um (OS2) Fibre Optic Armoured PE Jacket Cable**

5.3.1 Measurement

Measurement shall be made for total running feet for each type Single Mode 9um / 125um (OS2) Fibre Optic Armoured PE Jacket Cable acceptably supplied and installed by the Contractor.

5.3.2 Payment

Payment shall be made for total feet for each type Single Mode 9um / 125um (OS2) Fibre Optic Armoured PE Jacket Cable measured as provided above at the Contract unit price and shall constitute full compensation for supply, installing, laying, connecting, testing & commissioning of the each type of Single Mode 9um / 125um (OS2) Fibre Optic Armoured PE Jacket Cable including all accessories as specified.

5.4 **Cat 6A Copper Cable**

5.4.1 Measurement

Measurement shall be made for total running feet for each type Cat 6A Copper Cable acceptably supplied and installed by the Contractor.

5.4.2 Payment

Payment shall be made for total running feet for each type of Cat 6A Copper Cable measured as provided above at the Contract unit price and shall constitute full compensation for supply, installing, laying, connecting, testing & commissioning of the each type of Cat 6A Copper Cable including all accessories as specified.

5.5 **RJ 45 Copper Socket / LC Duplex Fiber Connectors**

5.5.1 Measurement

Measurement shall be made for each type of RJ 45 Copper Socket / LC Duplex Fiber Connectors acceptably supplied and installed by the Contractor.

5.5.2 Payment

Payment shall be made for each type of RJ 45 Copper Socket / LC Duplex Fiber Connectors measured as provided above at the Contract unit price and shall constitute full compensation for supply, installing, testing and commissioning of the each type of RJ 45 Copper Socket / LC Duplex Fiber Connectors including all accessories as specified.

5.6 **Patch Cord / Pigtaills**

5.6.1 Measurement

Measurement shall be made for each type of patch cord / pigtaills acceptably supplied and installed by the Contractor.

5.6.2 Payment

Payment shall be made for each type of patch cord / pigtaills measured as provided above at the Contract unit price and shall constitute full compensation for supply, installing, testing and commissioning of the each type of patch cord / pigtaills including all accessories as specified.

5.7 **Patch Panel**

5.7.1 Measurement

Measurement shall be made for each type of fibre duplex single mode patch panel with loaded LC duplex connectors / RJ 45 Cat

6A UTP loaded connectors in patch panel with built-in rear cable management acceptably supplied and installed by the Contractor.

5.7.2 Payment

Payment shall be made for each type of fibre duplex single mode patch panel with loaded LC duplex connectors / RJ 45 Cat 6A UTP loaded connectors in patch panel with built-in rear cable management measured as provided above at the Contract unit price and shall constitute full compensation for supply, installing, testing and commissioning of the each type of fibre duplex single mode patch panel with loaded LC duplex connectors / RJ 45 Cat 6A UTP loaded connectors in patch panel with built-in rear cable management including all accessories as specified.

5.8 **19" Cabinet / Rack**

5.8.1 Measurement

Measurement shall be made for each type of 19" Cabinet / Rack acceptably supplied and installed by the Contractor.

5.8.2 Payment

Payment shall be made for each type of 19" Cabinet / Rack measured as provided above at the Contract unit price and shall constitute full compensation for supply and installing of the each type of 19" Cabinet / Rack including all accessories as specified.

*** End of Section 8163***

SECTION – 8212

LOW TENSION CABLES

1.0 SCOPE OF WORK

2.0 GENERAL

3.0 APPLICABLE STANDARDS/CODES

4.0 MATERIAL

5.0 INSTALLATIONS

6.0 MEASUREMENT AND PAYMENT

1.0 SCOPE OF WORK

The work under this section consists of supplying, installing, testing and commissioning of all material and services of low tension (LT) cables and the accessories as specified herein or as shown on the Bidding Drawings and stated in the Bill of Quantities.

The Contractor shall discuss the electrical layout with the Engineer and coordinate at site with other services for exact route, location and position of the L.T. cables.

The LT cables with accessories shall also comply with the General Specifications for Electrical Works, Section-8001 and with other relevant provisions of the Bidding Document.

2.0 GENERAL

All multi-core and single core PVC insulated and sheathed cables for light circuits, socket outlets and circuits operating upto 250 volts shall be 300/500 volts grade. All single core PVC insulated, non-sheathed cables shall be of 450/750-volt grade. Power cables for main feeders, main to sub main feeders, power equipment, etc., armoured or unarmoured shall be of 600/1000 volt grade/XLPE. Armouring of multi-core/ single core cables shall be done with appropriate size galvanized steel/aluminium wire as per relevant codes.

The conductors shall be stranded high conductivity, soft annealed copper. Conductors of single core cables shall be circular, whereas of multi-core cables may be circular or shaped according to standard practices and codes. The PVC insulation, bedding and overall sheath shall be of extruded PVC compound having good flexibility, resistance to ageing and ability to withstand deformation at high temperatures. Non-hygroscopic filler shall be provided in multicore cable to fill empty gaps between the cores to make the cable a smooth round finish. In all shaped cables a non-hygroscopic high strength binding tape shall be provided on the core assembly. All cables shall be treated for vermin proofing and be protected against rodents during storage, laying and all protective pipe/sleeves shall be plugged to attain the same after installation.

Embossed marking on the oversheath at 3 meters intervals shall give the following information:

- name of Manufacturer
- year of Manufacture
- No. of cores and size of cable in sq.mm.
- voltage grade
- type of cable i.e. Cu./PVC/SWA/PVC

3.0 APPLICABLE STANDARDS/CODES

The latest editions of the following standards and codes shall be applicable for the materials specified within the scope of this section:

BS 6004	-	Electric cables PVC insulated, non armoured cables for voltages upto and including 450/750 volts for electric power, lighting and internal wiring
BS 6346	-	Electric cables PVC insulated, armoured cables for voltages of 600/1000 V and 1900/3300 V
BS 6746	-	PVC insulation for electrical cables
BS 6360	-	Copper conductors
BS 6500	-	Insulated flexible cords
BS 7846	-	Electric cables 600/1000 V armoured fire resistant cables having thermosetting insulation and low emission of smoke and corrosive gases when affected by fire
BS 7889	-	Electric cables. Thermosetting insulated, unarmoured cables for a voltage of 600/1000 V
BS EN 50266	-	Common test methods for cables under fire conditions

4.0 MATERIAL

4.1 General

The power, lighting and control cables shall be furnished and installed in accordance with the routes and requirements shown on the drawings.

All cables shall have phase identification colours on insulation of each core. The colour code for three phase circuits shall be red, yellow and blue for phase conductors and black for neutral conductor. Where insulated earth conductor is installed, it shall have green or green-yellow colour insulation.

Single-phase circuits shall have insulation of red colour for phase/line, black colour for neutral and green or green-yellow colour for earth conductor. All DC circuits shall have insulation of white colour for positive, black colour for negative and green or green-yellow colour for earth conductor.

The ends of each length of multi-core armoured or unarmoured cables shall be properly marked for clock-wise and anti clock-wise sequence of core colours.

4.2 Cables for Conduit or Channel Wiring

All cables/wiring in concealed or surface mounted PVC conduits or in covered channel shall be single core PVC insulated LSZH of specified grade and size, unless specifically shown on the drawings or given in BOQ.

The contractor shall wire all power receptacles/points from the panels using copper stranded conductor having proper insulation and PVC sheathing. Under no circumstances shall wire pulling compound be used when pulling the wire for isolated circuits. All wiring shall be color-coded in accordance with applicable standards.

4.3 Cables on surface/concrete trenches/cable trays

Cables for distribution system to be installed on surface, in cable ducts, in concrete trenches or on trays shall be single or multi-core PVC insulated and PVC sheathed of specified voltage grade and size, unless specifically shown on the drawings or given in BOQ.

4.4 Cable Accessories

All cable accessories shall be provided for the complete cabling and wiring system without any additional cost unless specifically mentioned in BOQ. These shall include but not limited to the items such as saddles, clamps, fixing channels, connectors, cable joints (where necessary and as approved by the Engineer), clips, lugs, colour sleeves, identification tags, bushes, glands, etc.

5.0 INSTALLATION

5.1 General

All installation material, labour, tools, cable rollers and accessories for cable installation shall be furnished by the Contractor. The cable and accessories shall be installed as described in accordance with these Specifications, drawings and manufacturer's instructions.

The Contractor shall confirm the exact cut lengths for cable by actual measurements at site prior to the ordering. The cable lengths where shown on the drawings or in BOQ are tentative and only for general guidance. The Contractor shall be solely responsible for furnishing

correct lengths of cable to avoid joints in cable length except where necessary, after obtaining approval of the Engineer.

No separate payment for such joints is admissible.

Necessary precautions for safety of cables shall be taken during the laying of cables to avoid scratches/ cuts to the cable surface. Pulling force on cable at all times shall remain well within the manufacturer's recommended limits.

Prior to installation of jointing and termination kits, the cable lengths shall be checked and tested to ensure that the cables are in sound condition, and no damage has been done during handling and installation. After installation, these shall again be tested prior to commissioning as per recommendations of the standards according to which the cable is manufactured.

5.2 Conduit or Channel Wiring

The wiring through conduit shall be started only after the conduit and channel system is completely installed and all outlet boxes, junction boxes, etc., are fixed in position.

The wires shall be pulled in conduit or channel with care, preferably without the use of any lubricant. Where necessary and if approved by the Engineer, the cable manufacturer's recommended lubricant may be used. Where several wires are to be installed in the same conduit, they shall be pulled together along with the earth conductor. All wires of same circuit shall be run in one conduit.

The wires shall not be bent to a radius less than ten times the overall diameter of the wire, if otherwise recommended by the manufacturer.

The wiring shall be continuous between terminations and looping-in system shall be followed throughout. Any joint in wires shall not be allowed. The use of connectors shall only be allowed at locations where looping-in is rendered difficult. The consent of the Engineer shall be required for using connectors. The connector shall be of suitable rating having porcelain body with sunk-in screw terminals. The connector shall be wrapped with PVC insulation tape after its installation. A minimum of 150 mm extra length of cable/wire shall be provided at each termination to facilitate repairs in future.

5.3 Cables on Surface/Trenches/Cable Trays

All cables for installation on surface of wall, column, ceiling, trenches, etc., shall be fixed to the surface by means of galvanized steel clips secured to a steel channel using suitable stud plate, nuts and washers. The distance between each cable clip shall be such so as to support the

entire weight of the cable and that distance between the cable & surface and also the vertical clearance between two adjacent cables at any point is 50mm minimum. Common mounting channels are to be furnished for cable along the same route. The Contractor can offer alternate cable fixing arrangement, which shall be approved by the Engineer before commencement of installation.

6.0 MEASUREMENT AND PAYMENT

6.1 General

The Contractor's bid amount against each Bill of Quantities item as given below shall include supply, installation, testing, commissioning and completion for all work specified herein and/or as shown on the Bidding Drawing related to the item.

6.2 Light Circuit Wiring

6.2.1 Measurement

Measurement shall be made for the total number of light circuit wiring from LT distribution board to point/switch/push button including wiring between switches/push buttons on the same circuit, acceptably carried out by the Contractor as a complete unit.

6.2.2 Payment

Payment shall be made for the total number of units measured, as provided above, at the Contract unit price each and shall constitute full compensation for supplying, installing, connecting, testing, commissioning and completion of the circuit wiring from the LT distribution board to point/switch/push button including wiring between switches/push buttons on the same circuit complete with specified type of surface mounted/concealed conduit, (PVC or steel) required No. specified size single core PVC insulated cable, earth continuity conductor, accessories, etc.

6.3 Wiring of Light/Fan Point (Point to Switch/ Impulse Relay, Point to Point, or Group Controlled Light Points)

6.3.1 Measurement

Measurement shall be made for the total no. of wiring of light/fan points (point to switch, point to point, or group controlled light point), acceptably carried out by the Contractor as a complete unit.

6.3.2 Payment

Payment shall be made for the total number of units measured, as provided above, at the Contract unit price each, and shall constitute full compensation for supplying, installing, connecting, testing, commissioning and completion of the wiring between light point to switch/ impulse relay, point to point or group controlled points including required no. of specified size single core PVC insulated cable, specified type of surface mounted/concealed conduit (PVC or Steel), earth continuity conductor, flexible cable, ceiling rose, one way or two way 10A light control switch, sheet steel box and other accessories, etc.

6.4 **Wiring of Power Circuits (Distributor to socket outlets & between sockets)**

6.4.1 Measurement

Measurement shall be made for the total number of each type of wiring acceptably carried out by the Contractor as a complete unit.

6.4.2 Payment:

Payment shall be made for the total number of units measured, as provided above, at the Contract unit price each and shall constitute full compensation for supplying, installing, connecting, testing, commissioning and completion of wiring of socket outlets etc. from distributor to sockets or between sockets with specified size and number of single core PVC cables LSZH cables including specified type of surface mounted / concealed conduit (PVC or Steel), ECC and all other accessories etc.

6.5 **LT Cables**

6.5.1 Measurement:

Measurement shall be made for the total running meter for each size and type of LT cable acceptably supplied and installed by the Contractor.

6.5.2 Payment:

Payment shall be made for the total running feet of each size and type of LT cable measured, as provided above, at the Contract unit price each and shall constitute full compensation for supplying, installing, connecting, testing and commissioning of the LT cables including all accessories such as cable joints, lugs,

colour sleeves, glands, bush, etc. complete with plugging of protective pipe/ sleeve ends for water tightening.

*** End of Section 8212 ***

SECTION – 8262

POLES FOR STREET LIGHTING

1.0 SCOPE OF WORK

2.0 APPLICABLE STANDARDS/CODES

3.0 CONSTRUCTION OF STREET LIGHTING POLES

4.0 INSTALLATION

5.0 TESTS

6.0 MEASUREMENT AND PAYMENT

1.0 SCOPE OF WORK

The work under this section consists of manufacturing, supplying, installation testing and commissioning of the street lighting poles and accessories as specified herein, or as shown on the Bid Drawings and given in the Schedule of Prices.

The Contractor shall discuss the electrical layout with the Engineer and coordinate at site with other services for exact location and position of the electrical poles.

The poles with accessories shall also comply with the requirements of Special Provisions and with other relevant provisions of the Bid Documents.

2.0 APPLICABLE STANDARDS/CODES

The latest editions of the following standards/codes shall be applicable to the material specified within the scope of this Section:

- BS 5649 - Specification for lighting columns
- NV 65 - Specification for lighting columns
- CM 66 - Specification for lighting columns
- XP P 97 406-1 - Specification for lighting columns

3.0 CONSTRUCTION OF STREET LIGHTING POLES

The galvanized steel poles shall be of mild steel as shown on drawing from base plate to lantern connection, well proportioned and neatly finished. The height of the pole from the centre line of the spigot for lantern connection to the ground line and out-reach of each arm from the vertical centre line of the pole to the tip of the spigot for lantern attachment shall be as shown on Drawing. Approval of the Engineer shall be obtained before ordering the poles for manufacturing.

The pole (vertical portion) along with base plate shall preferably be in one piece. But if manufacturing in one length is not possible, it can be in two or three pieces with force fit lap joint.

The steel poles after fabrication shall be galvanized by hot dip process both in and outside as per BS-729 'Hot Dip Galvanized Coatings on Iron and Steel Articles'. The poles shall be prepared before galvanizing by removing grease, burs and slag etc. so that zinc coating is adherent, dense, smooth, continuous and uniform. The Contractor shall ensure before placing of order that the firm has adequate facility for hot dip galvanizing process as per standard practice. The steel used in the manufacture of poles shall be made by open hearth or electric furnace process.

The steel for poles shall have the following requirements:

Tensile Strength

- Minimum = 39.9 kg/mm²
- Maximum Yield Point = 56.3 kg/mm²

Yield Point

- Minimum Elongation = 24.7 kg/mm²

Elongation

- for a 200mm sample = 20% min.

The straight portion of the pole shall be truly vertical and no deviation more than 100 mm in the entire length shall be accepted.

Other tolerances shall be as follows:

- Outside diameter = +/- 1%
- Wall thickness = +/- 10%
- Overall length of pole = +/- 0.5%
- Weight = - 0.3% + not limited.

The pole and the bracket shall be so designed that when subjected to wind at a velocity of 160 km/hour on the full projected area of pole, bracket and the lantern a factor of safety of 3 on minimum tensile strength of the material shall be obtained. In addition, the temporary horizontal deflections at the lantern position shall not exceed 1/40 of the length of the pole above ground at aforementioned wind velocity.

The poles shall have a base compartment, designed to accommodate a loop-in services cutout for 4 core PVC/SWA/PVC cables of given sizes. A 8 mm stainless steel stud complete with nut and washers shall be provided in the base compartment of the pole for earthing purpose.

The edges of the door opening on the pole shall be reinforced with a 10 mm thick M.S. square bar to reinstate the strength of pole at this location. The opening cover shall consist of weather proof hinged door. The door shall be provided with a heavy duty non-rusting lock.

Flag brackets shall be fitted to poles if shown on the drawing and shall be as approved by the Engineer.

4.0 INSTALLATION

Lighting poles shall be handled / transported and erected in such a way so as to avoid any damages. Any damage to pole or galvanizing shall be made good to the satisfaction of the Engineer.

The lighting poles shall be stored clear of soil, ground water or other rust producing materials. The fixing of poles shall be carried out in accordance with manufacturer's instructions and good engineering practice.

The poles shall be erected in a true vertical position. The contractor shall be responsible until completion of the maintenance period for correcting the alignment of any pole/bracket from its original position except where it is due to vehicle impact.

Where lighting poles are to be installed in the vicinity of overhead power lines, the Contractor shall inform the Engineer and act as directed. He shall maintain clearances as per WAPDA requirements from the power lines.

The Contractor shall number all the poles with high quality paint using stencil for 50 mm high lettering. The numbering shall be at 1200 mm from the bottom of pole towards the road. The numbering shall be in a manner as directed by the Engineer.

Earth backfill around pole foundation shall be done in 150 mm thick layers and shall be well rammed and compacted to provide full lateral support.

4.1 Data to be submitted

Before manufacturing, the Contractor shall submit for approval of the Engineer, the shop drawing of the pole anchor bolts, base plate and pole bracket together with details of the base compartment, cover and the means adopted for making it waterproof and tamperproof. Design calculation sheets for the poles from manufacturer shall also be submitted by the contractor to show that poles/foundations are safe for all specified stresses.

5.0 TESTS

5.1 General

The poles shall be tested and the results recorded for each test by the manufacturer in the presence of an authorized representative of the Owner or Engineer as stated below.

5.2 Inspection

The material, weight and dimensions of poles as specified shall be certified by the manufacturer. The poles shall be inspected and in case being found below the limits of tolerance as aforementioned, shall be rejected.

5.3 Loading Test

The pole shall be cantilevered horizontally, rigidly supported at base plate and loads applied at right angle to the axis of the pole at the required point, i.e. at some distance from top. The test items shall be as follows:

- Deflection test.
- Permanent set test
- Breaking load test.

Sample comprising four poles shall be selected at random out of each lot of 1000 and subjected to deflection test. One pole per thousand shall be tested for permanent set test and breaking load test. When the poles in Contact are limited in number, the manufacturer may avoid these tests and supply results of tests already done for prototype testing on such poles or supply calculation based results.

5.4 Galvanizing

Weight, uniformity of coating and other requirements shall be strictly inspected in accordance with BS-729 or other relevant international standards.

5.5 Service Cutouts

Each pole shall be provided with a waterproof and dust tight loop-in-service cutout accommodated in the base compartment of the pole.

The junction box shall comprise two (2) 6A MCBs for double arm poles and one (1) 6A MCB for single arm poles, a solid neutral link and an earthing terminal. It shall incorporate arrangements for looping "IN" and "OUT" for 4 core up to 25 mm² PVC/SWA/PVC cable having Aluminum conductor. The earth terminals, nuts and washers shall be adequately sized to take the earth continuity conductors with tight connections.

Dimensional drawings and details of the junction cutout box of pole shall be submitted for approval to the Engineer.

6.0 MEASUREMENT AND PAYMENT

6.1 Measurement:

Measurement shall be made for the number of poles including all accessories and foundation block acceptably supplied and installed by the Contractor as shown on the drawing.

6.2 Payment:

Payment shall be made for the number of units measured, as provided above, at the contract unit price each, and shall constitute full compensation for supplying, installing, connecting, testing and commissioning of each pole including junction cutout box.

*** End of Section 8262***

SECTION – 8290

MISCELLANEOUS ITEMS

- 1.0 SCOPE OF WORK**
- 2.0 GENERAL**
- 3.0 APPLICABLE STANDARDS/CODES**
- 4.0 MATERIAL**
- 5.0 INSTALLATIONS**
- 6.0 MEASUREMENT AND PAYMENT**

1.0 SCOPE OF WORK

The work under this section consists of supplying, installing, testing and commissioning of all material and accessories for Miscellaneous Items as specified herein and/or shown on the Bidding drawings and stated in the Bill of Quantities.

The Contractor shall discuss the electrical layout with the Engineer and coordinate at site with other services for exact locations and positions of the Miscellaneous Items.

The Miscellaneous Items with accessories shall also comply with the General Specifications for Electrical Works, Section - 8001 and with other relevant provisions of the Bidding Document.

2.0 GENERAL

The Miscellaneous Items as described in this section shall comply with other sections of these specifications as applicable. The Contractor shall ensure that all the miscellaneous items be supplied/fabricated from the reputable manufacturers, who have already supplied/fabricated similar items.

3.0 APPLICABLE STANDARDS/CODES

The latest editions of the following standards/codes shall be applicable to the material specified within the scope of this section:

IEC 60947-2	-	Low Voltage Switch Gear and Control Gear.
BS 729	-	Hot dip galvanization
BS 4934	-	Safety requirements for electric fans and regulators.
BS 5060	-	Performance of circulating fans and their regulators.
BS EN 50085	-	Cable trunking and cable ducting systems for electrical installations.
BS EN 61537	-	Cable tray systems and cable ladder systems for cable management

4.0 MATERIAL

4.1 MCCB / MCB Enclosed in Sheet Steel Box

The single / double pole 250 volts miniature circuit breaker (MCB) and triple pole 500 volts moulded case circuit breakers (MCCB) are used for

supplying single phase and three phase power respectively to the equipment shown on the drawings and given in the Bill of Quantities.

The MCCB/MCB shall conform to the same specifications as given in section LT switchboards and LT distribution boards of these specifications. It shall be installed in a 16 SWG sheet steel box of such a size, which can easily accommodate the MCCB/MCB and incoming/outgoing wires or cables. Sufficient numbers of PVC connectors shall also be provided inside the sheet steel box for terminating the earth continuity conductors and neutral wires. The front plate fixed on the sheet steel box shall be of white plastic fixed with G.I. screws having an opening for operating the ON-OFF lever of MCCB / MCB.

4.2 Load Break Switch Enclosed in Sheet Steel Box

Single pole 250 Volts and triple pole 500 Volts Load Break Switch Enclosed in Sheet Steel Box are used for supplying single phase and three phase power respectively to the equipment shown on the drawings and given in the Bill of Quantities.

The load break switch shall conform to the same Specifications as given in section LT switchboard and LT distribution boards of these Specifications. It shall be housed in a, manufacturer's standard and in such a size of box which can easily accommodate the load break switch and incoming / outgoing wires alongwith the earth continuity conductor and neutral wires terminals.

4.3 Exhaust Fans

Exhaust fans shall be three blade or multi blade type of metal / PVC construction as approved by the Engineer.

Fans shall be direct driven and supplied complete with electric motor, back draft dampers and anti-vermin screen.

The bearings shall be ball roller or sleeves type of permanently lubricated and sealed type.

Wheels shall be heavily and rigidly constructed and accurately balanced both statically and dynamically and be free from objectionable vibration or noises.

4.4 Cable Trays / Trunking

Where specified, the cables shall run on cable trays/trunking supported to the wall and/or ceiling. The tray shall be of appropriate dimensions to ensure minimum clearance of 50mm between the cables. Tray and trunking shall be provided with complete accessories such as straight through joint,

flexible expansion coupler, tee, cross, internal and external bend, cover etc. complete with proper support and fixing accessories, GI nuts, bolts washer etc.

The cable tray/ trunking length shall be fabricated in sections not exceeding 3.0 metres.

4.4.1 M.S. (Mild Steel) Cable Trunking

The M.S. cable trunking (with cover) shall be 16 SWG M.S. sheets. Suitable trunking design shall be provided for bends, crossings, etc., keeping in view allowable bending radius of cables.

Arrangement shall be provided to secure the cables in position on the trunking. After fabrication of each trunking and cover section, the metalwork shall be cleaned down to bare shining metal phosphated and the surface chemically prepared for powder coating. Then these shall be coated with powder of RAL colour as approved by the Engineer and then baked in oven. The thickness of powder coating shall not be less than 100 microns.

4.4.2 G.I. (Galvanized Iron) Trays/Cable Trunking

The G.I. trays/cable trunking shall comprise of 16 SWG perforated G.I. Sheets with solid cover, bend to shape and having required dimensions and all accessories shall be compatible with the tray to make a smooth medium.

Cables laid on tray or trunking shall be properly fixed or clamped, with smooth finished split pieces with bore diameter to suit the cable. Supports shall be arranged as far as practicable for easy removal of any cable without disturbing other cables.

Flexible copper braid connections shall be provided at every joint, fixing accessories of cable tray to ensure continuity.

5.0 INSTALLATION

5.1 General

The mounting heights, depths and other dimensions of all the Miscellaneous Items are stated on the drawings or in general notes. In case of any discrepancy, the instructions of the Engineer shall be obtained before fixing the item.

5.2 **MCCB / MCB Enclosed in Sheet Steel Box**

The triple pole moulded case circuit breakers (MCCB) single/double pole miniature circuit breakers (MCB) shall be installed on 1.63 mm (16 SWG) thick sheet steel box with screws or some suitable arrangements as approved by Engineer. White faceplate for sheet steel box shall be fixed by means of flat head galvanized screws sunk in the plastic plate so as to finish flush with the wall surface. The edges of the plate shall be chamfered.

5.3 **Load Break Switch Enclosed in Sheet Steel Box**

The load break switch shall be installed as per manufacturer's recommendation and site conditions following good engineering practice.

5.4 **Exhaust Fan**

The propeller exhaust fan shall be installed in the opening already made in the wall and shall be firmly fixed by means of flat and head galvanized screws.

Wiring between the ceiling rose and the fan terminals shall be with atleast three core 2.5 sq.mm PVC insulated PVC sheathed flexible cables.

5.5 **Cable Trays/Trunking**

The cable trays/trunking shall be installed on supports fixed to the wall and/or ceilings/trusses. The supports shall be fixed by means of Rawal bolts suitable to carry maximum expected load. The additional hangers and other metalwork required for the installation of the trays / trunking shall be galvanized / painted and finished by method as specified for the cable tray / trunking.

The distance between alternate supports (span) in straight runs shall be finalized as per loading and in no case shall exceed 1.2 metres. In addition to these, supports shall be provided near each bend or change in direction or at the end of trunking / tray.

The straight jointing, bends and other accessories shall be fixed with cable tray/ trunking in such a manner that they are in one line with no sharp edges/ protruded surfaces. Rivet head nuts shall be installed on inner side of tray/ trunking.

On straight lengths (Over 20 meters) and at every building expansion joint suitable flexible expansion couplers shall be provided.

At each joint, bend earth continuity shall be ensured by using copper earth braid and copper lugs in electro-tinned finish.

6.0 MEASUREMENT AND PAYMENT

6.1 General

The Contractor's bid amount against each Bill of Quantities item as given below shall include supply, installation, testing, commissioning and completion for all work specified herein, as shown on the Bidding Drawings and given in the Bill of Quantities related to the item.

6.2 MCCB / MCB and Load Break Switch Enclosed in Sheet Steel Box

6.2.1 Measurement:

Measurement shall be made for the number of each item acceptably supplied and installed by the Contractor as a complete unit.

6.2.2 Payment:

Payment shall be made for the number of units measured as provided above at the Contract unit price each and shall constitute full compensation for supplying, installing, connecting, testing and completion of each item including sheet steel outlet box, plate and accessories as required.

6.3 Exhaust Fan

6.3.1 Measurement:

Measurement shall be made for exhaust fan & Accessories acceptably supplied and installed by the Contractor as a complete unit.

6.3.2 Payment:

Payment shall be made for the number of units measured as provided above at the Contract unit price each and shall constitute full compensation for supplying, installing, connecting, testing and commissioning of exhaust fans including mounting accessories, nuts, bolts, etc. and wiring between ceiling rose and fan terminals complete in all respects.

6.4 Cable Trays/Cable Trunking

6.4.1 Measurement:

Measurement shall be made of the total running feet of each size of cable tray/cable trunking with cover and all accessories acceptably supplied and installed by the contractor.

6.4.2 Payment:

Payment shall be made for the total running feet as provided above at the contract unit price and shall constitute full compensation for supplying, installing, and completion of each size of cable tray/cable trunking with cover complete with all installation material and accessories such as mounting brackets, bends, elbows, nuts and bolts etc.

*** End of Section 8290***

SECTION – 8335

CLOSED CIRCUIT TELEVISION SYSTEM (CCTV)

1.0 SCOPE OF WORK

2.0 GENERAL

3.0 APPLICABLE STANDARDS/CODES

4.0 EQUIPMENT

5.0 VIDEO SURVEILLANCE APPLICATION SOFTWARE

6.0 INSTALLATIONS

7.0 TRAINING

8.0 MEASUREMENT AND PAYMENT

1.0 SCOPE OF WORK

The work under this section consists of supplying, installing, testing, connecting and commissioning of all materials and services of the complete CCTV system as specified herein, or as given in the Bidding Drawings and stated in the Bill of Quantities.

The Contractor shall discuss the CCTV layout with the Engineer and co-ordinate at the site with other services for exact route, location and position of the electrical lines and equipment.

The CCTV system with accessories shall also comply with the General specifications for Electrical Works, Section - 8001 and with other relevant provisions of the Bidding Documents.

2.0 GENERAL

The CCTV System shall be used for general surveillance. All the active items of the CCTV System shall be listed as a product of a single manufacturer.

Proposed CCTV system shall be an open standard based integrated system with IP network centric functional and management architecture aimed at providing high-speed manual/automatic operation for best performance.

System shall use video signals from various type of indoor/outdoor CCD colours cameras installed at different locations, process them for viewing on workstations/monitors at Fire Alarm/Security Room and simultaneously record all the cameras after compression using MPEG 4 or better standard. Joystick or Mouse-Keyboard controllers shall be used for Pan, Tilt, Zoom and other functions of desired cameras.

System shall have combination of Digital CCD Colour Video Cameras with individual IP address, analogue CCD Colour Video Cameras with Fixed or P/T/Z Lens, Encoders/ Decoders, Network Video Recorders (NVR/CAMERA SERVER), Network Attached Storage (NAS) / Raid backup device for recording, Application Software, Colour Video Monitors, Keyboards with Joystick Controllers / Mouse-Keyboard, software based Video Matrix Switcher, Workstation for System Administration / Management / Maintenance etc.

The NVR / Camera Server can be embedded type or server based. However the NVR / Camera Server Software shall run on common off the shelf available servers (Camera Server & Database Server). Each NVR shall be able to handle 16 or more cameras.

Network Video Recorder shall offer both video stream management and video stream storage management. Recording frame rate & resolution in respect of individual channel shall be programmable.

System should ensure that once recorded, the video cannot be altered, ensuring the audit trail is intact for evidential purposes.

System shall provide sufficient storage of all the camera recordings for a period of 30 days or more @ 30 FPS, at 4 CIF or better quality using necessary compression techniques for all cameras (extended capacity of cameras i.e. present capacity + 25%).

System shall use a combination of IP enable cameras & analogue CCD cameras with external encoder. The video shall be compressed using MPEG-4 or better standard and streamed over the IP network.

Encoders shall digitize analog video, compress the digital video using various compression algorithms (MPEG-4 or better standard), and transmit the compressed digital video over packet-based IP network. Encoders shall have less than 200 ms of latency and shall support dual stream – MPEG 4.

The recording resolution and frame rate for each camera shall be user programmable.

The Area under surveillance shall be monitored and controlled from Fire Alarm/Security Room(s) through workstations and Joystick controllers.

Surveillance CCTV System shall operate on 230 V, 50 Hz single phase power supply. Power for all the equipment will be conditioned using on-line UPS with minimum 30 minutes or more back up. If any equipment operates on any voltage other than the supply voltage and supply frequency, necessary conversion/correction device for supply shall be supplied along with the equipment.

All the control equipments e.g. servers, NVR/CAMERA SERVER, NAS/Raid backup device, decoders etc. shall be provided in standard racks.

All the indoor cameras & control equipment shall be suitable for operation from 10°C to 40°C and relative humidity up to 80% non-condensing. Cameras & other equipment, meant for outdoor installations, shall be suitable to work from (-) 10°C to (+) 50°C with RH upto 90% non-condensing. This temperature range may be achieved with or without heater.

Camera with external encoder or IP Cameras shall be used for image capture. Indoor cameras shall be either with fixed focal length lens or with Pan/Tilt & Zoom lens as per site requirement. All outdoor cameras shall be Day/Night cameras.

Housing of cameras meant for indoor use shall be of IP 42 rating whereas outdoor camera housing shall be of IP 66 or better rating. These must be integrated by the camera manufacturer.

System must provide built-in facility of watermarking or digital certificate to ensure tamperproof recording so that these can be used as evidence at a later date, if so desired. The recording shall support audit trail feature.

All camera recordings shall have Camera ID & location/area of recording as well as date/time stamp. Camera ID, Location/Area of recording & date/time shall be programmable by the system administrator with User ID & Password.

Facility of camera recording in CIF, 2CIF, 4CIF as well as in any combination i.e. any camera can be recorded in any quality – selective or group of cameras must be available in the system.

System to have facility of additional camera installation beyond the originally planned capacity.

In order to optimize the memory, while recording, video shall be compressed using MPEG-4 or better standard and streamed over the IP network. Once on the network, video can be viewed on a control room workstation or on analog monitor using a hardware decoder (MPEG-4/compatible standard Receiver) and shall be recorded on NVR/CAMERA SERVER and shall be backed up on NAS/RAID Backup device.

System shall be triplex i.e. it should provide facility of Viewing, Recording & Replay simultaneously.

The offered system shall have facility to export the desired portion of clipping (from a desired date/time to another desired date/time) on CD or DVD. Viewing of this recording shall be possible on standard PC using standard software like windows media player etc.

PTZ Cameras shall have 64 or more pre-defined positions to be selected through suitable input alarm.

Redundancy /Fail-over feature is required i.e. in case of failure of an NVR/CAMERA SERVER the relevant cameras shall automatically switch over to the redundant NVR/CAMERA SERVER.

System shall have provision of WAN connectivity for remote monitoring.

3.0 APPLICABLE STANDARDS AND CODES

The following standards and codes shall be applicable for the material covered within the scope of the section.

IEC 801 – 2	Electrostatic discharge
IEC 801 – 3	Radiated Electro magnetic interference
IEC 801 – 4	Voltage transients

Install all the signal transmission components in accordance with the relevant standard ANSI Locate all surge protection within are metre of building entrance:

- Dust and rain resistance IP66 for outdoor cameras.
- Salt mist According to IEC 68-2-11
(for outdoor cameras)
- Vibration According to IEC 68-2-6
- Bump test According to IEC 68-3

4.0 EQUIPMENT

4.1 Fixed Colour Dome/Box Camera Varifocal

Image Device	1/3" or 1/4" CMOS Sensor
Number of Pixels Minimum	720 x 576
Scanning System	PAL
Resolution	480 TV Lines or better
Min Illumination	1 Lux at F1.2
S/N Ratio	> = 48 dB
Electronic Shutter	AUTO
Lens	Built-in Varifocal lens. Auto Iris, lens F=4-9 mm (approx.)
Backlight compensation	Required
Power Supply	As per OEM's design

4.2 Colour Video Dome Camera with PTZ

Colour video dome camera with PTZ shall have following technical:

Image Device	Interline transfer 1/2.8" or better format CMOS Sensor
Focal length	4 mm to 72 mm or better (for Artificial Intelligence Cameras with better focal length i.e; 3.5 mm to 91 mm to be used)
Optical zoom (for indoor camera)	18 x or better
Optical zoom (for outdoor camera)	26 x or better
Number of Pixels	720 x 576
Scanning System	PAL

Resolution	480 TVL or better
Illumination (for indoor camera)	1.0 Lux (Color), 0.1 Lux (B/W) or better
Illumination (for outdoor camera)	1.0 Lux (Color), 0.05 Lux (B/W) or better
Pan Travel	360° Continuous
Tilt Travel	0 – 90°
Manual Tilt Speed	0.5°/SEC to 90°/SEC
Manual Pan Speed	0.5°/SEC to 90°/SEC
Preset Tilt Speed	0.5°/SEC to 90°/SEC
Preset Pan Speed	0.5°/SEC to 300°/SEC
Preset positions	Min. 64
Iris Control	Auto
Focus	Auto
Back Light	Required with black masking or other suitable technology compensation
White balance	Auto
Electronic shutter	Auto
S/N ratio	>=48 dB
Power supply	As per OEM's design, however generally AC 230V @ 50 Hz/12V or 24V AC Rectifier and SMPS if DC supply.

4.3 MPEG-4 Encoder (Hardware Based)

The encoder shall be built on embedded processor and real time operating system. The encoder should have convert Analog Composite/S-Video input into good quality digital stream on real time basis and shall be able to transmit as Unicast/Multicast IP packet with low latency (less than 200 m Sec.) for live viewing as well as for recording.

The video resolution should be configurable at either of 4 CIF, 2 CIF, CIF @ 30 fps or at lower frame rate per camera, user selectable.

The encoder should generate MPEG-4 video stream complaint with ISO/IEC 14496 standard. The encoder should be interchangeable with any standard encoder of any other make, which generates MPEG-4 video stream complaint with ISO/IEC 14496 standard.

The Encoder should have the following specifications or should match with the requirement:

Format	PAL color, B/W, composite, 30 fps, 2:1 interlaced
Resolution (HxV pixels)	4 CIF 704 x 576, 2 CIF, CIF, QCIF
Frame Rate	30 fps (PAL) and lower
Encoding	MPEG-4 complaint with ISO/IEC 14496 standard
Video Parameters selectable	Brightness, contrast, hue, sharpness and sizing
Video Latency	Less than 200 m Sec
Connectors connectors	BNC for composite Video for input, suitable for Power, Alarm in, and Alarm out, RJ-45 for Ethernet 10/100 Base-T output
IP Address	Static IP Address or as per system requirement
MPEG-4 standard	Complaint with ISO/IEC 14496
IP Packets	Unicast and Multicast
POE	Complaint
Power supply	As per OEM's design

4.4 **Workstation**

CPU	Latest Generation with optimum specs
Mother Board	Intel Original Mother Board
Memory	3 GB DDR RAM

Hard Drive	1TB or more
Keyboards	PS / 2 Keyboard
Mouse	Optical Mouse with Scroll
Video Card	In Built 2 Nos for connecting 2 monitors
RAID	Supported
Network Adapter (NIC)	Integrated 10/100/1000 Base-T
Sound Card	In-Built
DVD Writer	DVD+16x – 16x, RW + 8x – 6x, CDW 48x, Blu Ray
Monitor	32” TFT Monitor
USB 2.0 or fire wire card	2 Nos. at front panel
Operating System	MS Windows OS or Linux (Latest versions) at the time of Bidding
Anti Virus Software	Latest software at the time of Bidding

4.5 **NVR/Camera/Database Server**

CPU	Latest Generation with optimum specs
Memory	2 GB DDR RAM
Hard Drives	As per video storage with RAID 5 Support
DVD Writer Blu Ray	External DVD+16x - 16x, RW+ 8x - 6x, CDW 48x,
Network Adapter (NIC)	Dual TCP/IP Integrated 10/100/1000 Base-T
Sound Card	In-Built
Graphic Card	Super VGA non-interlaced graphic card capable of 1024 x 768 pixel resolution and 65K colors (or true color) with 4 MB video memory or better
Recording Speed	30 fps / channel (minimum 32 channel)
USB 2.0 or fire wall	2 Nos. at front panel

Keyboards	PS / 2 Keyboard
Mouse	Optical Mouse with Scroll
Monitors	19" TFT Monitor
Operating System	MS Windows OS or Linux (Latest versions) at the time of Bidding
Anti Virus Software	Latest software at the time of Bidding

4.6 Camera Housing & Mount

The camera mount should be:

- i) Of the same make as that of camera and suitable for the model number offered as specified by the manufacturer and should be an integrated unit.
- ii) Should be compact and indoor/outdoor types as required.
- iii) Should support the weight of Camera and accessories such as housing, pan & tilt head in any vertical or horizontal position etc.

4.7 Speed Dome Controller / PTZ Controller

Speed dome controller should have variable speed joystick, LCD display for programming and it should be able to control the speed dome for PAN/TILT/ZOOM.

4.8 Cables

S. No.	Connectivity	Cable Type
1	Camera to Video Encoder	Coaxial RG6/U/CAT6/Fibre Optic
2	Video Encoder to Switch in Control Room	UTP CAT6/Fibre Optic
3	Switch to Video Wall Switches	UTP CAT6/Fibre Optic
4	From Switches to NAS Box	Fibre Optic
5	Hardware Decoder to Monitor	Composite Signal Cable

4.9 LCD Display

40" Color TFT LCD display shall have following minimum technical specification.

Resolution	500 TVL: 1280x1024 pixels
Display Mode	VGA/SVGA/XGA
Luminance	250 cd/square meter
Power Source	230 VAC/50 Hz

5.0 VIDEO SURVEILLANCE APPLICATION SOFTWARE

The software shall operate on open architecture for integration with perimeter safety, access control, PA and fire / safety systems based on open standards.

Digital video surveillance control software should be capable to display and manage the entire surveillance system. It should be capable of supporting variety of device such as cameras, video encoders, video decoders, PTZ controller, NVR, NAS boxes/Raid backup device etc.

The software should have inbuilt facility to store configuration of encoders/decoders and cameras.

The software should support flexible 1/2/4 windows split screen display mode or scroll mode on the PC monitor or on preview monitor as per site requirement.

The software should be able to control all cameras i.e. PTZ control, Iris control, auto/manual focus and color balance of camera, selection of presets, video tour selection etc.

There must be a single encoder for each camera.

The software is required to generate reports of stored device configuration. The control software is required to provide alarm and alarm log. The log shall be able to be achieved, printed and displayed using a device filter, a device group filter and/or a time window.

The software should have user authority configurable on per device or per device group basis. The user shall have the facility to request the access of any camera and can control the camera for a reservation period. Control of camera is released after the reservation period.

The system shall provide user activity log (audit trail) with user id, time stamp and action performed etc.

The administrator should be able to add, edit & delete users with rights. It shall be possible to view ability/rights of each user or the cameras which can be viewed & controlled as per the permission assigned by the administrator.

The users should be on a hierarchical basis as assigned by the administrator. The higher priority person can take control of cameras, which are already being controlled by a lower priority user. There should be minimum 3 hierarchical levels of security for providing user level log in.

It should have recording modes viz. continuous, manual or programmed modes on date, time and camera-wise. All modes should be disabled and enabled using schedule configuration. It should be possible to search and replay the recorded images on date, time and camera-wise. It should provide on screen controls for remote operation of PTZ cameras. It should have the facility for schedule recording. Different recording speeds (fps) and resolution for each recording mode for each camera should be possible.

It should provide programmable motion detection and recording, to be defined area-wise. System must be able to support video motion detection algorithms to detect and track objects, learn the scene, adapt to a changing outdoor environment, ignore environmental changes including rain, hail, wind, swaying trees and gradual light changes.

The settings shall be individually configurable for each alarm and each camera pre-record duration. This shall allow the camera server to capture video prior to the alarm/event shall be selectable from a list of values ranging between 0 seconds and 5 minutes.

The software for clients should also be working on a browser based system for remote users. This will allow any authorized user to display the video of any desired camera on the monitor with full PTZ and associated controls.

Retrieval: The CCTV application should allow retrieval of data instantaneously or any data/time interval chosen through search functionality of the application software. In case data is older than 3 days and available, the retrieval should be possible. The system should be allow for backup of specific data on any drives like CD/DVD/Blu ray Recorders or any other device in a format which can be replayed through a standard PC based software. Log of any such activity should be maintained by the system which can be audited at a later date.

Backup: Online backup should be maintained to protect against storage failure.

Storage: Data storage should be at a central location in the airport. The capacity of the storage should be equal to 30 days of recording of all cameras at 30 fps/4 CIF. The system should follow FIFO on recording.

Artificial Intelligence: It shall have image tracking facility. If any object is found to be stationary for a pre-defined period the system shall track the event and alert the operator. This facility shall be provided on select cameras at entry point, check-in counters, X-Ray BIS points, SHA and as defined by the Bidder. The system must have the features for identifying tail-gating, vehicle detection

features, unattended baggage identification, queuing analysis, external text insertion feature and intruder detection.

6.0 INSTALLATION

Installation of CCTV System shall be done in strict accordance with the manufacturer's recommendations.

7.0 TRAINING

A training session shall be presented by a fully qualified, trained representative of the equipment manufacturer/supplier who is thoroughly knowledgeable of the specific installation. The training shall be given to personnel responsible for operation and maintenance of the system.

8.0 MEASUREMENT AND PAYMENT

8.1 General

The Contractor bid amount, against each Bill of Quantities item as given below, shall include design, supply, installation, testing, commissioning and completion for all work specified herein and / or as shown on the Bid Drawing Drawings related to the item.

8.2 Cameras / Lenses and Displays

8.2.1 Measurement:

Measurement shall be made for the total number of cameras/lenses and displays with accessories acceptably supplied and installed by the Contractor as a complete unit.

8.2.2 Payment:

Payment shall be made for the number of units measured as provided above at the Contractor unit price and shall constitute full compensation for supplying, installing connecting, testing and commissioning of the cameras/lenses and display including all mounting arrangement/racks, etc. and all accessories.

8.3 NVR / Controller

8.3.1 Measurement:

Measurement shall be made for the NVR/Controller acceptably supplied and installed by the Contractor as a complete job.

8.3.2 Payment:

Payment shall be made for the number of job measured as provided above at the contract unit price and shall constitute full compensation for supplying, installing and completion of the NVR/Controller including all control equipment for operation and control of system, mounting racks and interconnections etc.

8.4 **Cable/Conduit**

8.4.1 Measurement:

Measurement shall be made for the cabling including conduiting for cameras acceptably supplied and installed by the Contractor as complete job.

8.4.2 Payment:

Payment shall be made for the total job measured as provided above at the contract unit price and shall constitute full compensation for supplying, installing, pouring and excavation of cabling including all accessories related to the items.

8.5 **Operator Console**

8.5.1 Measurement:

Measurement shall be made for the CCTV System Operator Console including chair acceptably supplied and installed by the Contractor as a complete job.

8.5.2 Payment:

Payment shall be made for the complete job measured as provided above at the contract unit price and shall constitute full compensation for supplying and installing of Console and all accessories.

*** End of Section 8335 ***



**UNIVERSITY OF BUNER
SWARI, DISTRICT BUNER**

**DEVELOPMENT OF UNIVERSITY OF BUNER AT SWARI
(PHASE-I)**

**CONSTRUCTION OF BUILDINGS AND
INFRASTRUCTURE WORKS
AT SWARI CAMPUS OF UNIVERSITY OF BUNER
(PACKAGE-5)**

CONSTRUCTION OF ANCILLARY WORKS

TECHNICAL BID

**BIDDING DOCUMENTS
(VOLUME – III)**

BIDDING DRAWINGS

SEPTEMBER 2026

NESPAK NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD.
NESPAK HOUSE, SECTOR G-5/2, ISLAMABAD

Clearance Code 4010/321/BD/57(26)	Doc No. 4010-26-03	Revision No. 0
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CONNECTIVITY TO UNIVERSITY DRAINS WITH MUNICIPAL DRAINS

A. GENERAL

1. NOTES GIVEN ON THIS DRAWING ARE APPLICABLE TO ALL STRUCTURAL DRAWINGS UNLESS OTHERWISE NOTED. NOTES WRITTEN ON ANY OTHER DRAWING SHALL BE APPLICABLE TO THAT PARTICULAR DRAWING ONLY UNLESS OTHERWISE CROSS REFERRED.
2. SYSTEM OF UNITS IS FPS.
3. ALL LEVELS MARKED ON THE DRAWINGS ARE LEVELS OF STRUCTURAL ELEMENTS. FINISH LEVELS SHALL BE IN ACCORDANCE WITH THE ARCHITECTURAL DRAWINGS.
4. THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND STABILITY OF THE STRUCTURE AND ALL TEMPORARY WORKS DURING CONSTRUCTION.
5. THE CONTRACTOR SHALL INFORM THE ENGINEER ABOUT ANTICIPATED CONSTRUCTION LOADS IN THE STRUCTURE AND OBTAIN ENGINEER'S APPROVAL THEREOF BEFORE COMMENCING THE WORK.
6. THE CONTRACTOR SHALL CO-ORDINATE ALL DRAWNGS OF ALL DISCIPLINES FOR ALL ITEMS INCLUDING BUT NOT LIMITED TO SIZES AND LOCATION OF ALL OPENINGS REQUIRED FOR DUCTS, PIPES AND PIPE SLEEVES, ELECTRICAL CONDUITS AND OTHER ITEMS TO BE EMBEDDED IN CONCRETE OR OTHERWISE INCORPORATED IN STRUCTURAL WORK AND SHALL BRING TO THE NOTICE OF THE ENGINEER DISCREPANCIES, IF ANY, FOR HIS INSTRUCTIONS, PRIOR TO THE START OF WORK.
7. THE CONTRACTOR SHALL VERIFY LAYOUT, CONFIGURATION, ALL DIMENSIONS AND LEVELS PERTAINING TO EXISTING WORKS BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL ADOPT ADEQUATE AND APPROPRIATE MEASURES SO AS NOT TO DAMAGE THE EXISTING WORKS.
8. THE CONTRACTOR SHALL EXERCISE UTMOST CARE AND PRECAUTION DURING THE WORKS, AGAINST ANY MISHAPS OR ACCIDENTS, FOR WHICH THE CONTRACTOR SHALL BE WHOLLY AND SOLELY RESPONSIBLE. THE CONTRACTOR SHALL INDEMNIFY THE OWNER AGAINST ANY ACCIDENTS AND ANY LOSSES THEREFROM AND SHALL REPAIR AND RECTIFY THEM AT HIS OWN COST AND TIME.
9. THE CONTRACTOR SHALL COORDINATE SCHEDULE OF CONSTRUCTION WITH SUPPLY AND INSTALLATION OF EQUIPMENT.
10. PROVISIONS SHALL BE MADE FOR INSTALLATION OF EQUIPMENT AS PER MANUFACTURER'S RECOMMENDATIONS.
11. ANY DEPARTURES/DEVIATIONS DESIRED FROM THE DESIGN OR SPECIFICATIONS, OR SOLUTIONS TO ANY PROBLEMS ENCOUNTERED, SHALL BE GOT APPROVED FROM THE ENGINEER PRIOR TO IMPLEMENTATION. UNAPPROVED DEPARTURES/DEVIATIONS MAY LEAD TO REJECTION/REPLACEMENT OF THE ENTIRE WORK AT THE CONTRACTOR'S COST.
12. ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO SPECIFICATIONS OF THE CONTRACT. IN ABSENCE OF ANY EXPRESS OR IMPLIED SPECIFICATION IN THE CONTRACT, ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO RELEVANT AMERICAN STANDARDS AND SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.
13. THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS AND BAR BENDING SCHEDULES FOR ENGINEER'S APPROVAL AND OBTAIN HIS APPROVAL BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE ACCURACY OF SHOP DRAWINGS AND BAR BENDING SCHEDULES. THE ENGINEER'S APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY.

B. FOUNDATION AND EARTHWORK

1. THE DESIGN OF FOUNDATION IS BASED ON ALLOWABALE BEARING CAPACITY OF 0.75 TSF. IF THE CONTRACTOR FINDS TRACES OF LOW BEARING CAPACITY (ANYWHERE IN THE SITE), SAME SHALL BE INVESTIGATED BY THE CONTRACTOR UNDER THE SUPERVISION OF THE ENGINEER. FOUNDATION DESIGN SHALL BE REVISED (IF REQUIRED) BASED ON THE CONFIRMATORY GEOTECHNICAL INVESTIGATION CARRIED OUT BY THE CONTRACTOR.
2. ALL FOUNDATIONS SHALL BE PLACED ON COMPETENT BEARING STRATA. IF ACCEPTABLE BEARING STRATA IS NOT AVAILABLE AT INDICATED DEPTH OF FOUNDATION BELOW N.S.L OR F.G.L WHICH EVER IS LOWER, THE ENGINEER SHALL BE NOTIFIED IN WRITING FOR HIS/HER INSTRUCTION.
3. TERMITE CONTROL TREATMENT SHALL BE CARRIED OUT AS PER SPECIFICATIONS.
4. THE TYPE AND COMPACTION OF SOIL BELOW GRADE SLAB SHALL BE AS PER JOB SPECIFICATIONS.
5. NO FOOTING SHALL BE PLACED ON FILL. HOWEVER, AREAS WHERE FILLING BELOW THE FOOTINGS BECOMES INEVITABLE OR OVER-EXCAVATION (IF ANY), SHALL BE FILLED WITH P.C.C. (1:4:8) WITH PRIOR APPROVAL OF THE ENGINEER.
6. THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING SYSTEM IF AND WHERE SO REQUIRED DURING CONSTRUCTION.
7. ALL EARTH-FACING STRUCTURAL CONCRETE SURFACES SHALL BE COATED WITH BITUMEN (10/20 GRADE) APPLIED HOT AT THE RATE OF 20 lb/100 SFT. (1.0 KG/SQM), (EXCEPT FOR CONCRETE CLASS 'D' AND 'E').
8. BACKFILLING AND COMPACTION SHALL BE CARRIED OUT EQUALLY ON BOTH SIDES OF PLINTH BEAMS TO AVOID IMBALANCE OF LATERAL EARTH PRESSURE.
9. THE CONTRACTOR SHALL SUPPLY AND ERECT ADEQUATE SHORING AND SUPPORT THE SIDES OF ALL EXCAVATIONS WHERE REQUIRED TO SAFEGUARD WORKMEN AND PROTECT ANY ADJACENT STRUCTURES.
10. EXISTING UNDERGROUND SERVICES, REQUIRED TO BE LEFT IN POSITION, SHALL BE CAREFULLY PROTECTED DURING EXCAVATION AND BACKFILLING OPERATIONS.
11. EXCAVATIONS ADJACENT TO EXISTING STRUCTURES AND/OR UNDERGROUND SERVICES SHALL BE MADE BY HAND.

C. REINFORCED / PLAIN CEMENT CONCRETE

1. ALL CONCRETE WORKS AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF KP-MRS TECHNICAL SPECIFICATIONS, BEING REFERENCE SPECIFICATIONS FOR ALL SCHEDULED ITEMS.
2. STRENGTHS OF DIFFERENT CONCRETE CLASSES / MIXES SHALL BE AS FOLLOWS:

CLASS	NOMINAL MIX RATIO	MIN. CYLINDER STRENGTH AT 28 DAYS (psi)
A1	—	3,000 psi
C	1:2:4	2,400 psi
D	1:3:6	1,500 psi
E	1:4:8	1,200 psi

C. REINFORCED / PLAIN CEMENT CONCRETE
(CONTINUED)

3. CLASS OF CONCRETE FOR DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE AS FOLLOWS UNLESS NOTED OTHER WISE:

COMPONENT	CONCRETE TYPE
FOUNDATION & WALLS	'C'
COLUMNS, SLABS & BEAMS	'C'
P.C.C. STEPS	'D'
LEAN CONCRETE	'E'

4. ORDINARY PORTLAND CEMENT SHALL BE USED FOR ALL CONCRETE WORKS, IF NOT MENTIONED ON THE DRAWINGS/BOQ.
5. AN INTEGRAL WATER PROOFING AGENT SHALL BE USED IN CONCRETE THAT IS CONSTANTLY OR INTERMITTENTLY IN CONTACT WITH WATER AS PER MANUFACTURER'S RECOMMENDATIONS, AS ADVISED BY THE ENGINEER.
6. CONCRETE CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

STRUCTURAL MEMBER / ELEMENT	MINIMUM COVER (INCHES)
FOUNDATIONS (ALL TYPES)	2"
COLUMNS & BEAMS	1½"
RETAINING WALLS	1½"
SLABS	¾"
RCC SHELLS AND DOMES	½"

7. ALL REINFORCING STEEL BARS, EXCEPT ø3 (3/8"—DIAMETER) BARS, SHALL BE DEFORMED, HOT ROLLED BILLET STEEL BARS CONFORMING TO ASTM A-615, GRADE-60 WITH SPECIFIED YIELD STRENGTH OF NOT LESS THAN 60,000 psi.
8. ø3 (3/8"—DIAMETER) BARS SHALL BE GRADE-40 STEEL CONFORMING TO ASTM A-615 GRADE-40 WITH SPECIFIED YIELD STRENGTH OF NOT LESS THAN 40,000 psi.
9. GRADE-60 STEEL BARS ARE REPRESENTED USING PREFIX SYMBOL "#" AND GRADE-40 STEEL BARS ARE REPRESENTED USING PREFIX SYMBOL "ø". WHEREAS, THE NUMBER INDICATES THE BAR DIAMETER/SIZE, AS UNDER:

BAR NUMBER	DIAMETER (INCHES)
3	3⁄8"
4	1⁄2"
5	5⁄8"
6	3⁄4"
8	1"

10. ALL DETAILING SHALL BE DONE AS PER ACI STANDARDS ACI-315, ACI-318 & ACI-350R.
11. ALL REINFORCING STEEL SHALL BE HELD FIRMLY IN PLACE BEFORE AND DURING THE PLACING OF CONCRETE BY MEANS OF WIRES AND SUPPORTS ADEQUATE TO PREVENT DISPLACEMENT DURING THE COURSE OF CONSTRUCTION.

D. CONCRETE CONSTRUCTION

1. THE CONTRACTOR SHALL SUBMIT CONCRETE POURING SCHEDULE FOR ENGINEER'S APPROVAL. NO CONCRETE SHALL BE POURED UNTIL ITS FORMWORK AND REINFORCEMENT HAS BEEN INSPECTED AND APPROVED BY THE ENGINEER.
2. DURING CONSTRUCTION, STACKING OF CONSTRUCTION MATERIALS, BLOCKS ETC. SHOULD BE AVOIDED ON SLAB PANELS.
3. BEFORE CASTING OF ANY STRUCTURAL MEMBER, THE CONTRACTOR SHALL ENSURE THAT ALL EMBEDDED ITEMS FOR ELECTRICAL, MECHANICAL, HVAC, PLUMBING, STRUCTURAL STEEL AND OTHER WORKS, AND DOWELS FOR STRUCTURAL MEMBERS AND/OR MASONARY ARE PROPERLY LOCATED IN PLACE.

E. CONSTRUCTION JOINTS

1. JOINTS, NOT SHOWN ON THE DRAWING, SHALL BE SO MADE AND LOCATED AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHALL NEED PRIOR APPROVAL OF THE ENGINEER. THEY SHALL BE LOCATED NEAR THE MIDDLE OF THE SPANS OF SLAB & BEAMS. JOINTS IN WALLS & COLUMNS SHALL BE AT THE UNDER-SIDE OF FLOORS, SLABS OR BEAMS AND AT THE TOP OF FOOTINGS OR FLOOR SLABS.
2. JOINTS SHALL BE PERPENDICULAR TO MAIN REINFORCEMENT. ALL REINFORCING STEEL SHALL BE CONTINUED ACROSS THE JOINTS.
3. JOINTS IN BASE SLAB & WALLS AND ROOF SLAB, IN ADDITION TO THOSE SHOWN ON THE DRAWINGS SHALL BE BORNE BY THE CONTRACTOR. BEAMS & BRACKETS SHALL BE PLACED AT THE SAME TIME AS SLABS.

F. ELECTRICAL CONDUITS

1. CONDUITS, FOR ELECTRICAL WORKS, SHALL BE PLACED WITHIN THE REINFORCED CONCRETE. THEY SHALL BE PLACED WITHIN THE MIDDLE THIRD OF THE SECTION IN BEAMS & SLABS AND WITHIN THE MIDDLE HALF OF THE THICKNESS. SPACING BETWEEN PARALLEL CONDUITS SHALL NOT BE LESS THAN 6"(150 MM).

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1) ANCILLARY WORKS CONNECTIVITY OF UNIVERSITY DRAINS WITH MUNICIPAL DRAINS GENERAL STRUCTURAL NOTES & TYPICAL DETAILS (SHEET 1 OF 2)					
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. FAHMEED	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE 4010-AW	DATE	DRAWING NO.			REV.
CKD. M. HASNAIN		4010/323/C/10aG01			0
SUBM. AAMIR RASHEED	DEC, 2025				

G. PROPS, FORMWORK & CURING

1. SHORE & BRACE ALL PARTS OF THE BUILDING/STRUCTURE DURING CONSTRUCTION, TO THE EXTENT NECESSARY TO ENSURE COMPLETE SAFETY, STRENGTH & SERVICEABILITY OF ALL STRUCTURAL ELEMENTS UNDER ALL CONDITIONS OF LOADS WHICH MAY OCCUR DURING CONSTRUCTION. SUCH SHORING & BRACING IS THE CONTRACTOR'S SOLE RESPONSIBILITY AND IS NOT SHOWN ON STRUCTURAL DRAWINGS OR SPECIFIED IN THE PROJECT.
2. SEQUENCE OF REMOVAL OF FORMWORK SHALL BE APPROVED BY THE ENGINEER.
3. AT LEAST ONE LOWER FLOOR SHALL REMAIN PROPPED UNTILL THE UPPER FLOOR IS CAST AND CURED.

H. BRICK MASONRY WORK

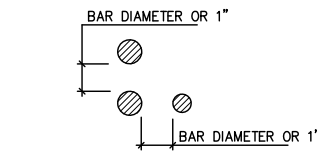
1. ALL BRICK WORK SHALL CONFORM TO KP-MRS TECHNICAL SPECIFICATIONS.
2. ALL DESIGN, DETAILING, MATERIAL AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH RELEVANT ACI, ASTM, AND UBC CODES AND STANDARDS.
3. ALL BRICKS SHALL BE SOUND, HARD, WELL BURNT AND OF UNIFORM SIZE, COLOUR AND TEXTURE. DIMENSIONAL VARIATION IN SIZES SHALL NOT EXCEED 1/8".
4. TESTING OF COMPRESSIVE STRENGTH OF MASONRY PRISMS SHALL BE DONE, IF SO DIRECTED BY THE ENGINEER, IN ACCORDANCE WITH ASTM E447 STANDARD.
5. BRICKS SHALL BE LAID "FROG" UPWARD WITH MORTAR JOINTS AND IN ENGLISH/FLEMISH BOND AS SHOWN ON DRAWINGS OR AS DIRECTED BY THE ENGINEER. BOTH BED/VERTICAL JOINTS SHALL BE 3/8" THICK COMLETELY FILLED WITH CEMENT MORTAR.
6. ALL BRICK WORK SHALL BE ERECTED PLUMB AND TRUE TO LINE AND LEVEL. THE MAXIMUM PERMISSIBLE VARIATION IN ANY STOREY HEIGHT OR ANY LENGTH OF WALL SHALL BE 1" IN 10'-0".
7. MORTAR MIX RATIO USED FOR LAYING MASONRY IN SUB-STRUCTURE AND SUPRE STRUCTURE SHOULD BE AS SHOWN ON DARWINGS / BOQ / KP-MRS TECHNICAL SPECIFICATIONS.

J. STRUCTURAL STEEL WORK

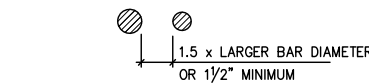
1. ALL FABRICATION, PAINTING, ERECTION AND QUALITY CONTROL IS TO BE DONE IN ACCORDANCE WITH THE LATEST AISC SPECIFICATIONS.
2. ALL STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-36 OR EQUIVALENT.
3. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF AMERICAN WELDING SOCIETY (AWS) SPECIFICATIONS USING ELECTRODES E70XX.
4. ALL BOLTS SHALL CONFORM TO ASTM A307 OR A325.
5. SURFACE PREPARATION OF ALL STRUCTURAL STEEL FOR PAINTING SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF "STEEL STRUCTURES PAINTING COUNCIL" SPECIFICATIONS SSPC-SP6 FOR COMMERCIAL BLAST CLEANING.
6. ALL STEEL SHALL BE GIVEN ONE SHOP COAT OF RED LEAD OXIDE PRIMER AND FIELD TOUCHUP EXCEPT FOR SURFACES TO BE EMBEDDED IN CONCRETE OR CONTACT SURFACES OF FRICTION BOLTED CONNECTIONS.

K. ABBREVIATIONS & SYMBOLS

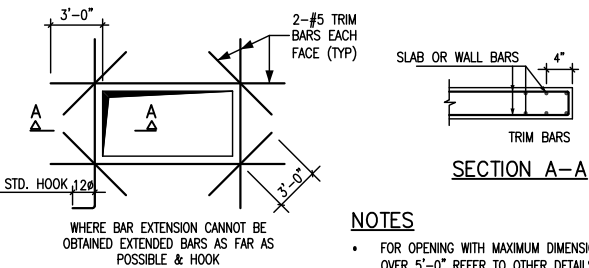
©	AT THE RATE OF
B	BOTTOM
BW	BOTHWAYS
c/c	CENTRE TO CENTRE
CL	CLEAR
D,d	DEPTH, THICKNESS
EF	EACH FACE
EJ	EXPANSION JOINT
EL.	STRUCTURAL ELEVATION
EQ.	EQUAL
FF	FAR FACE
FFL	FINISHED FLOOR LEVEL
FGL	FINISHED GROUND LEVEL
GS	SLAB ON GRADE
H	HORIZONTAL
NF	NEAR FACE
NSL	EXISTING/NATURAL SURFACE LEVEL
NSP	NOT SHOWN ON PLAN
NTS	NOT TO SCALE
SOP	SURVEY OF PAKISTAN
ST	STIRRUPS
T	TOP
TYP.	TYPICAL
UNO	UNLESS NOTED OTHERWISE
V	VERTICAL
>	GREATER THAN OR EQUAL TO
≤	LESS THAN OR EQUAL TO
∅	DIAMETER IN INCHES UNO
⊕	LEVEL ON PLAN
CL	CENTRE LINE
L	ANGLE
c	CHANNEL



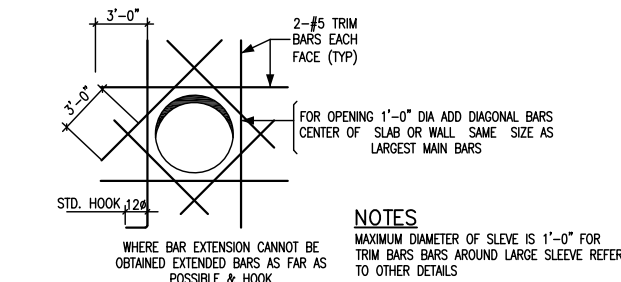
BAR SPACING IN BEAM



VERTICAL BAR SPACING



REINFORCEMENT DETAIL AT OPENING
IN SLAB & WALLS (TYP)

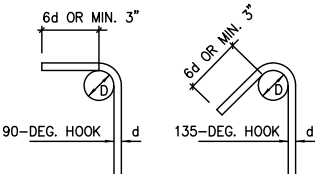


REINFORCEMENT AROUND SLEEVE IN SLABS
& WALLS (TYP)



STANDARD BAR HOOKS (MAIN BARS)

BAR DIA	D
∅3	2 1/2"
#4	3"
#5	4"
#6	4"
#8	6"
#9	7"
#11	8 1/2"



STIRRUPS AND TIE HOOKS

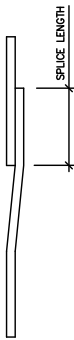
BAR DIA	D
∅3	1 1/2"
#4	2"
#5	2 1/2"

SPLICE LENGTH (LS) *

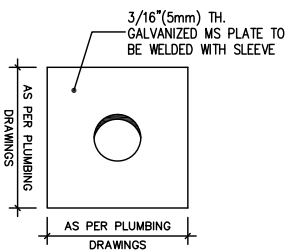
fc'=2400 psi/3000 psi		
BAR SIZES	(LS1) TOP BARS	(LS2) OTHER BARS
#3 TO #6	57db	44db
#7 TO #18	72db	55db



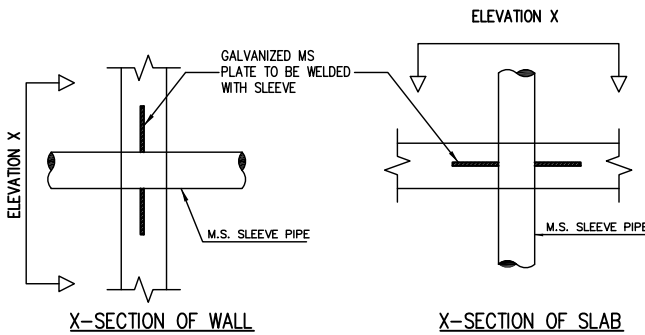
BEAM SPLICE (TYP)



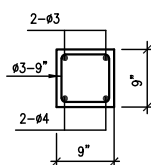
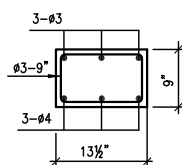
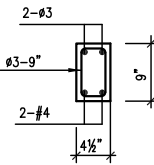
COLUMN SPLICE (TYP)



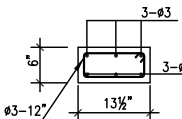
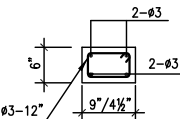
ELEVATION X OF PLATE
& SLEEVE PIPE



DETAIL OF SLEEVE IN SLAB & WALL
FOR SLEEVE OPENINGS REFER RELEVANT
PLUMBING DRAWINGS.

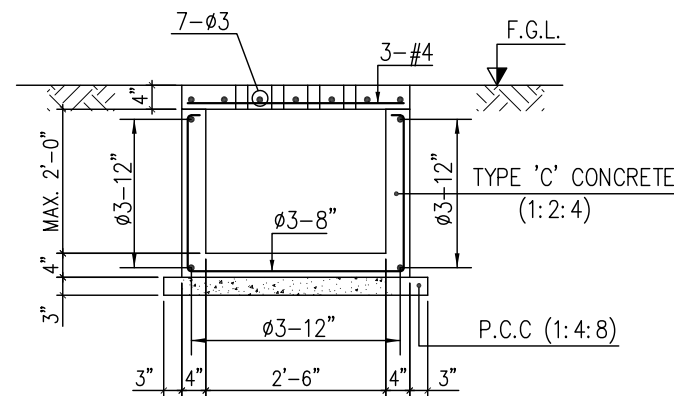


TYPICAL SECTION OF LINTELS
(UP TO 6'-0" CLEAR SPAN)

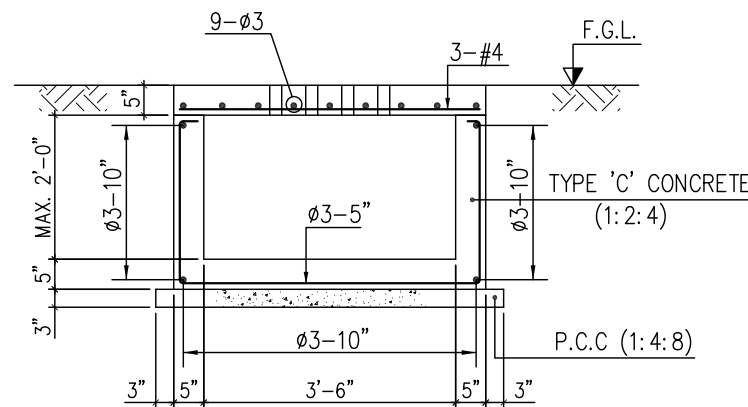


TYPICAL SECTION OF HORIZONTAL BANDS
AT PLINTH AND LINTEL LEVEL OTHER THAN OPENING

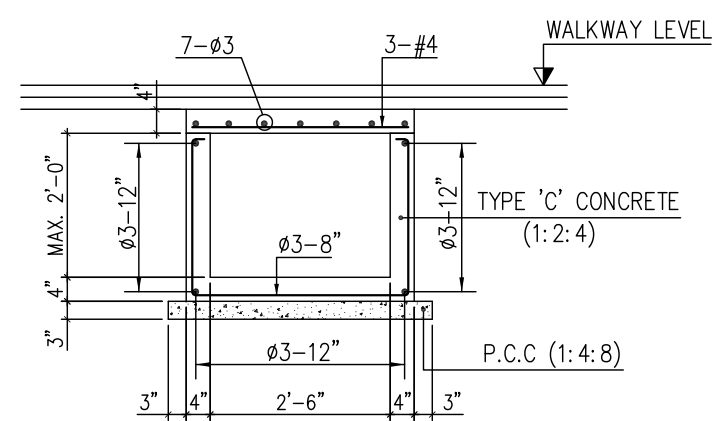
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UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
CONNECTIVITY OF UNIVERSITY DRAINS WITH MUNICIPAL DRAINS					
GENERAL STRUCTURAL NOTES & TYPICAL DETAILS					
(SHEET 2 OF 2)					
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DWN. FAHMEED	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
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SUBM. AAMIR RASHEED	DEC, 2025				



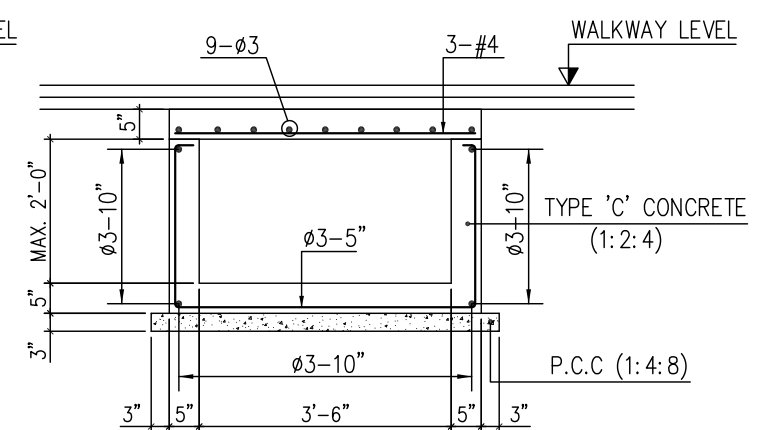
TYPICAL SECTION OF COVERED DRAIN
IN GREEN AREAS
(30"–WIDE MAX. 2'–0" DEEP)



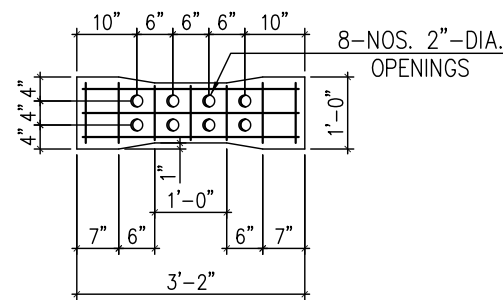
TYPICAL SECTION OF COVERED DRAIN
IN GREEN AREAS
(42"–WIDE MAX. 2'–0" DEEP)



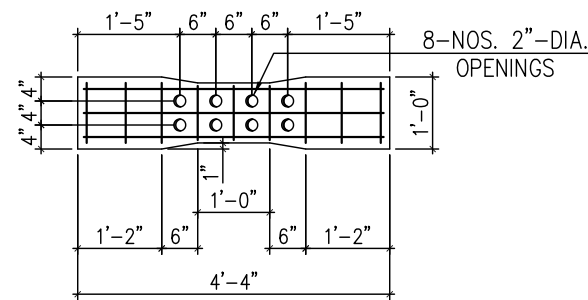
TYPICAL SECTION OF COVERED DRAIN
UNDER WALKWAY
(30"–WIDE MAX. 2'–0" DEEP)



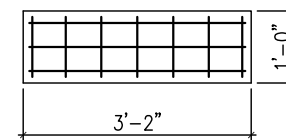
TYPICAL SECTION OF COVERED DRAIN
UNDER WALKWAY
(42"–WIDE MAX. 2'–0" DEEP)



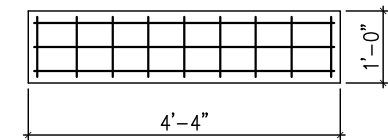
TYPICAL PLAN OF PRECAST RCC COVER
IN GREEN AREAS
(30"–WIDE MAX.)



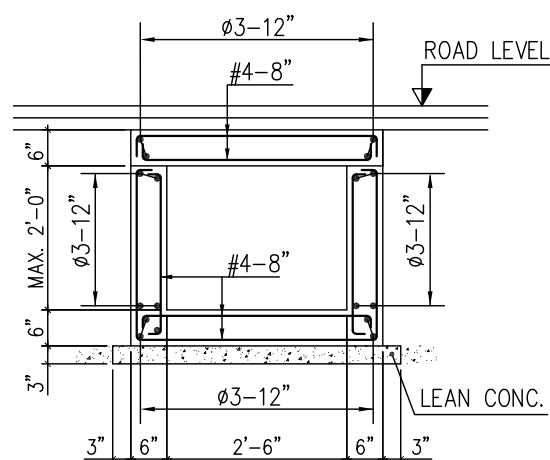
TYPICAL PLAN OF PRECAST RCC COVER
IN GREEN AREAS
(42"–WIDE MAX.)



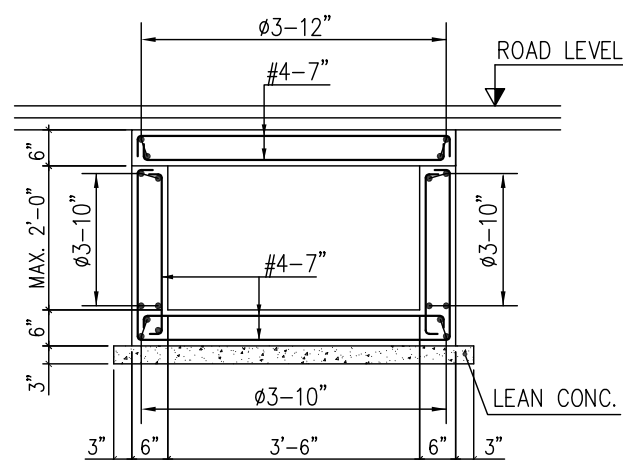
TYPICAL PLAN OF PRECAST RCC COVER
UNDER WALKWAY
(30"–WIDE MAX.)



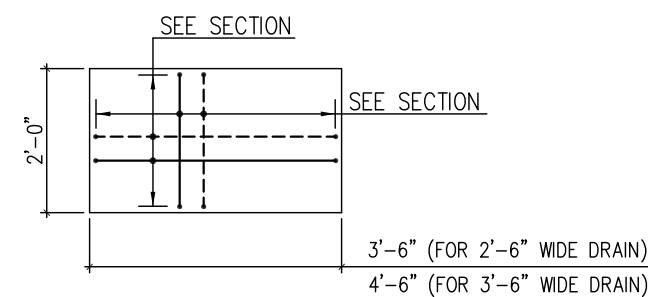
TYPICAL PLAN OF PRECAST RCC COVER
UNDER WALKWAY
(42"–WIDE MAX.)



TYPICAL SECTION OF COVERED DRAIN
AT ROAD CROSSING
(30"–WIDE MAX.)



TYPICAL SECTION OF COVERED DRAIN
AT ROAD CROSSING
(42"–WIDE MAX.)

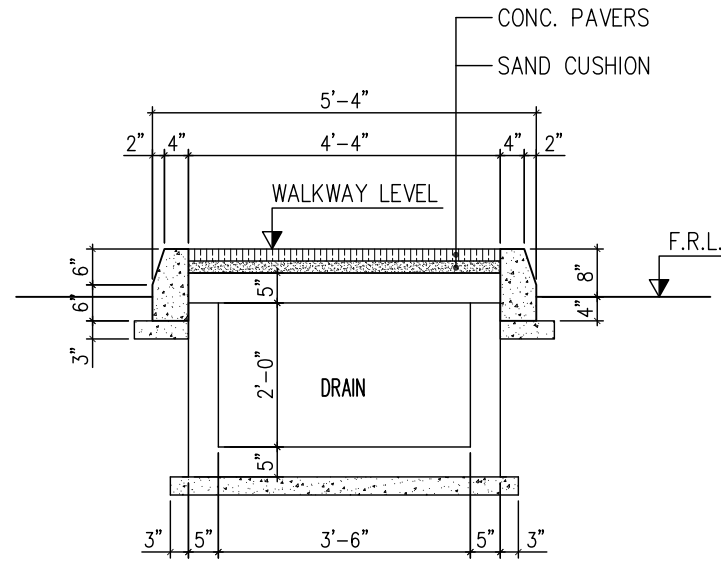


TYPICAL PLAN OF PRECAST RCC COVER
AT ROAD CROSSING

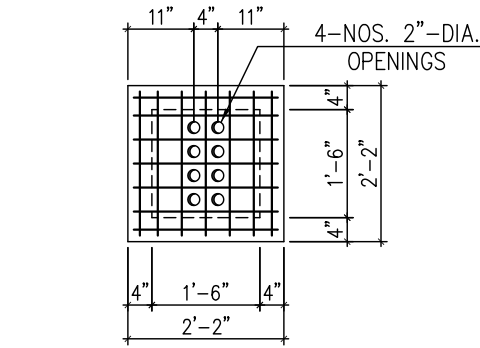
NOTES:

- ALL DIMENSIONS ARE IN FPS-UNITS, EXCEPT NOTED OTHERWISE.
- READ THIS DRAWING IN CONJUNCTION WITH THE RELEVANT DRAWINGS.
- FOR GENERAL STRUCTURAL NOTES & TYPICAL DETAILS, REFER DWG. NO. 4010/323/C/10aG03 & G04.

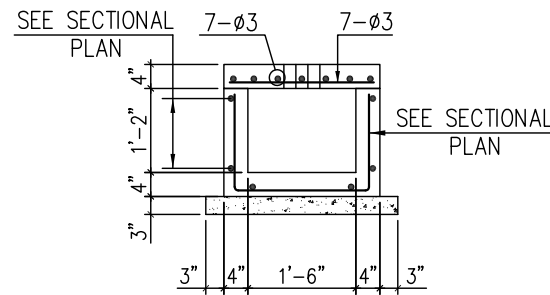
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UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
CONNECTIVITY OF UNIVERSITY DRAINS WITH MUNICIPAL DRAINS					
STRUCTURAL DETAILS OF DRAINS					
(SHEET 1 OF 2)					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CHKD.	APPROVED		
DWN. MUNIR	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
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CKD. M. HASNAIN		4010/323/C/10aG03			0
SUBM. AAMIR RASHEED	DEC, 2025				



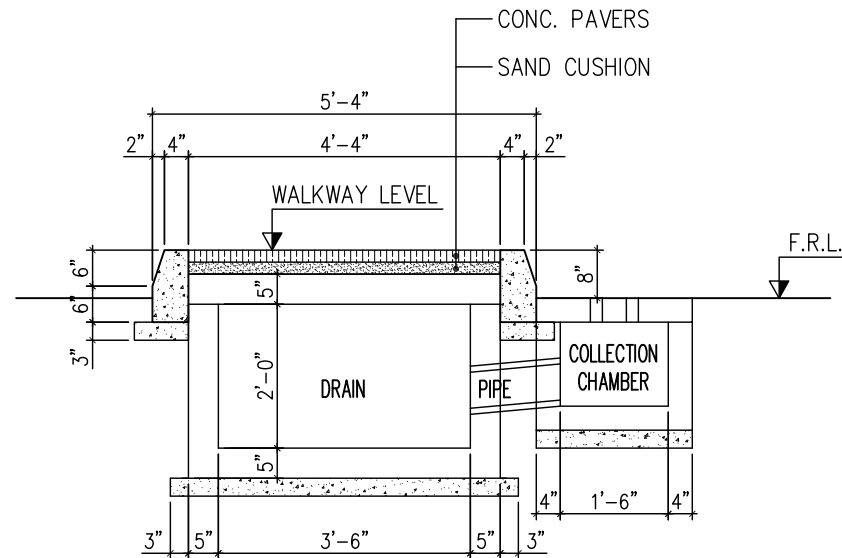
TYPICAL SECTION OF DRAIN WITH WALKWAY
ALONG THE ROAD IN THE DEGREE COLLEGE AREA



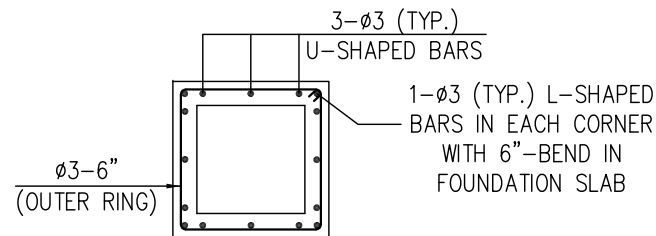
PLAN OF PERFORATED RCC COVER
OVER COLLECTION CHAMBER



CROSS SECTION OF
COLLECTION CHAMBER



TYPICAL SECTION OF DRAIN WITH WALKWAY
ALONG THE ROAD IN THE DEGREE COLLEGE AREA
AT COLLECTION CHAMBER LOCATION



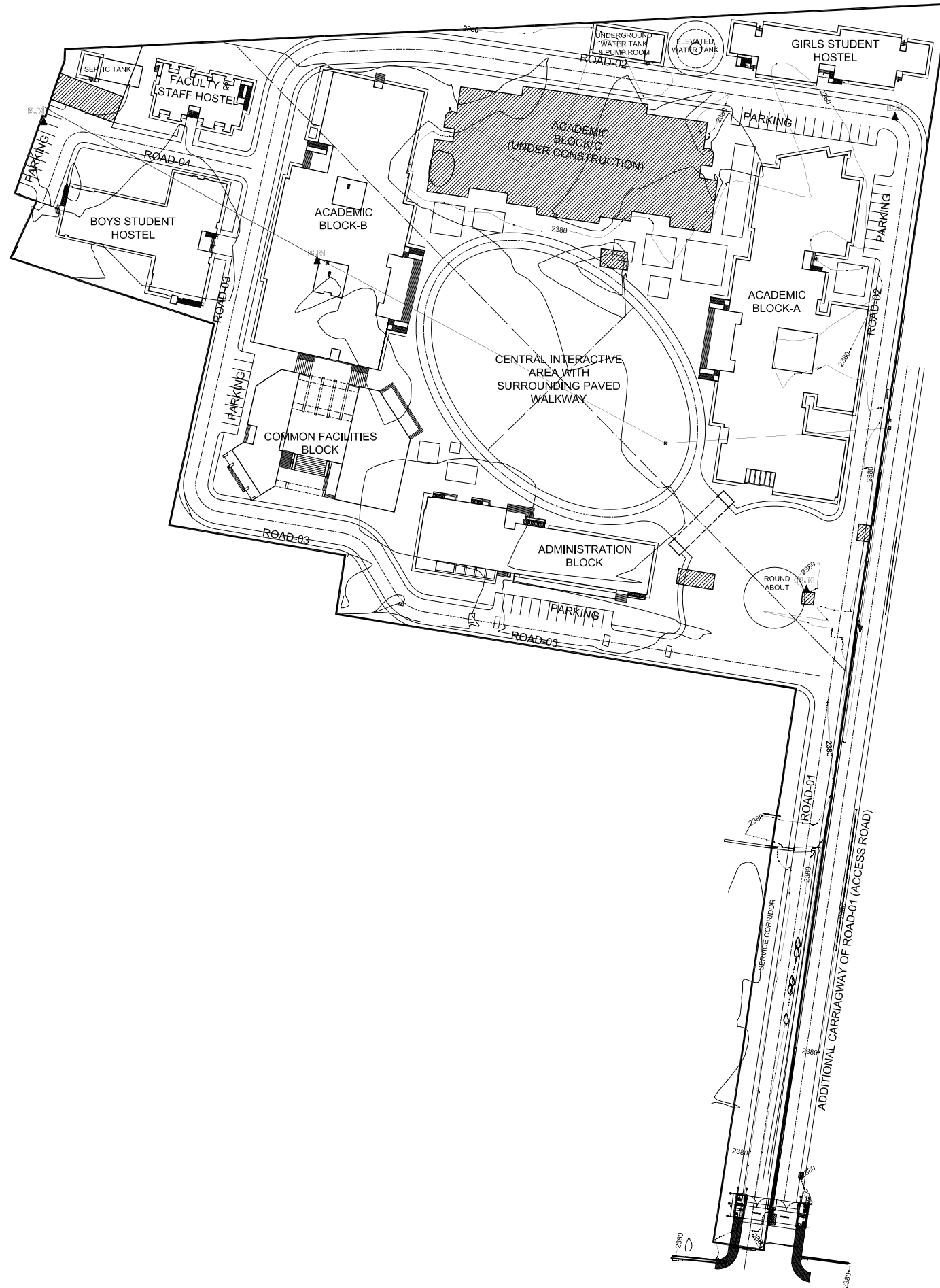
SECTIONAL PLAN OF
COLLECTION CHAMBER

NOTES:

- ALL DIMENSIONS ARE IN FPS-UNITS, EXCEPT NOTED OTHERWISE.
- READ THIS DRAWING IN CONJUNCTION WITH THE RELEVANT DRAWINGS.
- FOR GENERAL STRUCTURAL NOTES & TYPICAL DETAILS, REFER DWG. NO. 4010/323/C/10aG03 & G04.

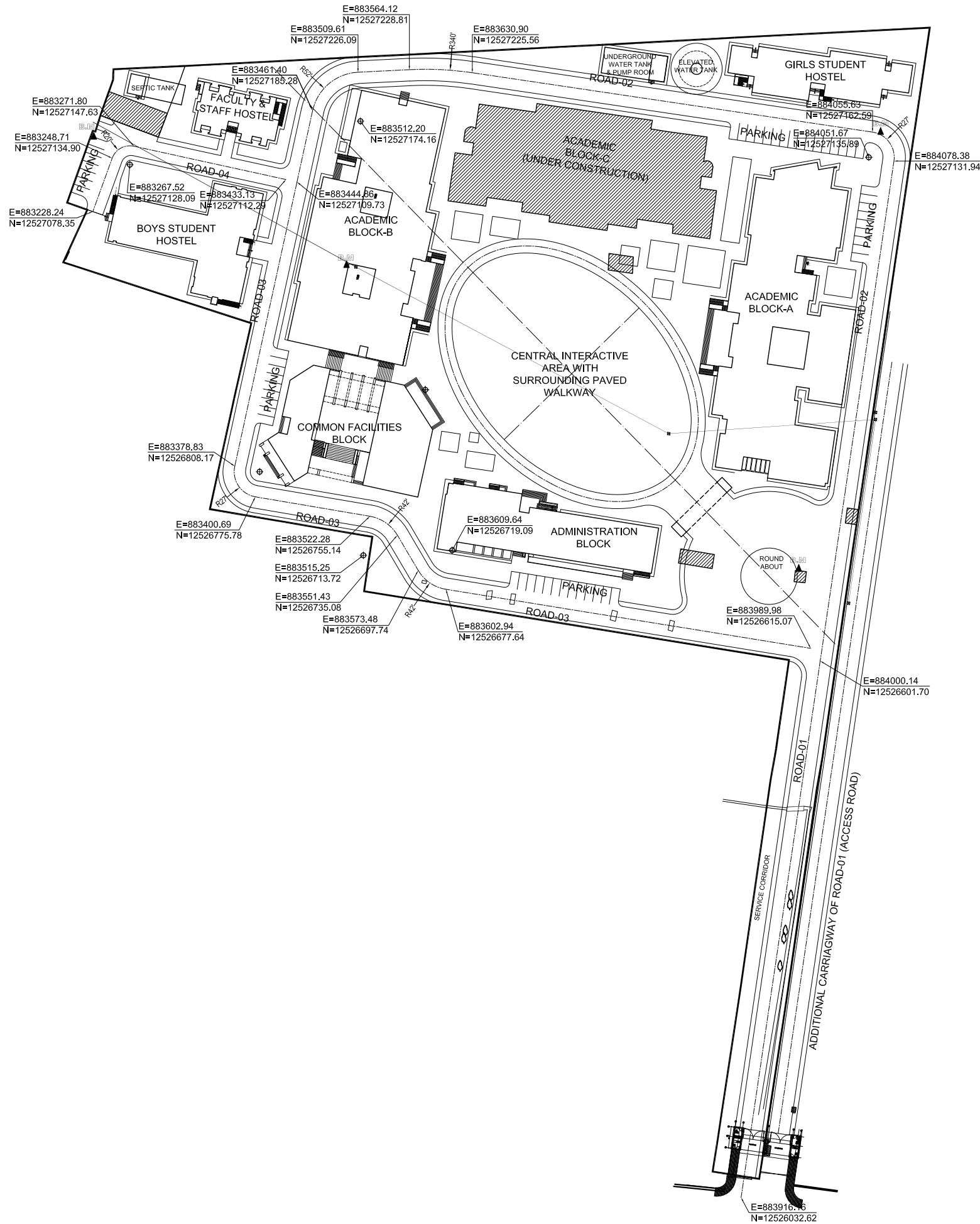
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 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESIGN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. MUNIR	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
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CKD. M. HASNAIN		4010/323/C/10aG04			0
SUBM. AAMIR RASHEED	DEC. 2025				

WIDENING OF ACCESS ROAD
ROAD & WALKWAYS



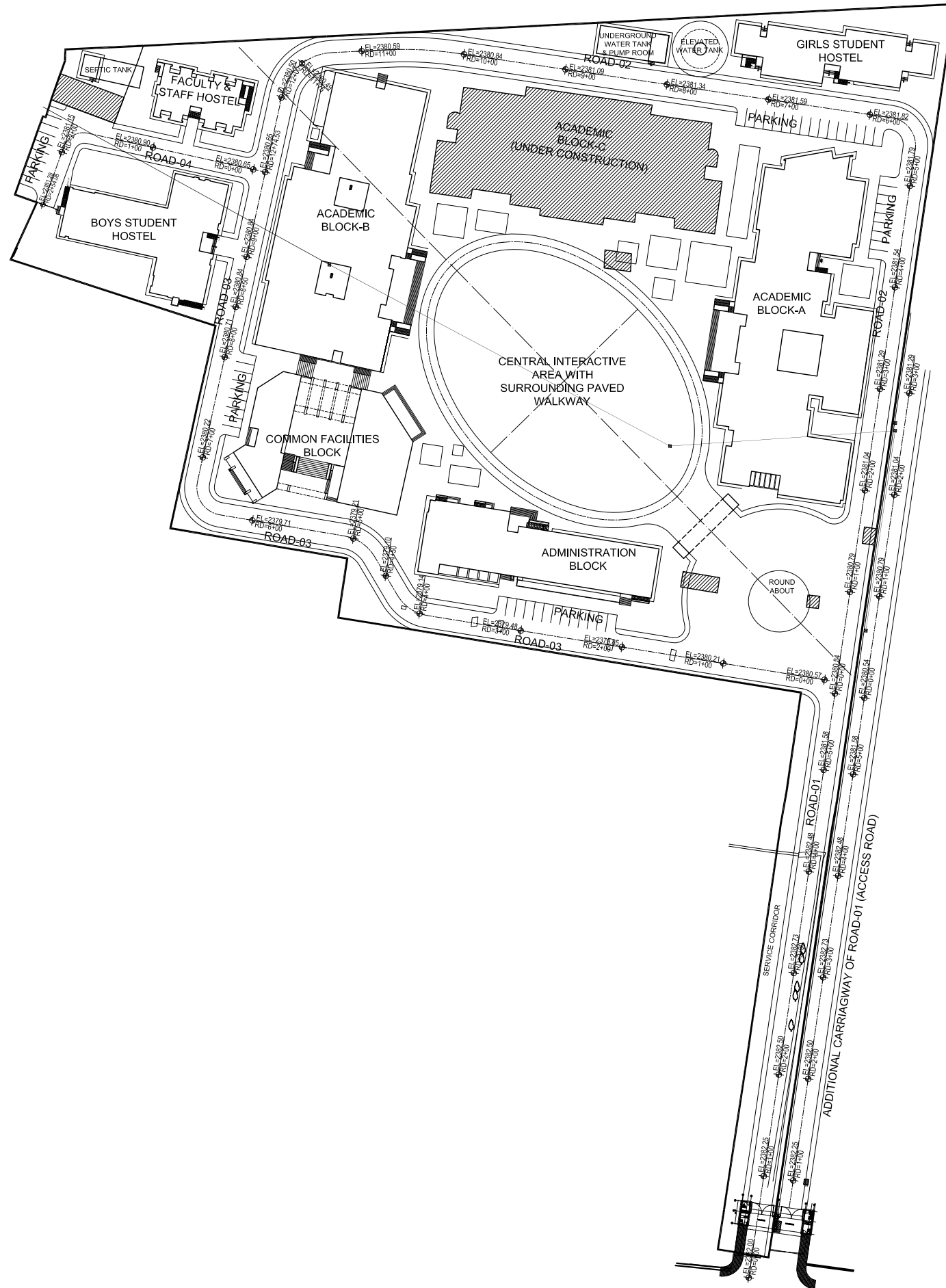
LIST OF CONTROL POINTS				
BM.NO	EASTING	NORTHING	ELE.	REMARKS
BM.1	883977.340	12526700.430	2380.34	NEAR TUBEWELL
BM.2	884064.230	12527163.780	2380.89	NEAR U/C BUILDING
BM.3	883497.440	12527022.550	2376.22	NEAR ELECTRIC POLE
BM.4	883229.220	12527158.590	2376.89	NEAR WATER TANK

REV. NO.	DATE	DESCRIPTION		BY	CKD. APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1) ANCILLARY WORKS WIDENING OF ACCESS ROAD (ADDITIONAL CARRIAGEWAY) MASTER PLAN SUPERIMPOSED ON SURVEY					
		NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD			
DESIGN, NESPAC	RECOMMENDED	VER/CKD.	APPROVED		
DWN.					
FILE	DATE	DRAWING NO.			REV.
CKD.		4010/324/C/10bC01			0
SUBM.	DEC, 2025				

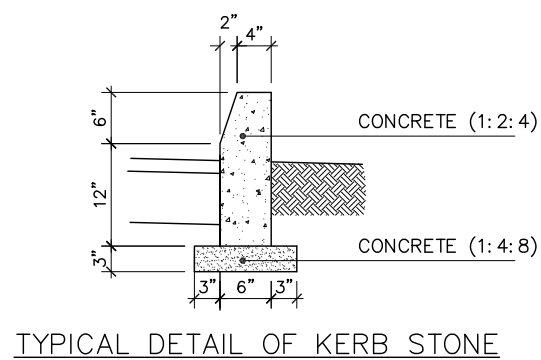
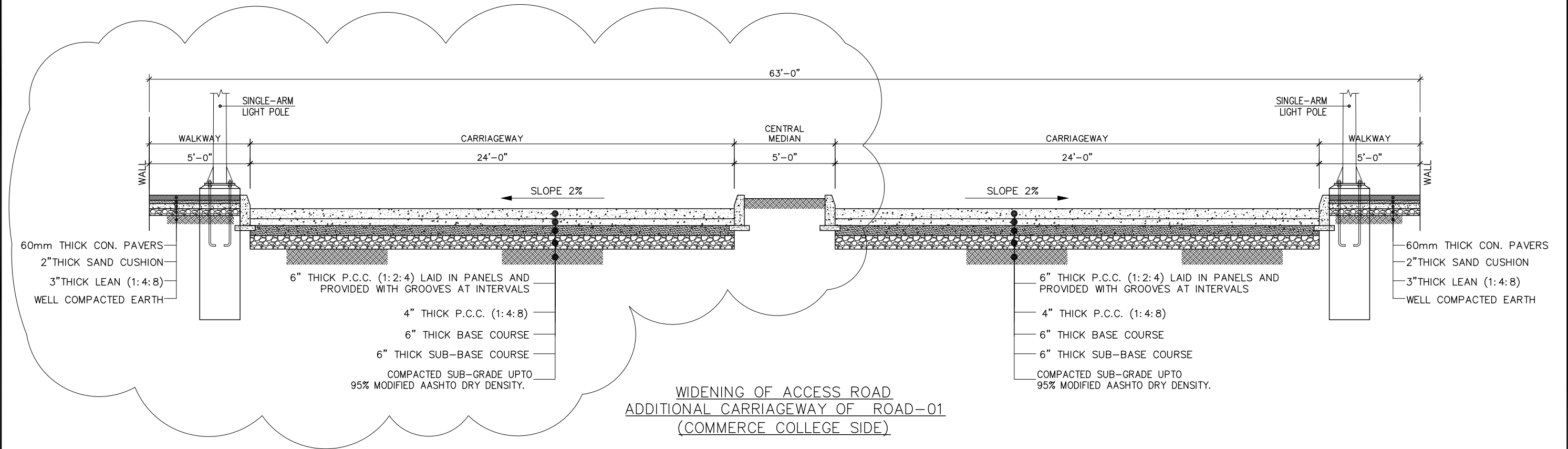


LIST OF CONTROL POINTS				
BM.NO	EASTING	NORTHING	ELE.	REMARKS
BM.1	883977.340	12526700.430	2380.34	NEAR TUBEWELL
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REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
WIDENING OF ACCESS ROAD (ADDITIONAL CARRIAGEWAY)					
SETTING OUT PLAN					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DES. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. _____	_____	_____	_____		
FILE _____	DATE	DRAWING NO.			REV.
CKD. _____	DEC. 2025	4010/324/C/10bC02			0
SUBM. _____					



REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1) ANCILLARY WORKS WIDENING OF ACCESS ROAD (ADDITIONAL CARRIAGEWAY) FINISH ROAD ELEVATION					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DES. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN.					
FILE	DATE	DRAWING NO.			REV.
CKD.		4010/324/C/10bC03			0
SUBM.	DEC, 2025				



- NOTES:**
1. ALL DIMENSIONS ARE IN FPS-UNITS, EXCEPT NOTED OTHERWISE.
 2. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT PROJECT DRAWINGS.

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
WIDENING OF ACCESS ROAD					
TYPICAL ROAD CROSS SECTION					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESIGN, NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN.					
FILE	DATE	DRAWING NO.		REV.	
CKD.		4010/324/C/10bC04		0	
SUBM.	DEC. 2025				

WIDENING OF ACCESS ROAD
STORM DRAINAGE SYSTEM

A. GENERAL

- NOTES GIVEN ON THIS DRAWING ARE APPLICABLE TO ALL STRUCTURAL DRAWINGS UNLESS OTHERWISE NOTED. NOTES WRITTEN ON ANY OTHER DRAWING SHALL BE APPLICABLE TO THAT PARTICULAR DRAWING ONLY UNLESS OTHERWISE CROSS REFERRED.
- SYSTEM OF UNITS IS FPS.
- ALL LEVELS MARKED ON THE DRAWINGS ARE LEVELS OF STRUCTURAL ELEMENTS. FINISH LEVELS SHALL BE IN ACCORDANCE WITH THE ARCHITECTURAL DRAWINGS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND STABILITY OF THE STRUCTURE AND ALL TEMPORARY WORKS DURING CONSTRUCTION.
- THE CONTRACTOR SHALL INFORM THE ENGINEER ABOUT ANTICIPATED CONSTRUCTION LOADS IN THE STRUCTURE AND OBTAIN ENGINEER'S APPROVAL THEREOF BEFORE COMMENCING THE WORK.
- THE CONTRACTOR SHALL CO-ORDINATE ALL DRAWNGS OF ALL DISCIPLINES FOR ALL ITEMS INCLUDING BUT NOT LIMITED TO SIZES AND LOCATION OF ALL OPENINGS REQUIRED FOR DUCTS, PIPES AND PIPE SLEEVES, ELECTRICAL CONDUITS AND OTHER ITEMS TO BE EMBEDDED IN CONCRETE OR OTHERWISE INCORPORATED IN STRUCTURAL WORK AND SHALL BRING TO THE NOTICE OF THE ENGINEER DISCREPANCIES, IF ANY, FOR HIS INSTRUCTIONS, PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL VERIFY LAYOUT, CONFIGURATION, ALL DIMENSIONS AND LEVELS PERTAINING TO EXISTING WORKS BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL ADOPT ADEQUATE AND APPROPRIATE MEASURES SO AS NOT TO DAMAGE THE EXISTING WORKS.
- THE CONTRACTOR SHALL EXERCISE UTMOST CARE AND PRECAUTION DURING THE WORKS, AGAINST ANY MISHAPS OR ACCIDENTS, FOR WHICH THE CONTRACTOR SHALL BE WHOLLY AND SOLELY RESPONSIBLE. THE CONTRACTOR SHALL INDEMNIFY THE OWNER AGAINST ANY ACCIDENTS AND ANY LOSSES THEREFROM AND SHALL REPAIR AND RECTIFY THEM AT HIS OWN COST AND TIME.
- THE CONTRACTOR SHALL COORDINATE SCHEDULE OF CONSTRUCTION WITH SUPPLY AND INSTALLATION OF EQUIPMENT.
- PROVISIONS SHALL BE MADE FOR INSTALLATION OF EQUIPMENT AS PER MANUFACTURER'S RECOMMENDATIONS.
- ANY DEPARTURES/DEVIATIONS DESIRED FROM THE DESIGN OR SPECIFICATIONS, OR SOLUTIONS TO ANY PROBLEMS ENCOUNTERED, SHALL BE GOT APPROVED FROM THE ENGINEER PRIOR TO IMPLEMENTATION. UNAPPROVED DEPARTURES/DEVIATIONS MAY LEAD TO REJECTION/REPLACEMENT OF THE ENTIRE WORK AT THE CONTRACTOR'S COST.
- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO SPECIFICATIONS OF THE CONTRACT. IN ABSENCE OF ANY EXPRESS OR IMPLIED SPECIFICATION IN THE CONTRACT, ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO RELEVANT AMERICAN STANDARDS AND SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.
- THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS AND BAR BENDING SCHEDULES FOR ENGINEER'S APPROVAL AND OBTAIN HIS APPROVAL BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE ACCURACY OF SHOP DRAWINGS AND BAR BENDING SCHEDULES. THE ENGINEER'S APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY.

B. FOUNDATION AND EARTHWORK

- THE DESIGN OF FOUNDATION IS BASED ON ALLOWABALE BEARING CAPACITY OF 0.75 TSF. IF THE CONTRACTOR FINDS TRACES OF LOW BEARING CAPACITY (ANYWHERE IN THE SITE), SAME SHALL BE INVESTIGATED BY THE CONTRACTOR UNDER THE SUPERVISION OF THE ENGINEER. FOUNDATION DESIGN SHALL BE REVISED (IF REQUIRED) BASED ON THE CONFIRMATORY GEOTECHNICAL INVESTIGATION CARRIED OUT BY THE CONTRACTOR.
- ALL FOUNDATIONS SHALL BE PLACED ON COMPETENT BEARING STRATA. IF ACCEPTABLE BEARING STRATA IS NOT AVAILABLE AT INDICATED DEPTH OF FOUNDATION BELOW N.S.L OR F.G.L WHICH EVER IS LOWER, THE ENGINEER SHALL BE NOTIFIED IN WRITING FOR HIS/HER INSTRUCTION.
- TERMITE CONTROL TREATMENT SHALL BE CARRIED OUT AS PER SPECIFICATIONS.
- THE TYPE AND COMPACTION OF SOIL BELOW GRADE SLAB SHALL BE AS PER JOB SPECIFICATIONS.
- NO FOOTING SHALL BE PLACED ON FILL. HOWEVER, AREAS WHERE FILLING BELOW THE FOOTINGS BECOMES INEVITABLE OR OVER-EXCAVATION (IF ANY), SHALL BE FILLED WITH P.C.C. (1:4:8) WITH PRIOR APPROVAL OF THE ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING SYSTEM IF AND WHERE SO REQUIRED DURING CONSTRUCTION.
- ALL EARTH-FACING STRUCTURAL CONCRETE SURFACES SHALL BE COATED WITH BITUMEN (10/20 GRADE) APPLIED HOT AT THE RATE OF 20 lb/100 SFT. (1.0 KG/SQM), (EXCEPT FOR CONCRETE CLASS 'D' AND 'E').
- BACKFILLING AND COMPACTION SHALL BE CARRIED OUT EQUALLY ON BOTH SIDES OF PLINTH BEAMS TO AVOID IMBALANCE OF LATERAL EARTH PRESSURE.
- THE CONTRACTOR SHALL SUPPLY AND ERECT ADEQUATE SHORING AND SUPPORT THE SIDES OF ALL EXCAVATIONS WHERE REQUIRED TO SAFEGUARD WORKMEN AND PROTECT ANY ADJACENT STRUCTURES.
- EXISTING UNDERGROUND SERVICES, REQUIRED TO BE LEFT IN POSITION, SHALL BE CAREFULLY PROTECTED DURING EXCAVATION AND BACKFILLING OPERATIONS.
- EXCAVATIONS ADJACENT TO EXISTING STRUCTURES AND/OR UNDERGROUND SERVICES SHALL BE MADE BY HAND.

C. REINFORCED / PLAIN CEMENT CONCRETE

- ALL CONCRETE WORKS AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF KP-MRS TECHNICAL SPECIFICATIONS, BEING REFERENCE SPECIFICATIONS FOR ALL SCHEDULED ITEMS.
- STRENGTHS OF DIFFERENT CONCRETE CLASSES / MIXES SHALL BE AS FOLLOWS:

CLASS	NOMINAL MIX RATIO	MIN. CYLINDER STRENGTH AT 28 DAYS (psi)
A1	—	3,000 psi
C	1:2:4	2,400 psi
D	1:3:6	1,500 psi
E	1:4:8	1,200 psi

C. REINFORCED / PLAIN CEMENT CONCRETE
(CONTINUED)

- CLASS OF CONCRETE FOR DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE AS FOLLOWS UNLESS NOTED OTHER WISE:

COMPONENT	CONCRETE TYPE
FOUNDATION & WALLS	'C'
COLUMNS, SLABS & BEAMS	'C'
P.C.C. STEPS	'D'
LEAN CONCRETE	'E'

- ORDINARY PORTLAND CEMENT SHALL BE USED FOR ALL CONCRETE WORKS, IF NOT MENTIONED ON THE DRAWINGS/BOQ.
- AN INTEGRAL WATER PROOFING AGENT SHALL BE USED IN CONCRETE THAT IS CONSTANTLY OR INTERMITTENTLY IN CONTACT WITH WATER AS PER MANUFACTURER'S RECOMMENDATIONS, AS ADVISED BY THE ENGINEER.
- CONCRETE CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

STRUCTURAL MEMBER / ELEMENT	MINIMUM COVER (INCHES)
FOUNDATIONS (ALL TYPES)	2"
COLUMNS & BEAMS	1½"
RETAINING WALLS	1½"
SLABS	¾"
RCC SHELLS AND DOMES	½"

- ALL REINFORCING STEEL BARS, EXCEPT ø3 (3/8"-DIAMETER) BARS, SHALL BE DEFORMED, HOT ROLLED BILLET STEEL BARS CONFORMING TO ASTM A-615, GRADE-60 WITH SPECIFIED YIELD STRENGTH OF NOT LESS THAN 60,000 psi.
- ø3 (3/8"-DIAMETER) BARS SHALL BE GRADE-40 STEEL CONFORMING TO ASTM A-615 GRADE-40 WITH SPECIFIED YIELD STRENGTH OF NOT LESS THAN 40,000 psi.
- GRADE-60 STEEL BARS ARE REPRESENTED USING PREFIX SYMBOL "#" AND GRADE-40 STEEL BARS ARE REPRESENTED USING PREFIX SYMBOL "ø". WHEREAS, THE NUMBER INDICATES THE BAR DIAMETER/SIZE, AS UNDER:

BAR NUMBER	DIAMETER (INCHES)
3	3/8"
4	1/2"
5	5/8"
6	3/4"
8	1"

- ALL DETAILING SHALL BE DONE AS PER ACI STANDARDS ACI-315, ACI-318 & ACI-350R.
- ALL REINFORCING STEEL SHALL BE HELD FIRMLY IN PLACE BEFORE AND DURING THE PLACING OF CONCRETE BY MEANS OF WIRES AND SUPPORTS ADEQUATE TO PREVENT DISPLACEMENT DURING THE COURSE OF CONSTRUCTION.

D. CONCRETE CONSTRUCTION

- THE CONTRACTOR SHALL SUBMIT CONCRETE POURING SCHEDULE FOR ENGINEER'S APPROVAL. NO CONCRETE SHALL BE POURED UNTIL ITS FORMWORK AND REINFORCEMENT HAS BEEN INSPECTED AND APPROVED BY THE ENGINEER.
- DURING CONSTRUCTION, STACKING OF CONSTRUCTION MATERIALS, BLOCKS ETC. SHOULD BE AVOIDED ON SLAB PANELS.
- BEFORE CASTING OF ANY STRUCTURAL MEMBER, THE CONTRACTOR SHALL ENSURE THAT ALL EMBEDDED ITEMS FOR ELECTRICAL, MECHANICAL, HVAC, PLUMBING, STRUCTURAL STEEL AND OTHER WORKS, AND DOWELS FOR STRUCTURAL MEMBERS AND/OR MASONARY ARE PROPERLY LOCATED IN PLACE.

E. CONSTRUCTION JOINTS

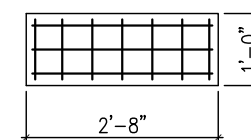
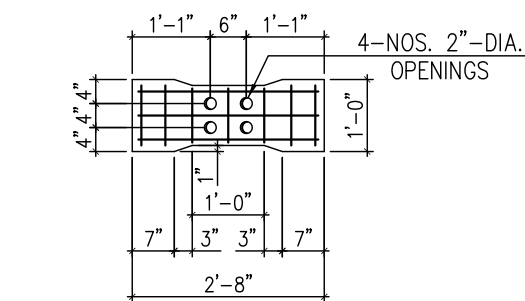
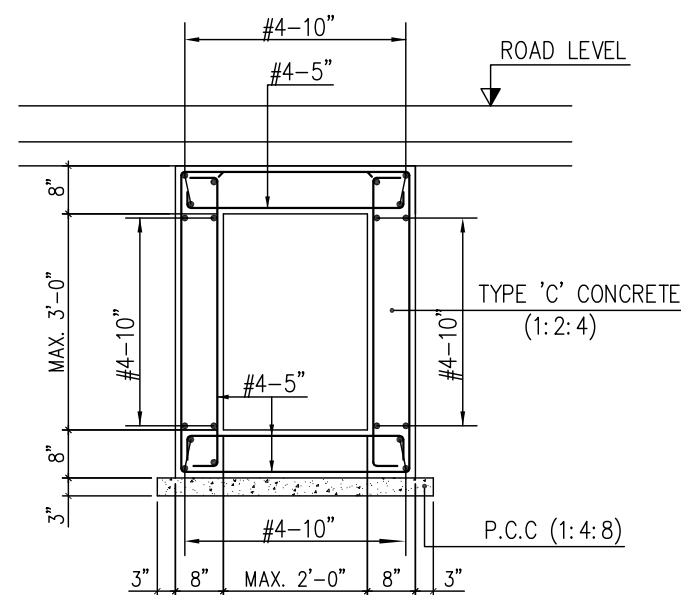
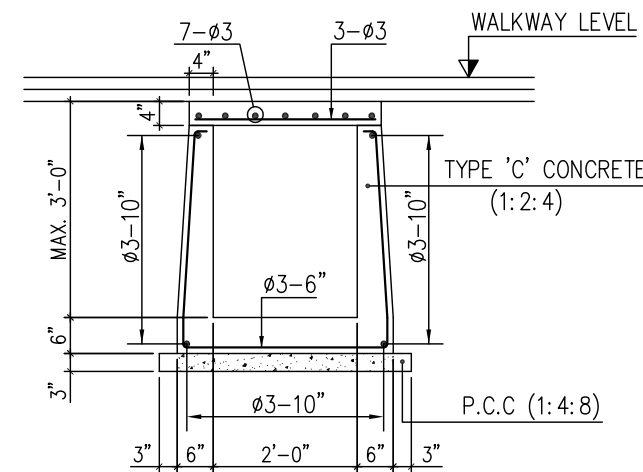
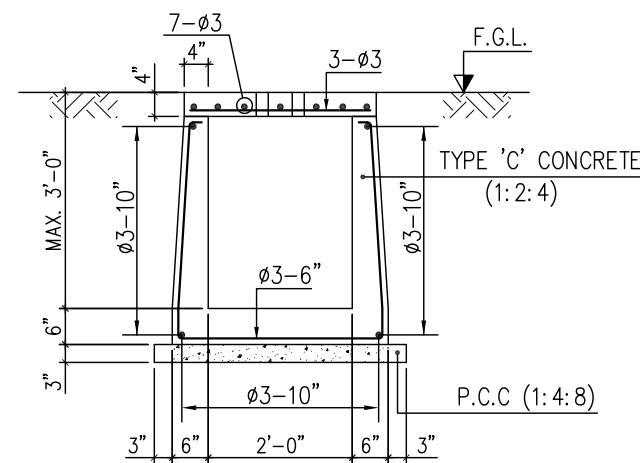
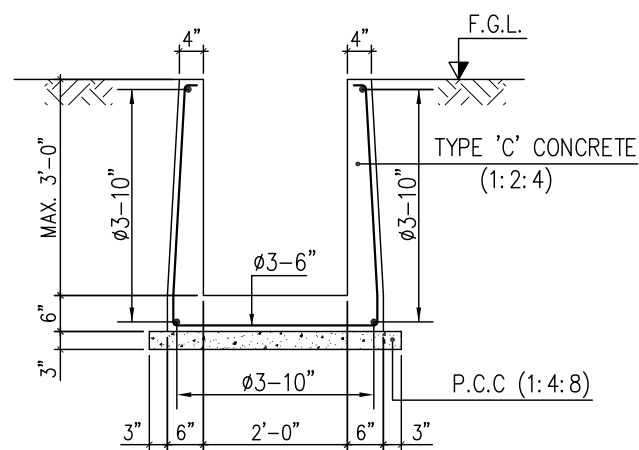
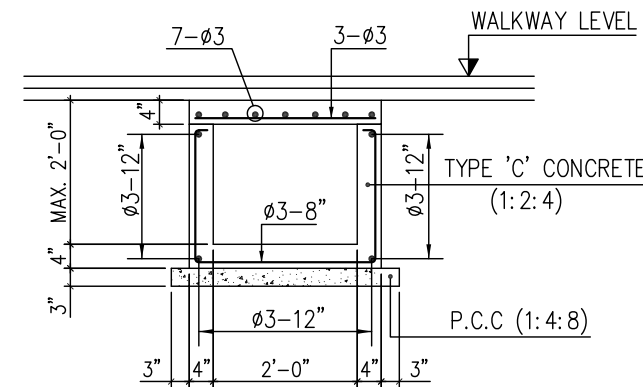
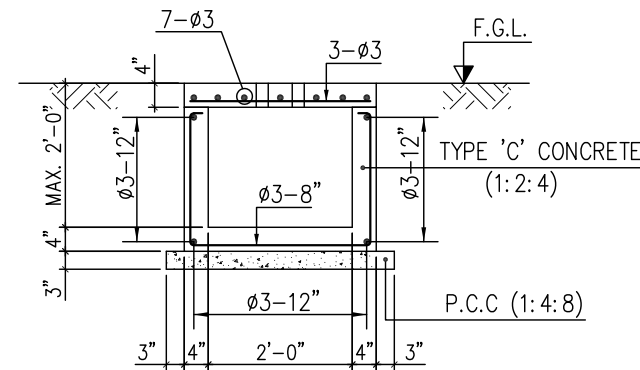
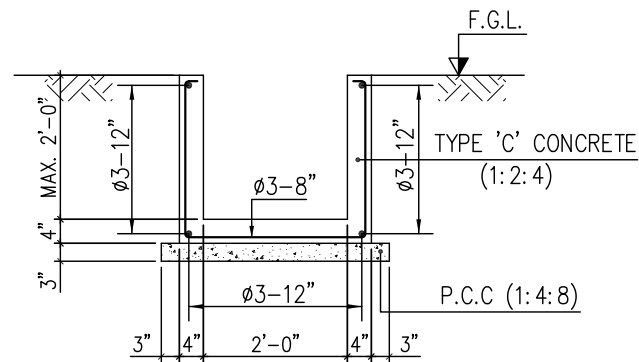
- JOINTS, NOT SHOWN ON THE DRAWING, SHALL BE SO MADE AND LOCATED AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHALL NEED PRIOR APPROVAL OF THE ENGINEER. THEY SHALL BE LOCATED NEAR THE MIDDLE OF THE SPANS OF SLAB & BEAMS. JOINTS IN WALLS & COLUMNS SHALL BE AT THE UNDER-SIDE OF FLOORS, SLABS OR BEAMS AND AT THE TOP OF FOOTINGS OR FLOOR SLABS.
- JOINTS SHALL BE PERPENDICULAR TO MAIN REINFORCEMENT. ALL REINFORCING STEEL SHALL BE CONTINUED ACROSS THE JOINTS.
- JOINTS IN BASE SLAB & WALLS AND ROOF SLAB, IN ADDITION TO THOSE SHOWN ON THE DRAWINGS SHALL BE BORNE BY THE CONTRACTOR. BEAMS & BRACKETS SHALL BE PLACED AT THE SAME TIME AS SLABS.

F. ELECTRICAL CONDUITS

- CONDUITS, FOR ELECTRICAL WORKS, SHALL BE PLACED WITHIN THE REINFORCED CONCRETE. THEY SHALL BE PLACED WITHIN THE MIDDLE THIRD OF THE SECTION IN BEAMS & SLABS AND WITHIN THE MIDDLE HALF OF THE THICKNESS. SPACING BETWEEN PARALLEL CONDUITS SHALL NOT BE LESS THAN 6"(150 MM).

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1) ANCILLARY WORKS WIDENING OF ACCESS ROAD (STROM DRAINAGE SYSTEM) GENERAL STRUCTURAL NOTES & TYPICAL DETAILS (SHEET 1 OF 2)					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. <u>NESPAK</u>	RECOMMENDED	VER./CKD.	APPROVED		
DWN. <u>FAHMEED</u>	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE <u>4010-AW</u>	DATE	DRAWING NO.		REV.	
CKD. <u>M. HASNAIN</u>		4010/323/C/10cG01		0	
SUBM. <u>AAMIR RASHEED</u>	DEC, 2025				

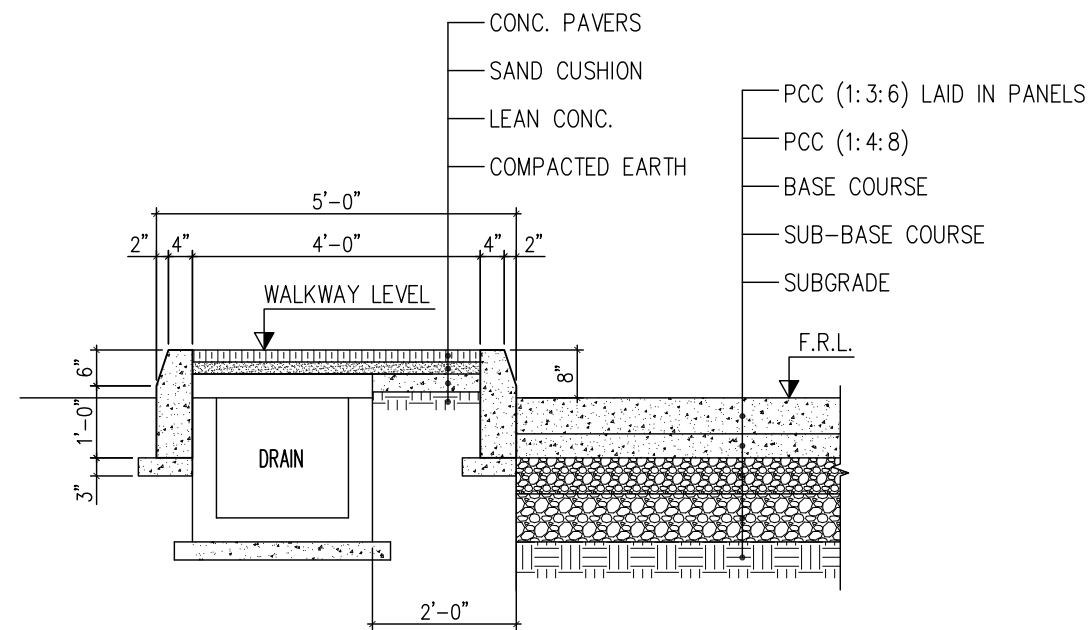
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UNIVERSITY OF BUNER, BUNER									
UOB SWARI CAMPUS (PROJECT-1) ANCILLARY WORKS WIDENING OF ACCESS ROAD (STROM DRAINAGE SYSTEM) GENERAL STRUCTURAL NOTES & TYPICAL DETAILS (SHEET 2 OF 2)									
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD									
DESIGN. NESPAK -----		RECOMMENDED		VER./CKD.		APPROVED			
DRAWN. FAHMEED -----		M. HASNAIN		AAMIR RASHEED		AAMIR RASHEED -----			
FILED. 4010-AW -----		DATE		DRAWING NO.					REV.
CKD. M. HASNAIN -----				4010/323/C/10cG02					0
SUBM. AAMIR RASHEED		DEC.; 2025							



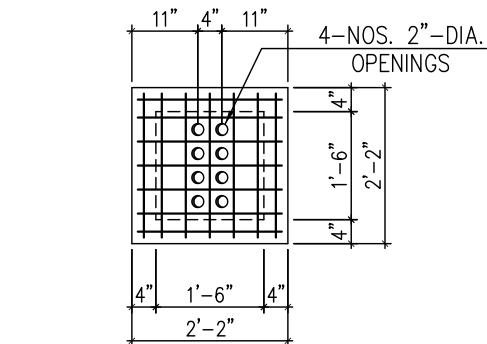
NOTES:

1. ALL DIMENSIONS ARE IN FPS—UNITS, EXCEPT NOTED OTHERWISE.
2. READ THIS DRAWING IN CONJUNCTION WITH THE RELEVANT DRAWINGS.
3. FOR GENERAL STRUCTURAL NOTES & TYPICAL DETAILS, REFER DWG. NO. 4010/323/C/10bG01 & G02.

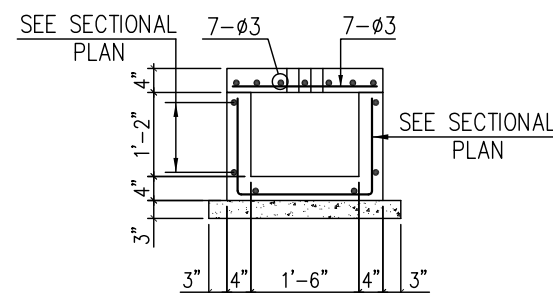
REV. NO.	DATE	DESCRIPTION				BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER								
UOB SWARI CAMPUS (PROJECT-1) ANCILLARY WORKS WIDENING OF ACCESS ROAD (STROM DRAINAGE SYSTEM) STRUCTURAL DETAILS OF DRAINS (SHEET 1 OF 3)								
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD								
DESIGN. NESPAK DRAWN. MUNIR FILE 4010-AW CKD. M. HASNAIN SUBM. AAMIR RASHEED	RECOMMENDED M. HASNAIN		VER./CKD. AAMIR RASHEED		APPROVED AAMIR RASHEED			
DATE		DRAWING NO.					REV.	
DEC. 2025		4010/323/C/10cG03					0	



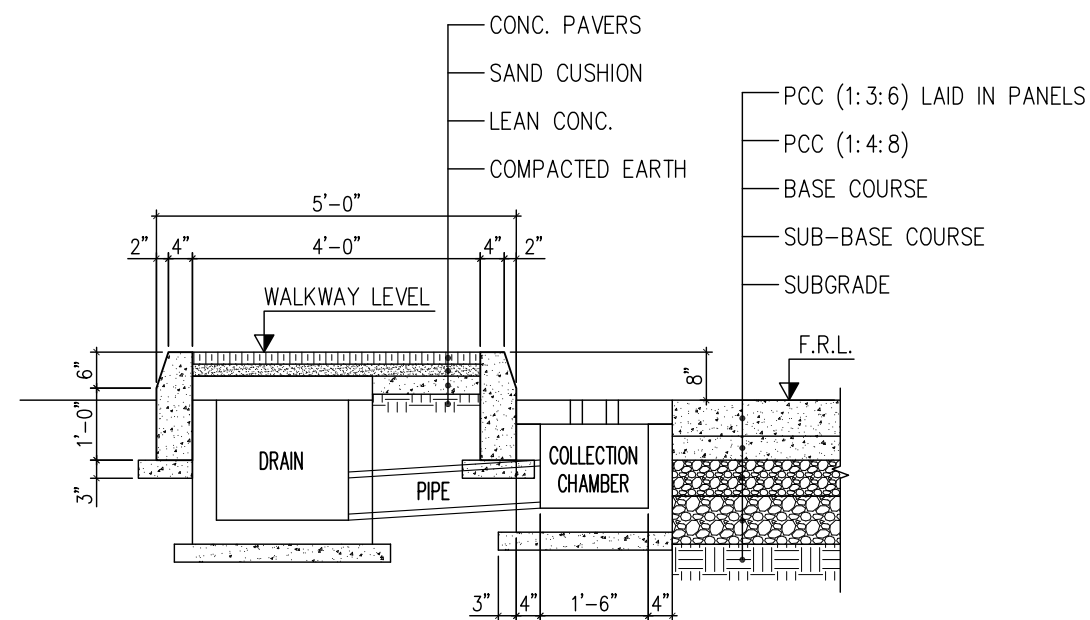
TYPICAL SECTION OF WALKWAY / ACCESS ROAD
AT DRAIN LOCATION



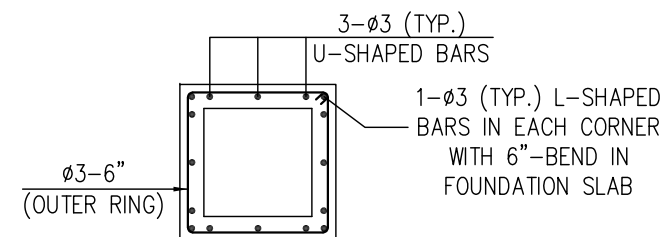
PLAN OF PERFORATED RCC COVER
OVER COLLECTION CHAMBER



CROSS SECTION OF
COLLECTION CHAMBER



TYPICAL SECTION OF WALKWAY / ACCESS ROAD
AT DRAIN AND COLECTION CHAMBER LOCATION

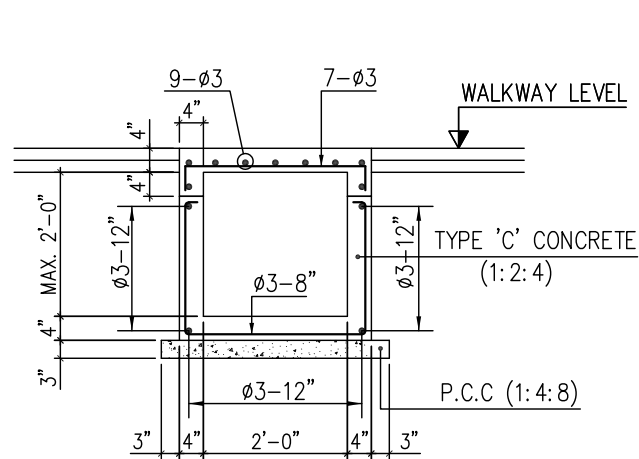


SECTIONAL PLAN OF
COLLECTION CHAMBER

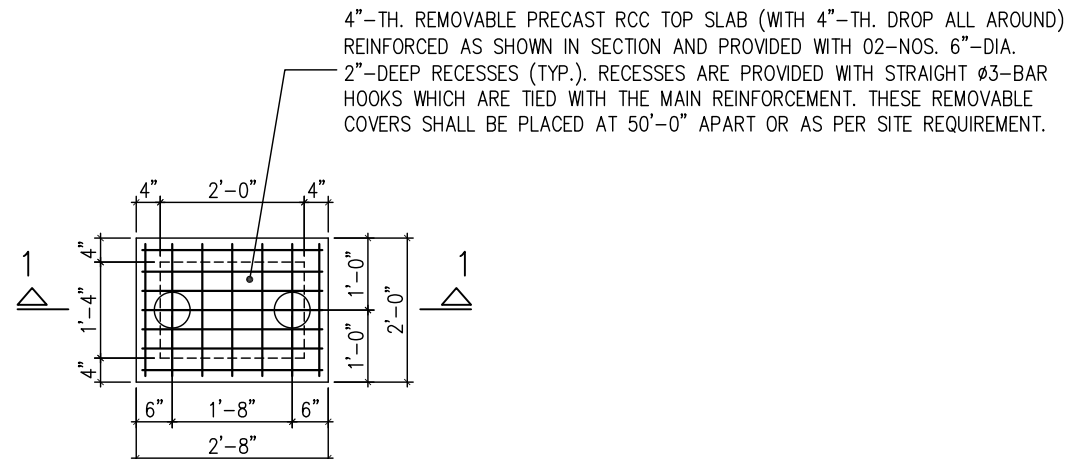
NOTES:

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3. FOR GENERAL STRUCTURAL NOTES & TYPICAL DETAILS, REFER DWG. NO. 4010/323/C/10bG01 & G02.

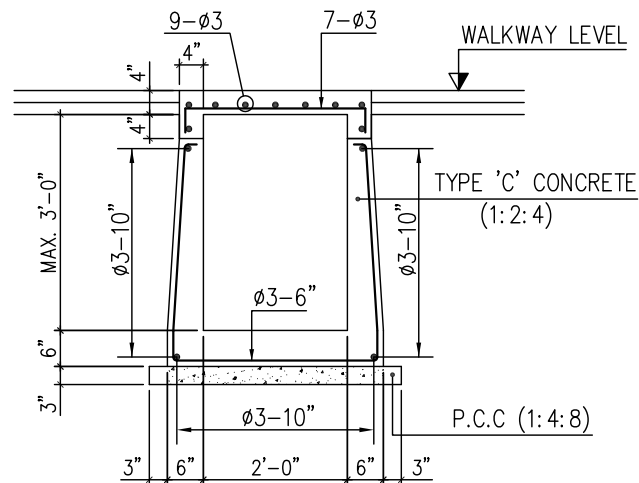
REV. No.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1) ANCILLARY WORKS WIDENING OF ACCESS ROAD (STROM DRAINAGE SYSTEM) STRUCTURAL DETAILS OF DRAINS (SHEET 2 OF 3)					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. MUNIR	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE 4010-AW	DATE	DRAWING NO.			REV.
CKD. M. HASNAIN		4010/323/C/10cG04			0
SUBM. AAMIR RASHEED	DEC. 2025				



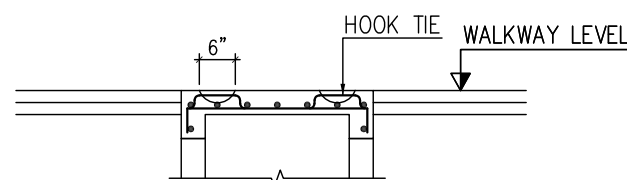
TYPICAL SECTION OF COVERED DRAIN
UNDER WALKWAY (MAX. 2'-0" DEEP)
AT REMOVABLE COVER LOCATION



TYPICAL PLAN OF REMOVABLE
PRECAST RCC COVER
FOR 24"-WIDE DRAIN UNDER WALKWAY



TYPICAL SECTION OF COVERED DRAIN
UNDER WALKWAY (MAX. 3'-0" DEEP)
AT REMOVABLE COVER LOCATION



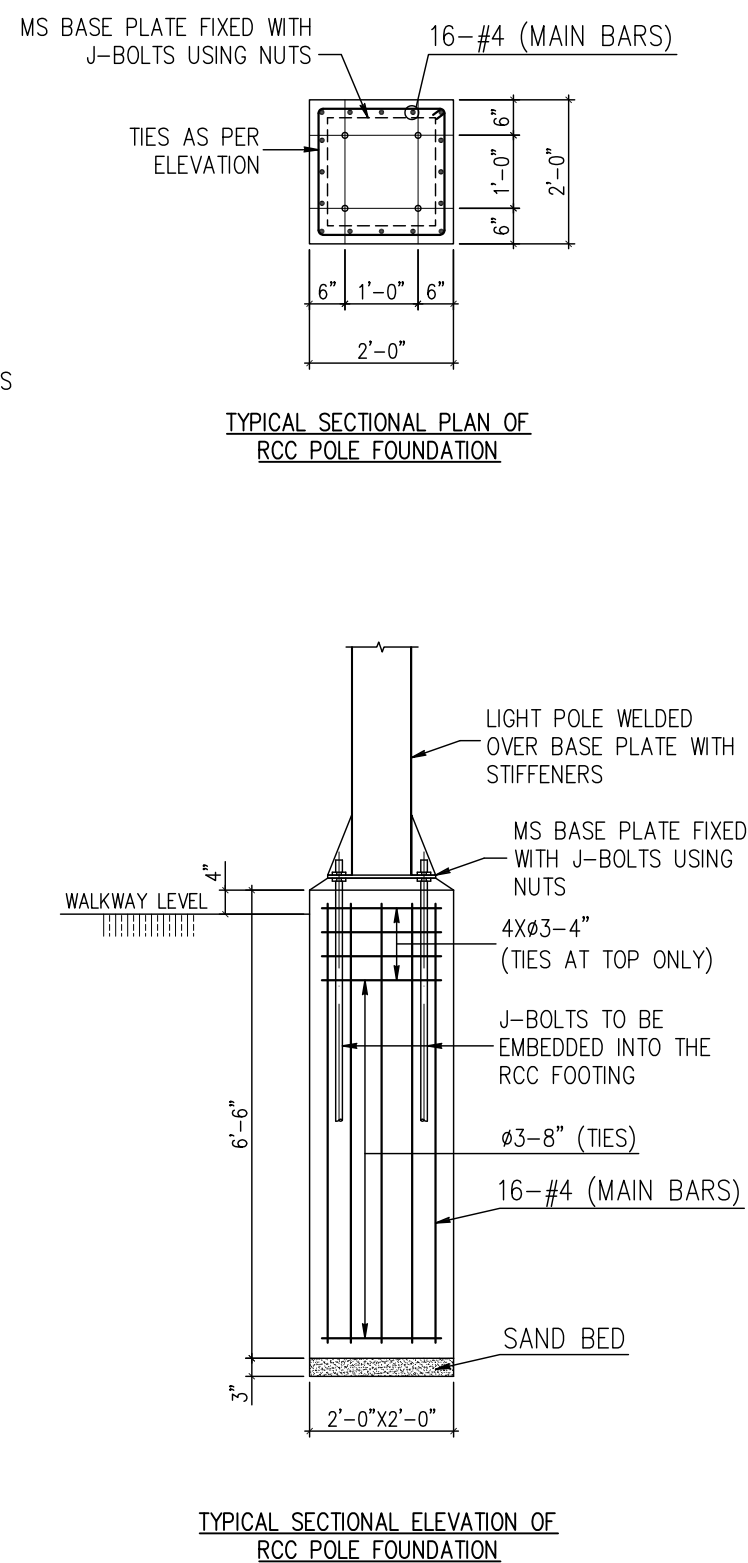
TYPICAL CROSS SECTION OF REMOVABLE
PRECAST RCC COVER
(SECTION 1-1)

NOTES:

- ALL DIMENSIONS ARE IN FPS-UNITS, EXCEPT NOTED OTHERWISE.
- READ THIS DRAWING IN CONJUNCTION WITH THE RELEVANT DRAWINGS.
- FOR GENERAL STRUCTURAL NOTES & TYPICAL DETAILS, REFER DWG. NO. 4010/323/C/10bG01 & G02.

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1) ANCILLARY WORKS WIDENING OF ACCESS ROAD (STROM DRAINAGE SYSTEM) STRUCTURAL DETAILS OF DRAINS (SHEET 3 OF 3)					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. MUNIR	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE 4010-AW	DATE	DRAWING NO.			REV.
CKD. M. HASNAIN		4010/323/C/10cG05			0
SUBM. AAMIR RASHEED	DEC, 2025				

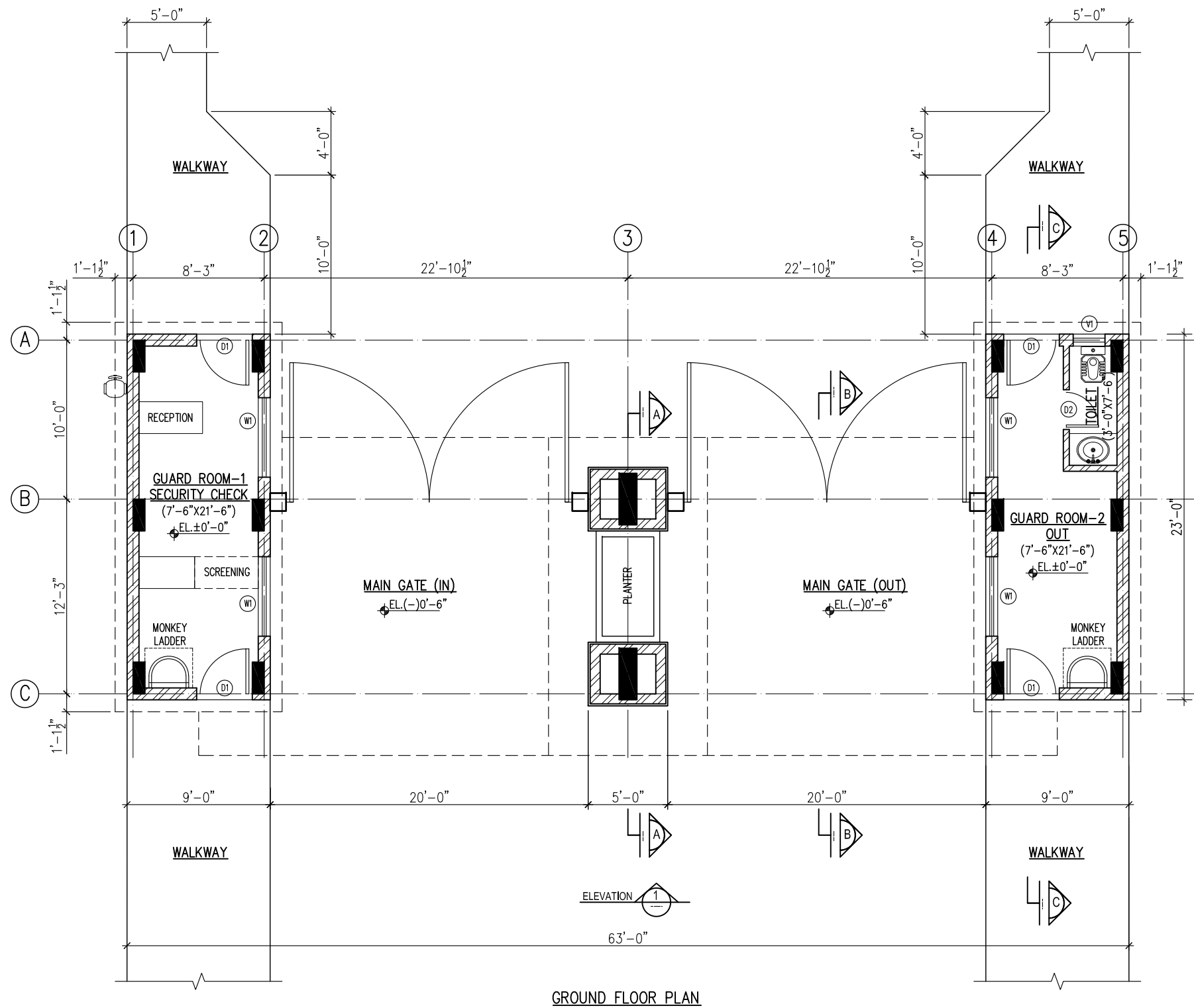
WIDENING OF ACCESS ROAD
EXTERNAL ELECTRICAL WORKS



- NOTES:**
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 3. FOR GENERAL STRUCTURAL NOTES & TYPICAL DETAILS, REFER DWG. NO. 4010/323/C/10bG01 & G02.

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1) ANCILLARY WORKS WIDENING OF ACCESS ROAD (EXTERNAL ELECTRICAL WORKS) STRUCTURAL DETAILS OF LIGHT POLE FOUNDATION (SHEET 1 OF 1)					
		NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD			
DES.N. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. MUNIR	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE 4010-AW	DATE	DRAWING NO.			REV.
CKD. M. HASNAIN		4010/323/C/10bG06			0
SUBM. AAMIR RASHEED	DEC. 2025				

MAIN GATE



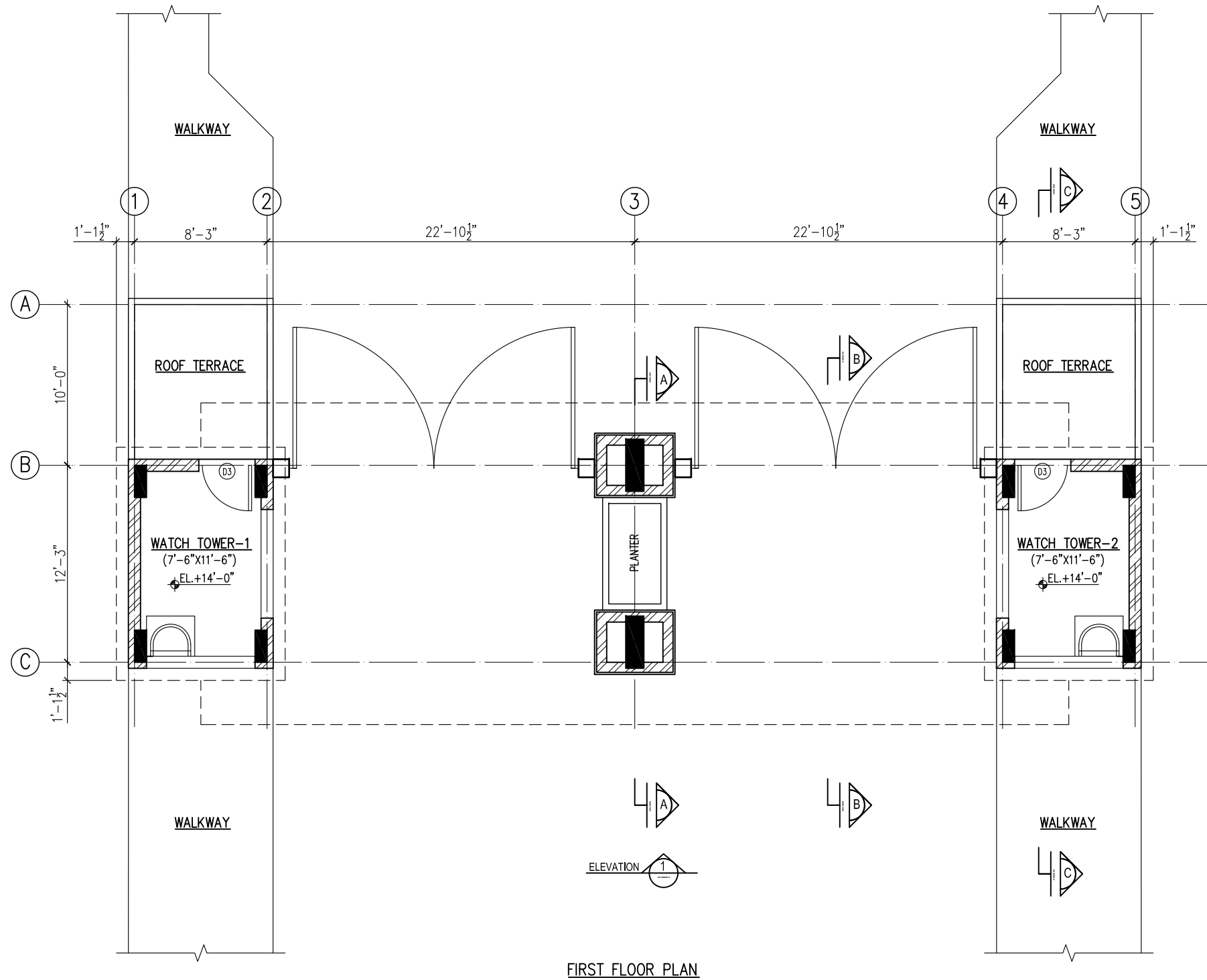
GROUND FLOOR PLAN

SCHEDULE OF DOORS & VENTILATORS												
TYPE	DESCRIPTION	MASONRY OPENING		MATERIAL		FINISHES		H A R D W A R E				
		WIDTH	HEIGHT	FRAME	SHUTTER	FRAME	SHUTTER	HOLD FAST	HINGES	LOCKS	TOWER BOLTS	PUSH PLATE
D1	MS-SINGLE LEAF	3'-6"	9'-0"	MS	MS	PAINT	PAINT	AS PER KP-MRS ITEM / SPECIFICATIONS				
D2	UPVC-SINGLE LEAF	2'-6"	7'-0"	UPVC	UPVC	UPVC	UPVC	AS PER KP-MRS ITEM / SPECIFICATIONS				
D3	MS-SINGLE LEAF	3'-6"	7'-0"	MS	MS	PAINT	PAINT	AS PER KP-MRS ITEM / SPECIFICATIONS				
W1	ALUMINIUM-SLIDING	5'-0"	6'-0"	AL	AL	AL	AL	AS PER KP-MRS ITEM / SPECIFICATIONS				
V1	ALUMINIUM-SLIDING	2'-0"	2'-0"	AL	AL	AL	AL	AS PER KP-MRS ITEM / SPECIFICATIONS				

GENERAL NOTES:

- ALL DIMENSIONS AND LEVELS ARE IN 'FPS' SYSTEM.
- READ THIS DRAWING IN CONJUNCTION WITH RELEVANT PROJECT DRAWINGS.
- ALL EL. (LEVELS) ARE STRUCTURAL LEVELS.
- EL.±0'-0" CORRESPONDS TO TOPOGRAPHIC SURVEY LEVEL OF THE SITE AS DECIDED BY THE ENGINEER.
- FIRST CLASS BRICK SHALL BE USED FOR ALL MASONRY WORKS.
- FINISH FLOOR IS 2" ABOVE THE STRUCTURAL LEVEL (EL.).

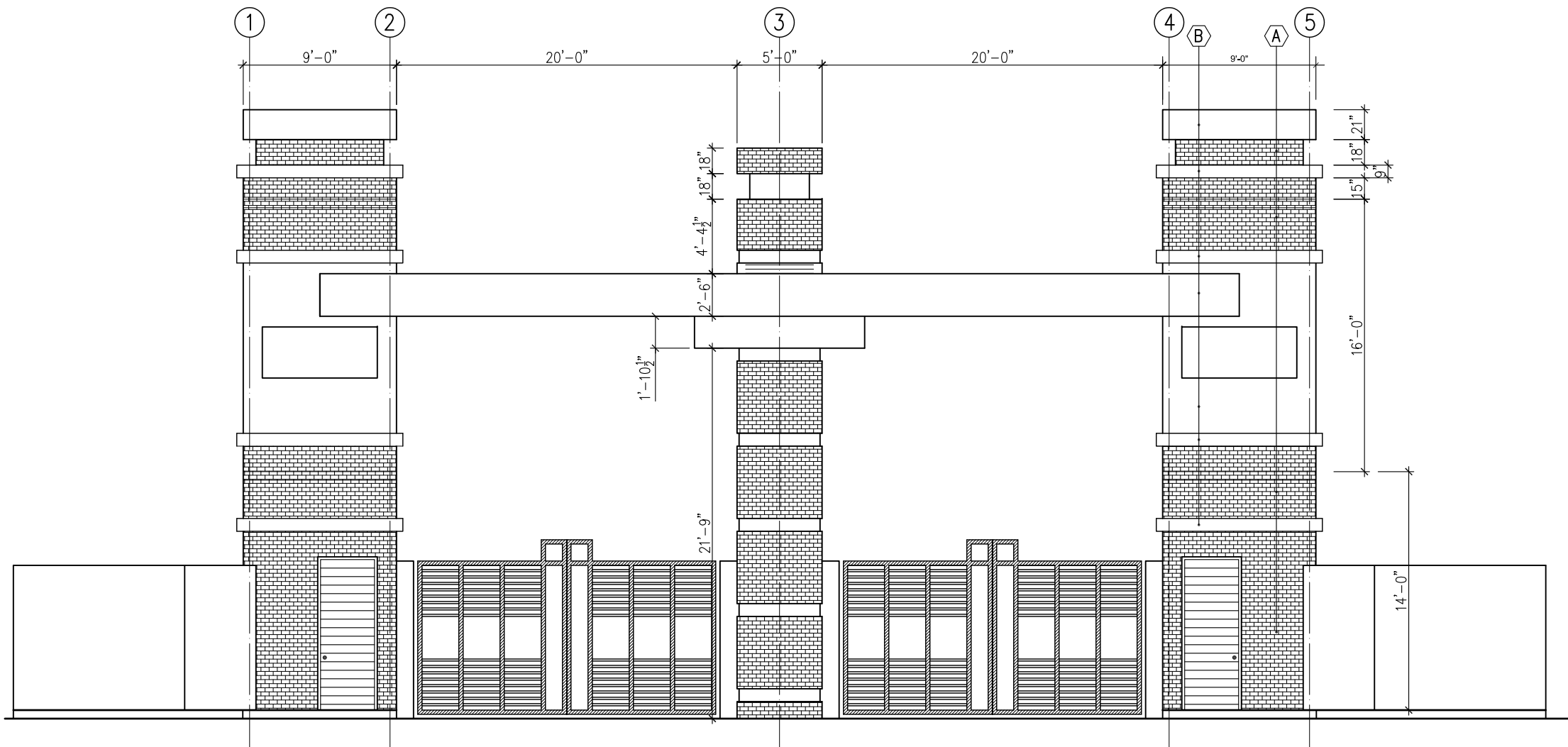
UNIVERSITY OF BUNER, BUNER			
UOB SWARI CAMPUS (PROJECT-1)			
ANCILLARY WORKS			
MAIN GATE			
GROUND FLOOR PLAN			
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD			
DESIGN: NESPAK	RECOMMENDED: JUNAID ABBAS	VER./CKD: JUNAID ABBAS	APPROVED: WAJHA REHAN
DWN: JAVED	DATE: DEC, 2025	DRAWING NO. 4010/322/C/10cB01	
FILE: 4010-AW-MG			REV. 0
CKD: JUNAID			
SUBM: WAJHA REHAN			



GENERAL NOTES:

1. ALL DIMENSIONS AND LEVELS ARE IN 'FPS' SYSTEM.
2. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT PROJECT DRAWINGS.
3. ALL EL. (LEVELS) ARE STRUCTURAL LEVELS.
4. EL.±0'-0" CORRESPONDS TO TOPOGRAPHIC SURVEY LEVEL OF THE SITE AS DECIDED BY THE ENGINEER.
5. FIRST CLASS BRICK SHALL BE USED FOR ALL MASONRY WORKS.
6. FINISH FLOOR IS 2" ABOVE THE STRUCTURAL LEVEL (EL.).

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
FIRST FLOOR PLAN					
NESPAK NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESIGN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. JAVED	JUNAID ABBAS	JUNAID ABBAS	WAJHA REHAN		
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. JUNAID		4010/322/C/10cB02			0
SUBM. WAJHA REHAN	DEC. 2025				

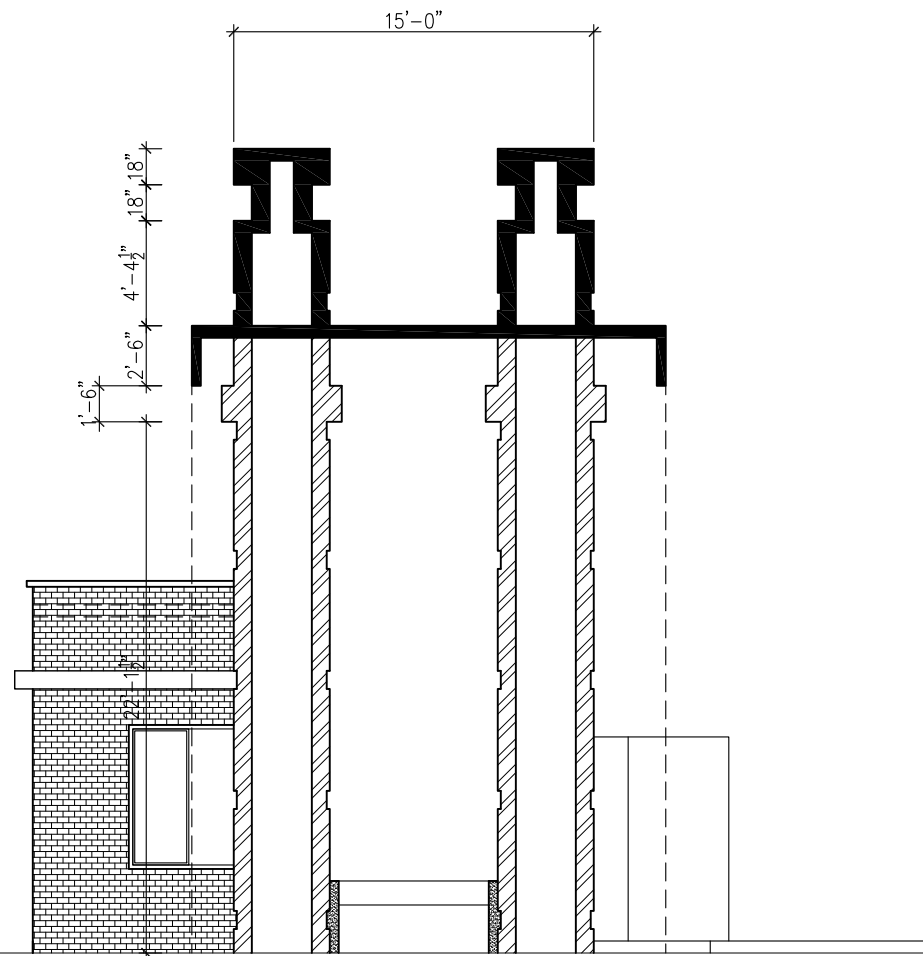


ELEVATION-1

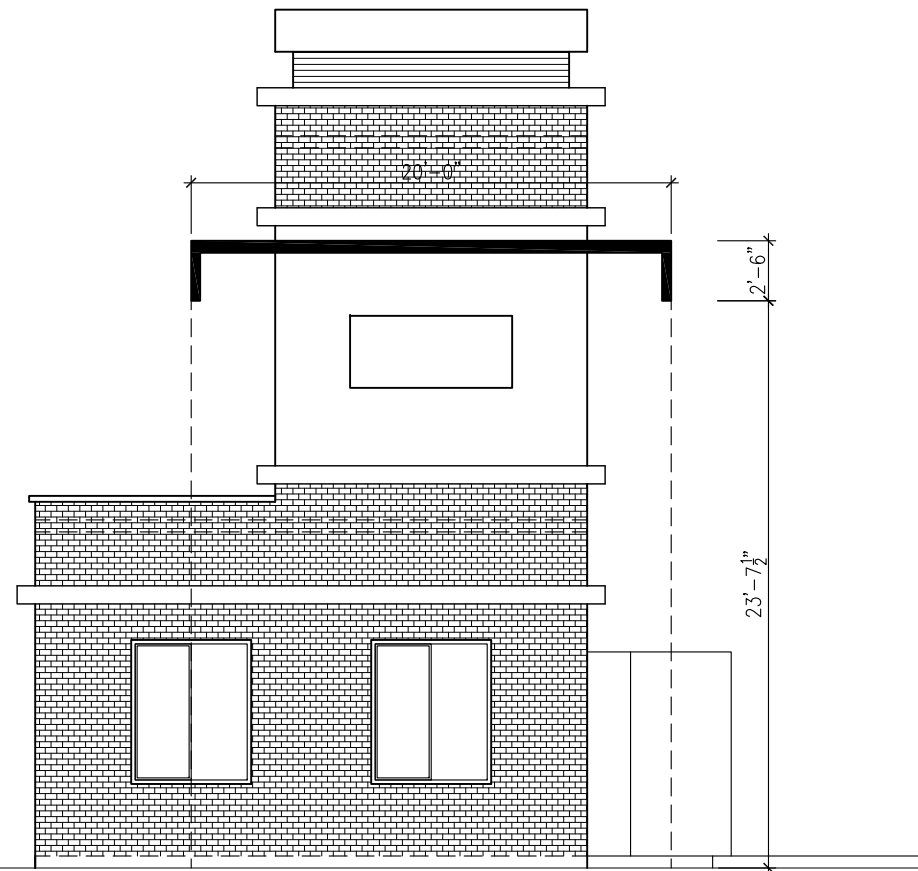
LEGEND FOR EXTERNAL FINISHES:

- (A) BRICK POINTING
(B) WEATHER SHIELD PAINT

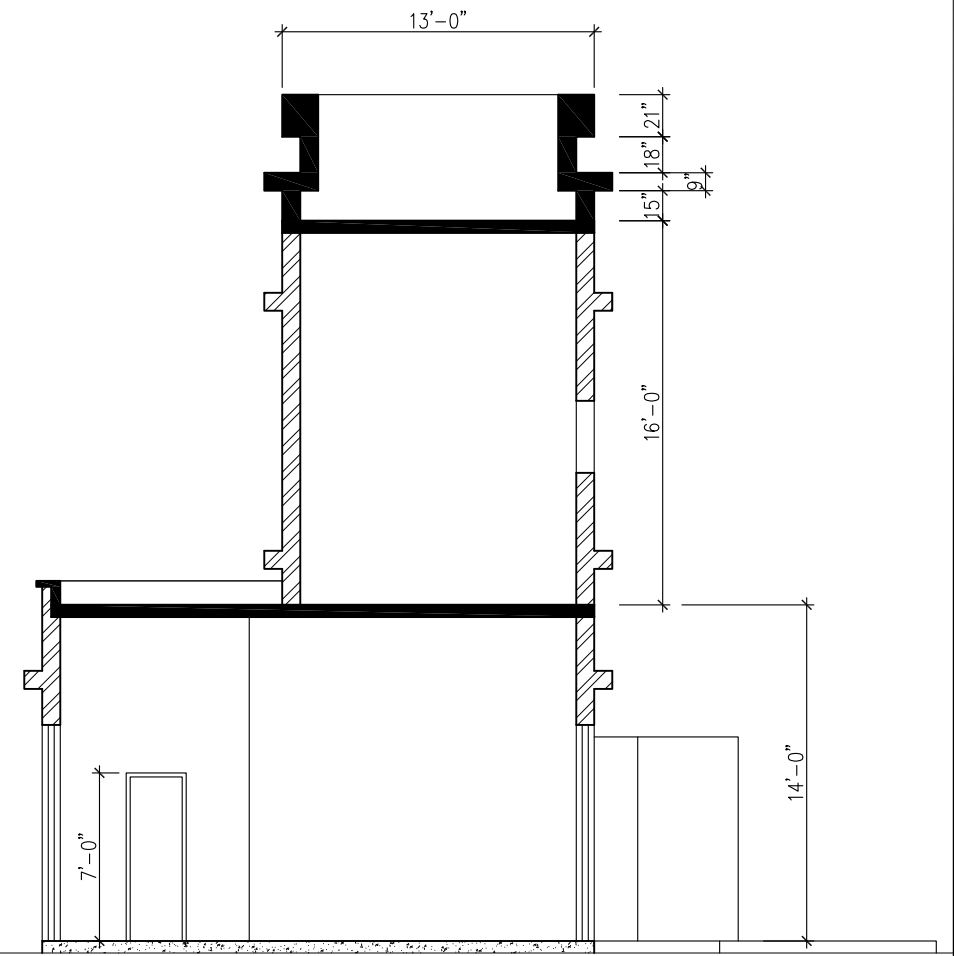
REV. No.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
ELEVATION					
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. JAVED	JUNAID ABBAS	JUNAID ABBAS	WAJIHA REHAN		
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. JUNAID		4010/322/C/10cB03			0
SUBM. WAJIHA REHAN	DEC, 2025				



SECTION-A

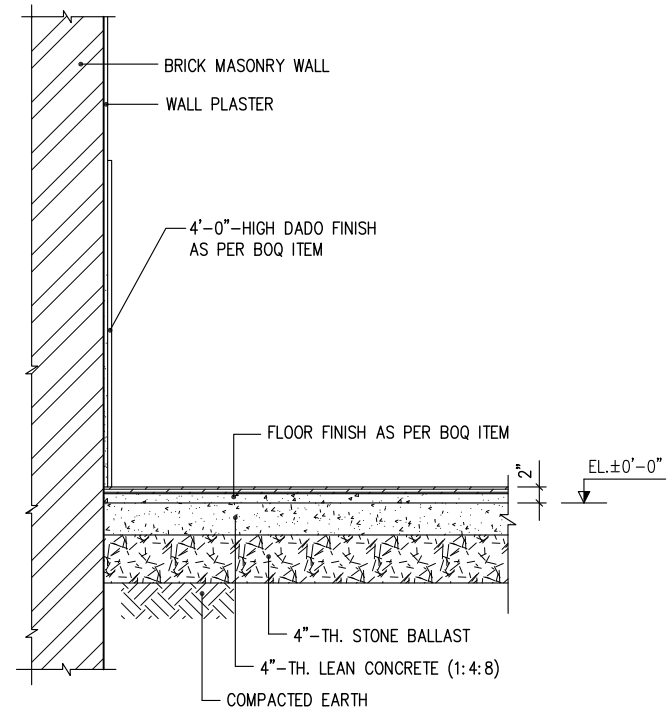


SECTION-B

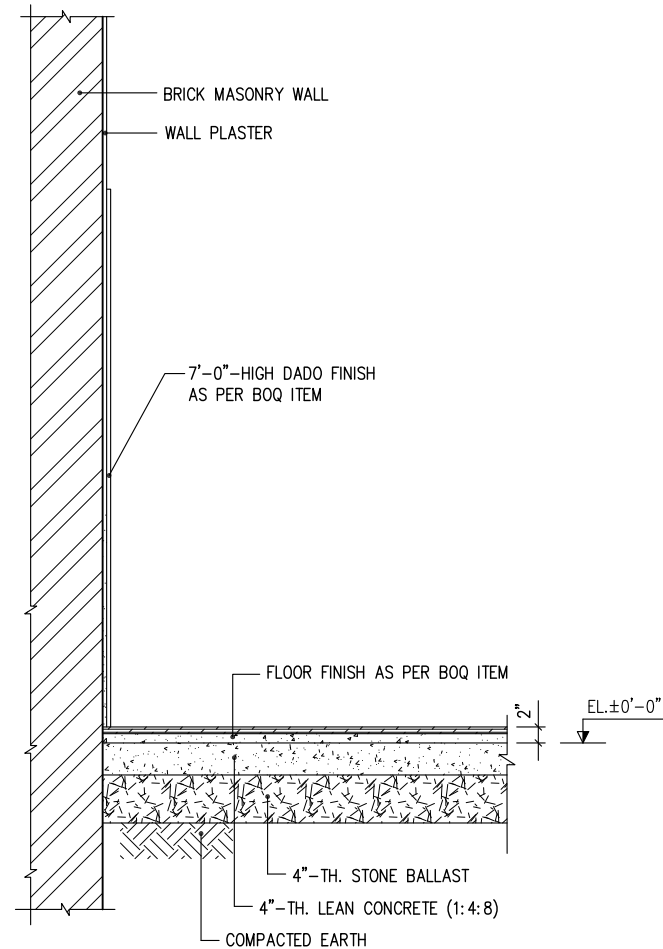


SECTION-C

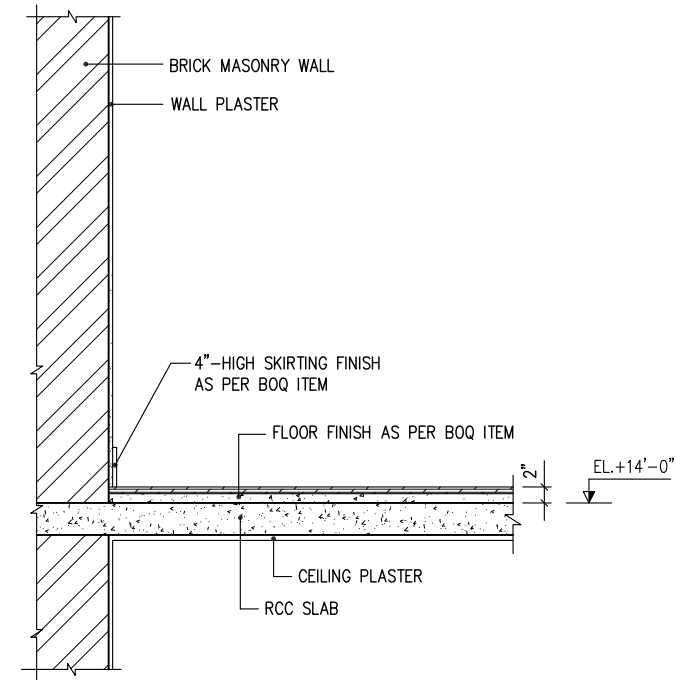
REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
SECTIONS					
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DES. NESPAC	RECOMMENDED	VER./CKD.	APPROVED		
DWN. JAVED	JUNAID ABBAS	JUNAID ABBAS	WAJHA REHAN		
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. JUNAID		4010/322/C/10cB04			0
SUBM. WAJHA REHAN	DEC, 2025				



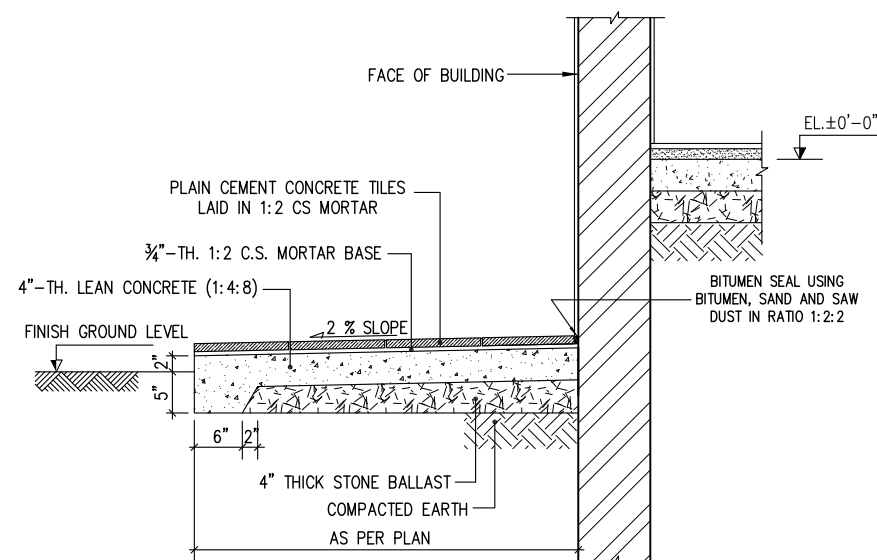
TYPICAL FLOORING DETAIL AT GROUND FLOOR
(GUARD ROOMS)



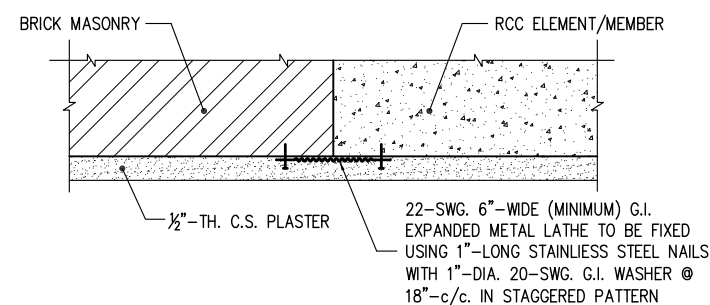
TYPICAL FLOORING DETAIL AT GROUND FLOOR
(TOILET)



TYPICAL FLOORING DETAIL AT FIRST FLOOR
(WATCH TOWERS)

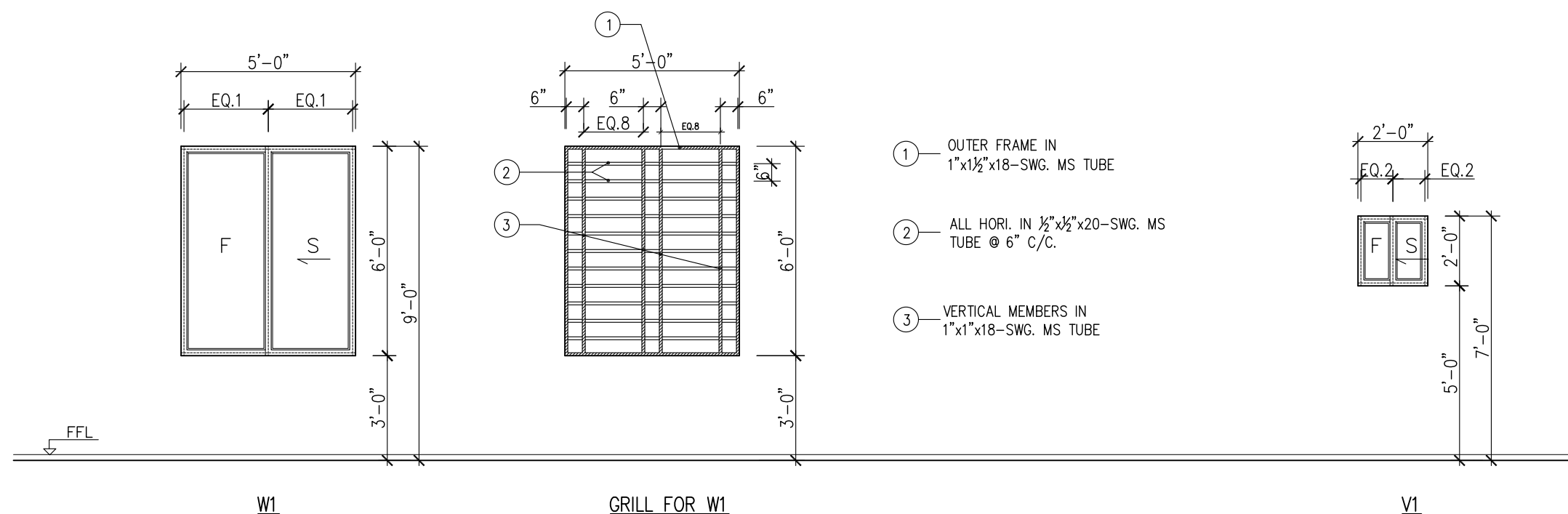
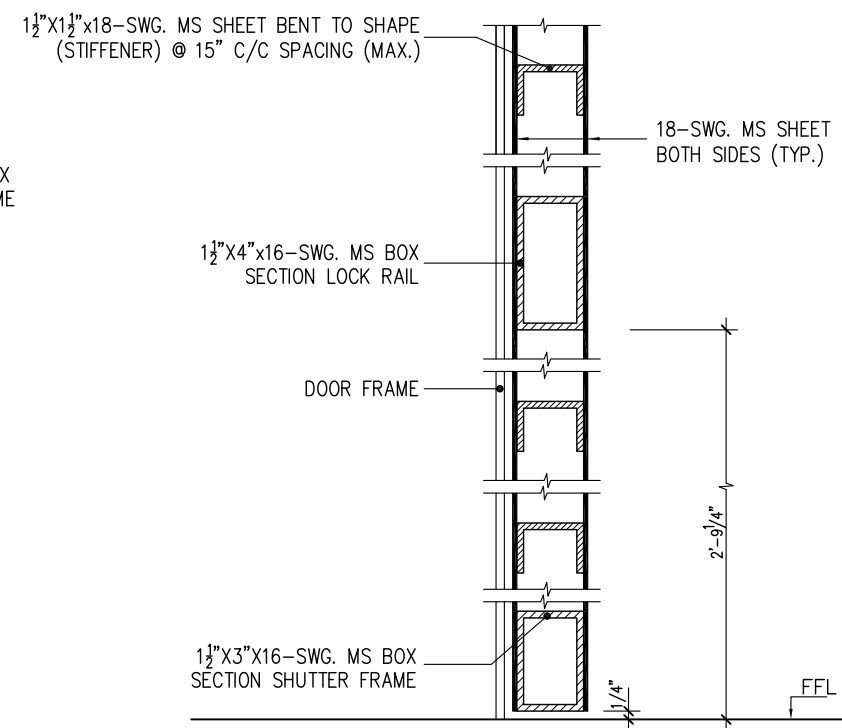
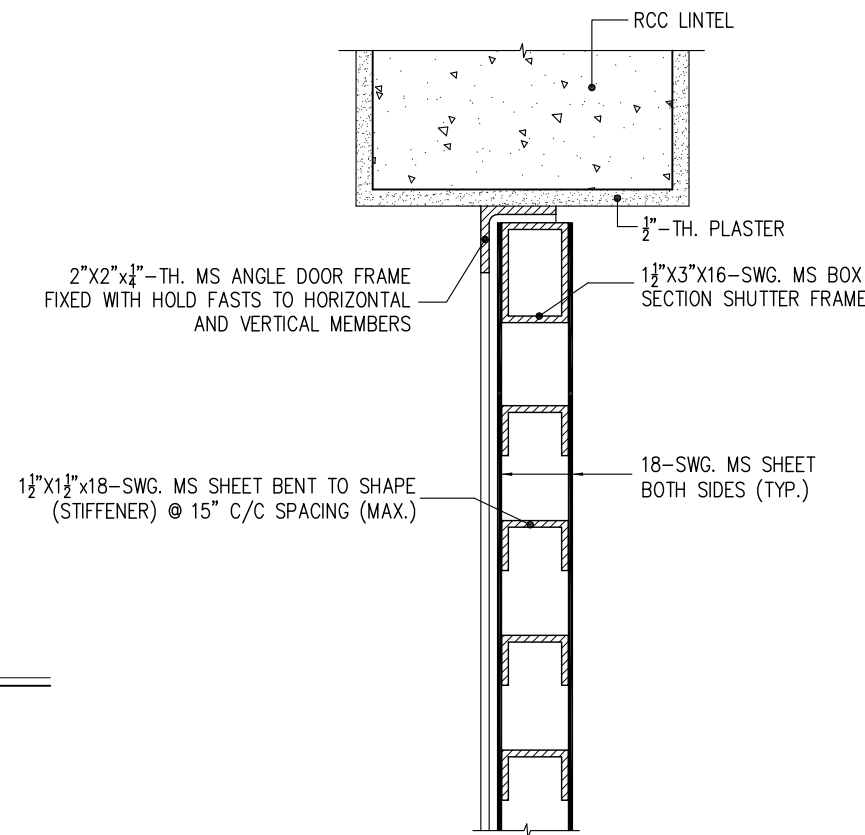
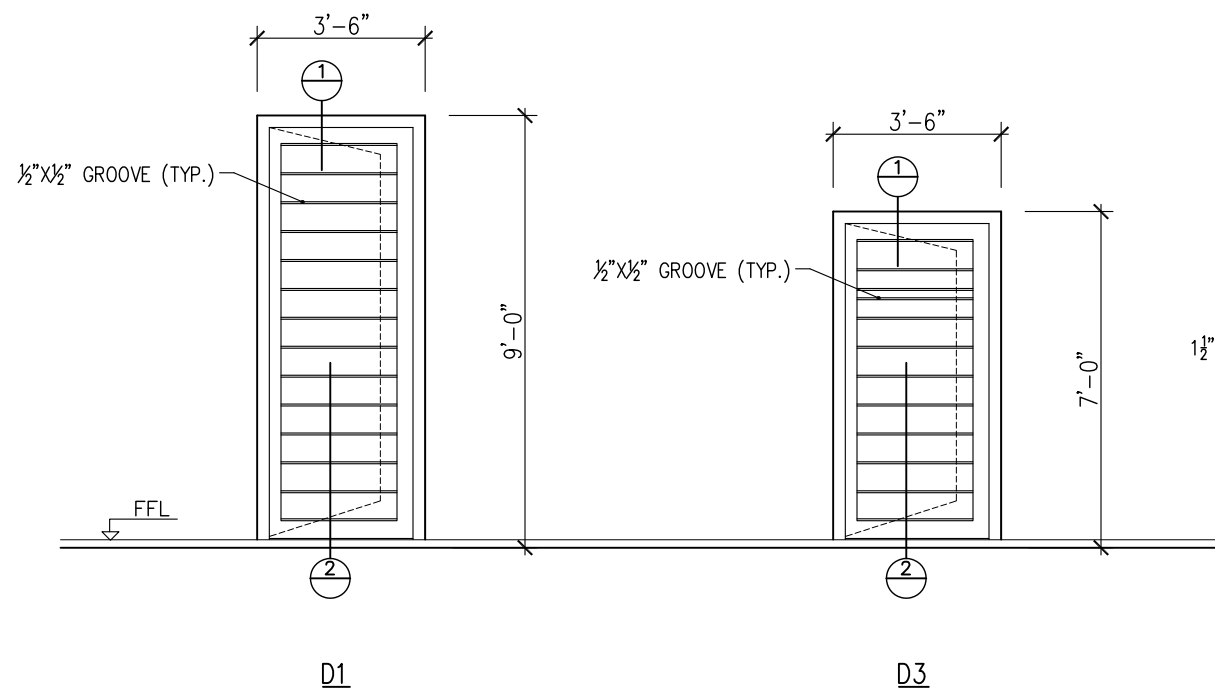


TYPICAL DETAIL OF PLINTH PROTECTION



TYPICAL CONCRETE AND MASONRY JOINT DETAIL

REV. NO.	DATE	DESCRIPTION	BY	CHKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
MISCELLANEOUS DETAILS (SHEET 1)					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. FAHMEED	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. M. HASNAIN		4010/322/C/10cB05			0
SUBM. AAMIR RASHEED	DEC. 2025				



- ① OUTER FRAME IN 1"x1 1/2"x18-SWG. MS TUBE
- ② ALL HORI. IN 1/2"x1/2"x20-SWG. MS TUBE @ 6" C/C.
- ③ VERTICAL MEMBERS IN 1"x1"x18-SWG. MS TUBE

NOTES:

- ALL DIMENSIONS ARE IN FPS-UNITS, EXCEPT NOTED OTHERWISE.
- READ THIS DRAWING IN CONJUNCTION WITH RELEVANT PROJECT DRAWINGS.
- ALL STEEL SECTIONAL MEMBERS SHALL BE WELDED & ALL STEEL SURFACES SHALL BE PAINTED WITH RED OXIDE BEFORE APPLYING ENAMEL PAINT.

SCHEDULE OF DOORS & VENTILATORS												
TYPE	DESCRIPTION	MASONRY OPENING		MATERIAL		FINISHES		H A R D W A R E				
		WIDTH	HEIGHT	FRAME	SHUTTER	FRAME	SHUTTER	HOLD FAST	HINGES	LOCKS	TOWER BOLTS	PUSH PLATE
D1	MS-SINGLE LEAF	3'-6"	9'-0"	MS	MS	PAINT	PAINT					
D2	UPVC-SINGLE LEAF	2'-6"	7'-0"	UPVC	UPVC	UPVC	UPVC					
D3	MS-SINGLE LEAF	3'-6"	7'-0"	MS	MS	PAINT	PAINT					
W1	ALUMINIUM-SLIDING	5'-0"	6'-0"	AL	AL	AL	AL					
V1	ALUMINIUM-SLIDING	2'-0"	2'-0"	AL	AL	AL	AL					

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
MISCELLANEOUS DETAILS (SHEET 3)					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. FAHMEED	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. M. HASNAIN		4010/322/C/10cB07			0
SUBM. AAMIR RASHEED	DEC, 2025				

A. GENERAL

- NOTES GIVEN ON THIS DRAWING ARE APPLICABLE TO ALL STRUCTURAL DRAWINGS UNLESS OTHERWISE NOTED. NOTES WRITTEN ON ANY OTHER DRAWING SHALL BE APPLICABLE TO THAT PARTICULAR DRAWING ONLY UNLESS OTHERWISE CROSS REFERRED.
- SYSTEM OF UNITS IS FPS.
- ALL LEVELS MARKED ON THE DRAWINGS ARE LEVELS OF STRUCTURAL ELEMENTS. FINISH LEVELS SHALL BE IN ACCORDANCE WITH THE ARCHITECTURAL DRAWINGS.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR THE SAFETY AND STABILITY OF THE STRUCTURE AND ALL TEMPORARY WORKS DURING CONSTRUCTION.
- THE CONTRACTOR SHALL INFORM THE ENGINEER ABOUT ANTICIPATED CONSTRUCTION LOADS IN THE STRUCTURE AND OBTAIN ENGINEER'S APPROVAL THEREOF BEFORE COMMENCING THE WORK.
- THE CONTRACTOR SHALL CO-ORDINATE ALL DRAWNGS OF ALL DISCIPLINES FOR ALL ITEMS INCLUDING BUT NOT LIMITED TO SIZES AND LOCATION OF ALL OPENINGS REQUIRED FOR DUCTS, PIPES AND PIPE SLEEVES, ELECTRICAL CONDUITS AND OTHER ITEMS TO BE EMBEDDED IN CONCRETE OR OTHERWISE INCORPORATED IN STRUCTURAL WORK AND SHALL BRING TO THE NOTICE OF THE ENGINEER DISCREPANCIES, IF ANY, FOR HIS INSTRUCTIONS, PRIOR TO THE START OF WORK.
- THE CONTRACTOR SHALL VERIFY LAYOUT, CONFIGURATION, ALL DIMENSIONS AND LEVELS PERTAINING TO EXISTING WORKS BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL ADOPT ADEQUATE AND APPROPRIATE MEASURES SO AS NOT TO DAMAGE THE EXISTING WORKS.
- THE CONTRACTOR SHALL EXERCISE UTMOST CARE AND PRECAUTION DURING THE WORKS, AGAINST ANY MISHAPS OR ACCIDENTS, FOR WHICH THE CONTRACTOR SHALL BE WHOLLY AND SOLELY RESPONSIBLE. THE CONTRACTOR SHALL INDEMNIFY THE OWNER AGAINST ANY ACCIDENTS AND ANY LOSSES THEREFROM AND SHALL REPAIR AND RECTIFY THEM AT HIS OWN COST AND TIME.
- THE CONTRACTOR SHALL COORDINATE SCHEDULE OF CONSTRUCTION WITH SUPPLY AND INSTALLATION OF EQUIPMENT.
- PROVISIONS SHALL BE MADE FOR INSTALLATION OF EQUIPMENT AS PER MANUFACTURER'S RECOMMENDATIONS.
- ANY DEPARTURES/DEVIATIONS DESIRED FROM THE DESIGN OR SPECIFICATIONS, OR SOLUTIONS TO ANY PROBLEMS ENCOUNTERED, SHALL BE GOT APPROVED FROM THE ENGINEER PRIOR TO IMPLEMENTATION. UNAPPROVED DEPARTURES/DEVIATIONS MAY LEAD TO REJECTION/REPLACEMENT OF THE ENTIRE WORK AT THE CONTRACTOR'S COST.
- ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO SPECIFICATIONS OF THE CONTRACT. IN ABSENCE OF ANY EXPRESS OR IMPLIED SPECIFICATION IN THE CONTRACT, ALL MATERIALS AND WORKMANSHIP SHALL CONFORM TO RELEVANT AMERICAN STANDARDS AND SHALL BE SUBJECT TO APPROVAL OF THE ENGINEER.
- THE CONTRACTOR SHALL PREPARE AND SUBMIT SHOP DRAWINGS AND BAR BENDING SCHEDULES FOR ENGINEER'S APPROVAL AND OBTAIN HIS APPROVAL BEFORE PROCEEDING WITH THE WORK. THE CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE ACCURACY OF SHOP DRAWINGS AND BAR BENDING SCHEDULES. THE ENGINEER'S APPROVAL SHALL NOT RELIEVE THE CONTRACTOR FROM HIS RESPONSIBILITY.

B. FOUNDATION AND EARTHWORK

- THE DESIGN OF FOUNDATION IS BASED ON ALLOWABALE BEARING CAPACITY OF 0.75 TSF. IF THE CONTRACTOR FINDS TRACES OF LOW BEARING CAPACITY (ANYWHERE IN THE SITE), SAME SHALL BE INVESTIGATED BY THE CONTRACTOR UNDER THE SUPERVISION OF THE ENGINEER. FOUNDATION DESIGN SHALL BE REVISED (IF REQUIRED) BASED ON THE CONFIRMATORY GEOTECHNICAL INVESTIGATION CARRIED OUT BY THE CONTRACTOR.
- ALL FOUNDATIONS SHALL BE PLACED ON COMPETENT BEARING STRATA. IF ACCEPTABLE BEARING STRATA IS NOT AVAILABLE AT INDICATED DEPTH OF FOUNDATION BELOW N.S.L OR F.G.L WHICH EVER IS LOWER, THE ENGINEER SHALL BE NOTIFIED IN WRITING FOR HIS/HER INSTRUCTION.
- TERMITE CONTROL TREATMENT SHALL BE CARRIED OUT AS PER SPECIFICATIONS.
- THE TYPE AND COMPACTION OF SOIL BELOW GRADE SLAB SHALL BE AS PER JOB SPECIFICATIONS.
- NO FOOTING SHALL BE PLACED ON FILL. HOWEVER, AREAS WHERE FILLING BELOW THE FOOTINGS BECOMES INEVITABLE OR OVER-EXCAVATION (IF ANY), SHALL BE FILLED WITH P.C.C. (1:4:8) WITH PRIOR APPROVAL OF THE ENGINEER.
- THE CONTRACTOR SHALL BE RESPONSIBLE FOR DEWATERING SYSTEM IF AND WHERE SO REQUIRED DURING CONSTRUCTION.
- ALL EARTH-FACING STRUCTURAL CONCRETE SURFACES SHALL BE COATED WITH BITUMEN (10/20 GRADE) APPLIED HOT AT THE RATE OF 20 lb/100 SFT. (1.0 KG/SQM), (EXCEPT FOR CONCRETE CLASS 'D' AND 'E').
- BACKFILLING AND COMPACTION SHALL BE CARRIED OUT EQUALLY ON BOTH SIDES OF PLINTH BEAMS TO AVOID IMBALANCE OF LATERAL EARTH PRESSURE.
- THE CONTRACTOR SHALL SUPPLY AND ERECT ADEQUATE SHORING AND SUPPORT THE SIDES OF ALL EXCAVATIONS WHERE REQUIRED TO SAFEGUARD WORKMEN AND PROTECT ANY ADJACENT STRUCTURES.
- EXISTING UNDERGROUND SERVICES, REQUIRED TO BE LEFT IN POSITION, SHALL BE CAREFULLY PROTECTED DURING EXCAVATION AND BACKFILLING OPERATIONS.
- EXCAVATIONS ADJACENT TO EXISTING STRUCTURES AND/OR UNDERGROUND SERVICES SHALL BE MADE BY HAND.

C. REINFORCED / PLAIN CEMENT CONCRETE

- ALL CONCRETE WORKS AND MATERIALS SHALL CONFORM TO THE REQUIREMENTS OF KP-MRS TECHNICAL SPECIFICATIONS, BEING REFERENCE SPECIFICATIONS FOR ALL SCHEDULED ITEMS.
- STRENGTHS OF DIFFERENT CONCRETE CLASSES / MIXES SHALL BE AS FOLLOWS:

CLASS	NOMINAL MIX RATIO	MIN. CYLINDER STRENGTH AT 28 DAYS (psi)
A1	—	3,000 psi
C	1:2:4	2,400 psi
D	1:3:6	1,500 psi
E	1:4:8	1,200 psi

C. REINFORCED / PLAIN CEMENT CONCRETE (CONTINUED)

- CLASS OF CONCRETE FOR DIFFERENT COMPONENTS OF THE STRUCTURE SHALL BE AS FOLLOWS UNLESS NOTED OTHER WISE:

COMPONENT	CONCRETE TYPE
FOUNDATION & WALLS	'C'
COLUMNS, SLABS & BEAMS	'C'
P.C.C. STEPS	'D'
LEAN CONCRETE	'E'

- ORDINARY PORTLAND CEMENT SHALL BE USED FOR ALL CONCRETE WORKS, IF NOT MENTIONED ON THE DRAWINGS/BOQ.
- AN INTEGRAL WATER PROOFING AGENT SHALL BE USED IN CONCRETE THAT IS CONSTANTLY OR INTERMITTENTLY IN CONTACT WITH WATER AS PER MANUFACTURER'S RECOMMENDATIONS, AS ADVISED BY THE ENGINEER.
- CONCRETE CLEAR COVER FOR REINFORCING STEEL SHALL BE AS FOLLOWS:

STRUCTURAL MEMBER / ELEMENT	MINIMUM COVER (INCHES)
FOUNDATIONS (ALL TYPES)	2"
COLUMNS & BEAMS	1½"
RETAINING WALLS	1½"
SLABS	¾"
RCC SHELLS AND DOMES	½"

- ALL REINFORCING STEEL BARS, EXCEPT ø3 (3/8"—DIAMETER) BARS, SHALL BE DEFORMED, HOT ROLLED BILLET STEEL BARS CONFORMING TO ASTM A-615, GRADE-60 WITH SPECIFIED YIELD STRENGTH OF NOT LESS THAN 60,000 psi.
- ø3 (3/8"—DIAMETER) BARS SHALL BE GRADE-40 STEEL CONFORMING TO ASTM A-615 GRADE-40 WITH SPECIFIED YIELD STRENGTH OF NOT LESS THAN 40,000 psi.
- GRADE-60 STEEL BARS ARE REPRESENTED USING PREFIX SYMBOL "#" AND GRADE-40 STEEL BARS ARE REPRESENTED USING PREFIX SYMBOL "ø". WHEREAS, THE NUMBER INDICATES THE BAR DIAMETER/SIZE, AS UNDER:

BAR NUMBER	DIAMETER (INCHES)
3	3⁄8"
4	½"
5	5⁄8"
6	¾"
8	1"

- ALL DETAILING SHALL BE DONE AS PER ACI STANDARDS ACI-315, ACI-318 & ACI-350R.
- ALL REINFORCING STEEL SHALL BE HELD FIRMLY IN PLACE BEFORE AND DURING THE PLACING OF CONCRETE BY MEANS OF WIRES AND SUPPORTS ADEQUATE TO PREVENT DISPLACEMENT DURING THE COURSE OF CONSTRUCTION.

D. CONCRETE CONSTRUCTION

- THE CONTRACTOR SHALL SUBMIT CONCRETE POURING SCHEDULE FOR ENGINEER'S APPROVAL. NO CONCRETE SHALL BE POURED UNTIL ITS FORMWORK AND REINFORCEMENT HAS BEEN INSPECTED AND APPROVED BY THE ENGINEER.
- DURING CONSTRUCTION, STACKING OF CONSTRUCTION MATERIALS, BLOCKS ETC. SHOULD BE AVOIDED ON SLAB PANELS.
- BEFORE CASTING OF ANY STRUCTURAL MEMBER, THE CONTRACTOR SHALL ENSURE THAT ALL EMBEDDED ITEMS FOR ELECTRICAL, MECHANICAL, HVAC, PLUMBING, STRUCTURAL STEEL AND OTHER WORKS, AND DOWELS FOR STRUCTURAL MEMBERS AND/OR MASONARY ARE PROPERLY LOCATED IN PLACE.

E. CONSTRUCTION JOINTS

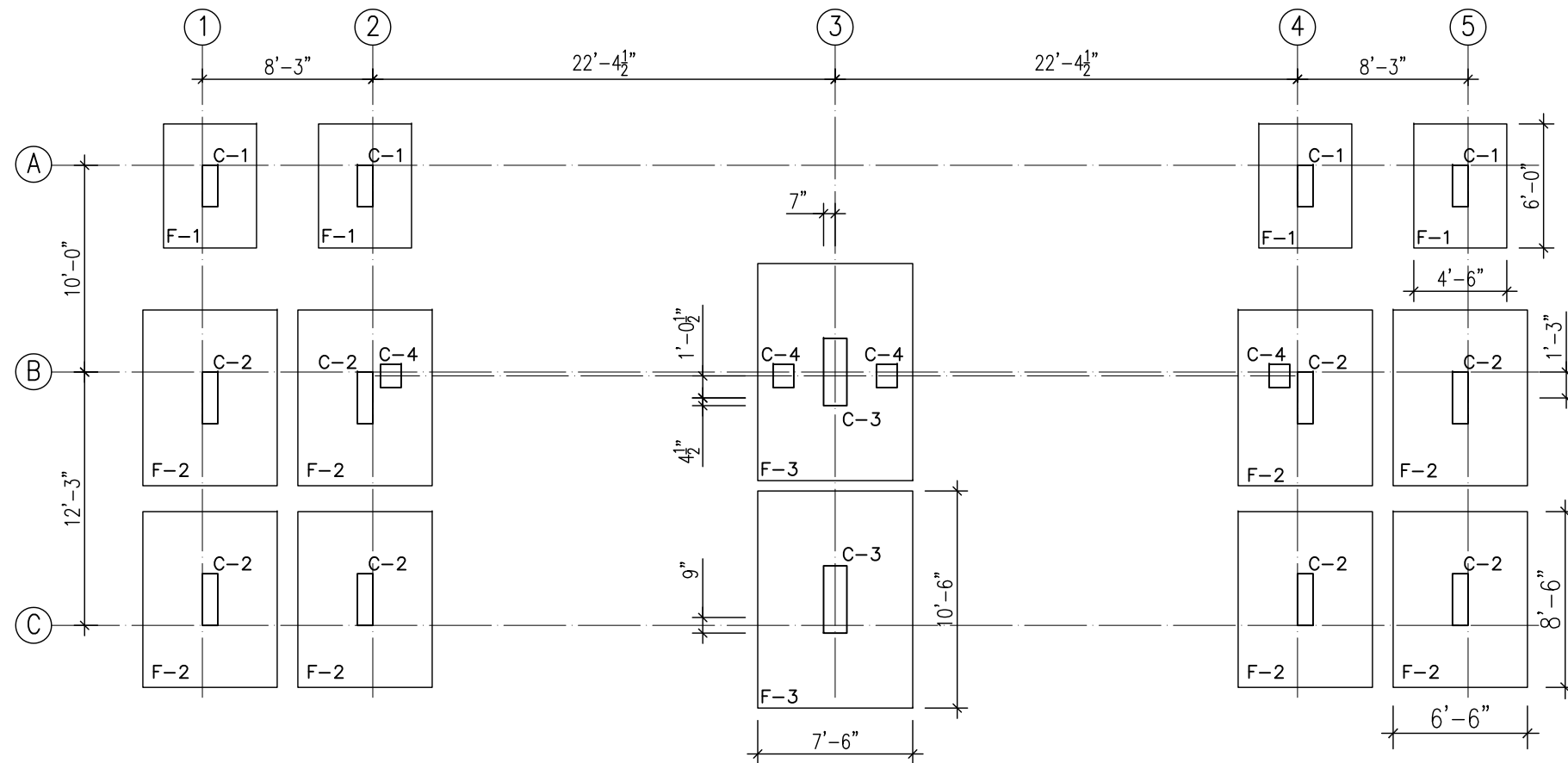
- JOINTS, NOT SHOWN ON THE DRAWING, SHALL BE SO MADE AND LOCATED AS TO LEAST IMPAIR THE STRENGTH OF THE STRUCTURE AND SHALL NEED PRIOR APPROVAL OF THE ENGINEER. THEY SHALL BE LOCATED NEAR THE MIDDLE OF THE SPANS OF SLAB & BEAMS. JOINTS IN WALLS & COLUMNS SHALL BE AT THE UNDER-SIDE OF FLOORS, SLABS OR BEAMS AND AT THE TOP OF FOOTINGS OR FLOOR SLABS.
- JOINTS SHALL BE PERPENDICULAR TO MAIN REINFORCEMENT. ALL REINFORCING STEEL SHALL BE CONTINUED ACROSS THE JOINTS.
- JOINTS IN BASE SLAB & WALLS AND ROOF SLAB, IN ADDITION TO THOSE SHOWN ON THE DRAWINGS SHALL BE BORNE BY THE CONTRACTOR. BEAMS & BRACKETS SHALL BE PLACED AT THE SAME TIME AS SLABS.

F. ELECTRICAL CONDUITS

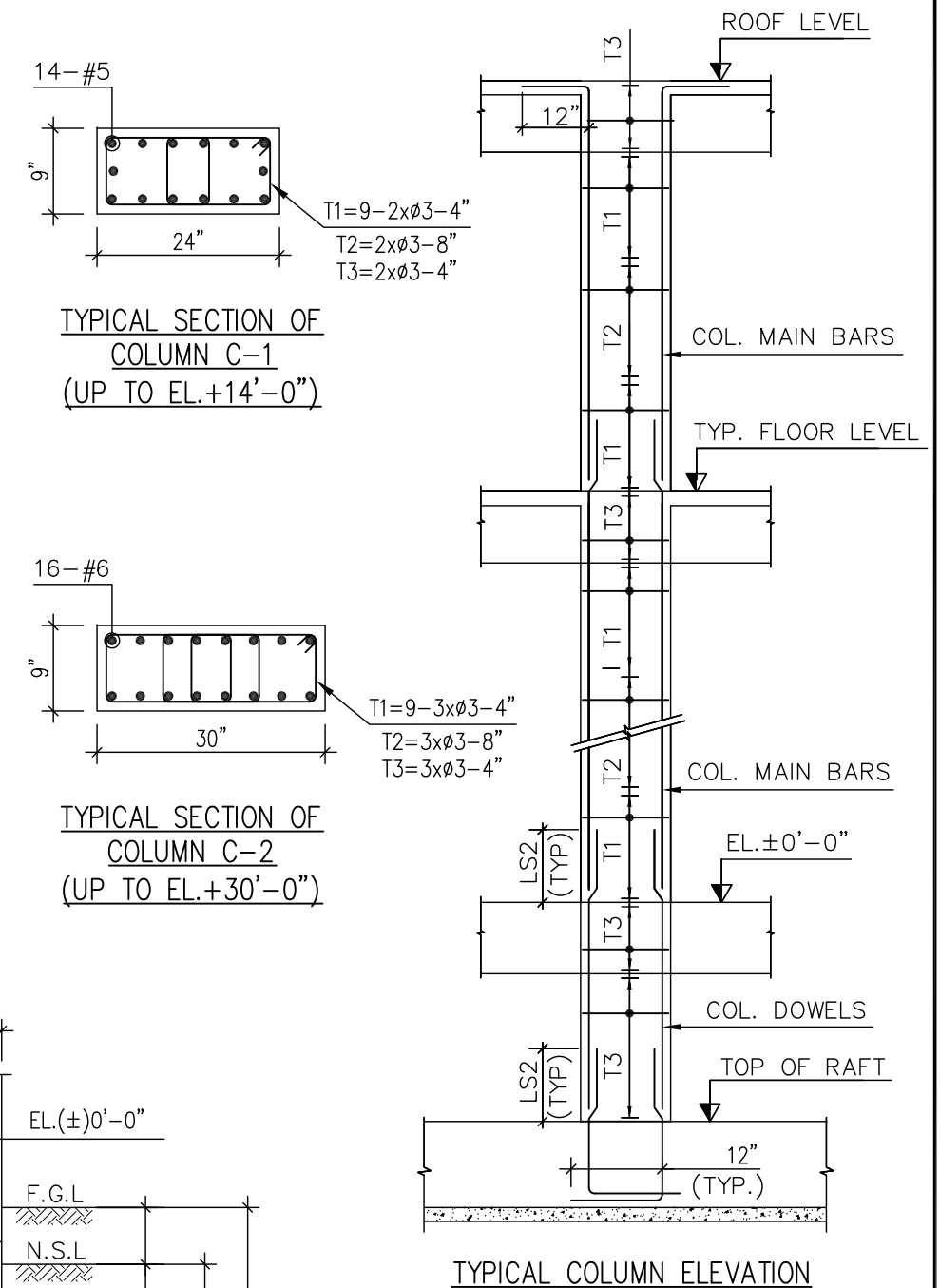
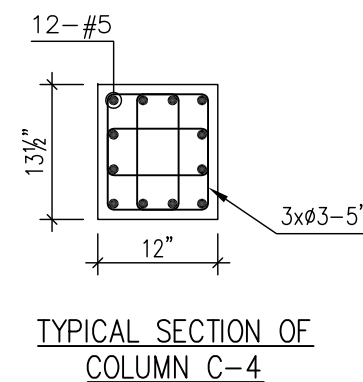
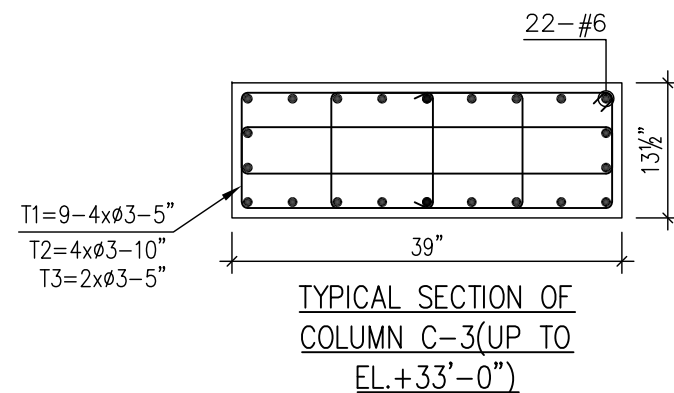
- CONDUITS, FOR ELECTRICAL WORKS, SHALL BE PLACED WITHIN THE REINFORCED CONCRETE. THEY SHALL BE PLACED WITHIN THE MIDDLE THIRD OF THE SECTION IN BEAMS & SLABS AND WITHIN THE MIDDLE HALF OF THE THICKNESS. SPACING BETWEEN PARALLEL CONDUITS SHALL NOT BE LESS THAN 6"(150 MM).

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
GENERAL STRUCTURAL NOTES & TYPICAL DETAILS (SHEET 1 OF 2)					
NESP PAK NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAC	RECOMMENDED	VER./CKD.	APPROVED		
DWN. MUNR	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. M. HASNAIN		4010/323/C/10cG01			0
SUBM. AAMIR RASHEED	DEC, 2025				

REV. NO.	DATE	DESCRIPTION				BY	CKD.	APPR.	
UNIVERSITY OF BUNER, BUNER									
UOB SWARI CAMPUS (PROJECT-1)									
ANCILLARY WORKS									
MAIN GATE									
GENERAL STRUCTURAL NOTES & TYPICAL DETAILS (SHEET 2 OF 2)									
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD									
DESIGN. NESPAK		RECOMMENDED		VER./CKD.		APPROVED			
DRAWN. MUNIR									
FILE 4010-AW-MG		M. HASNAIN		AAMIR RASHEED		AAMIR RASHEED			
CHKD. M. HASNAIN		DATE		DRAWING NO.				REV.	
SUBM. AAMIR RASHEED		DEC. 2025		4010/323/C/10cG02				0	

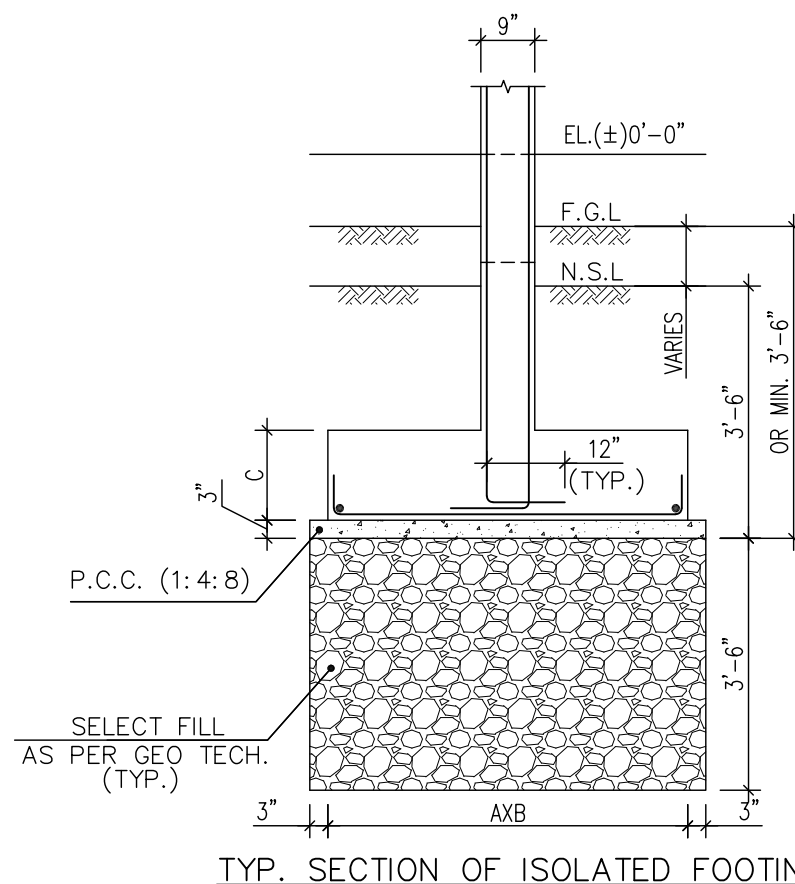
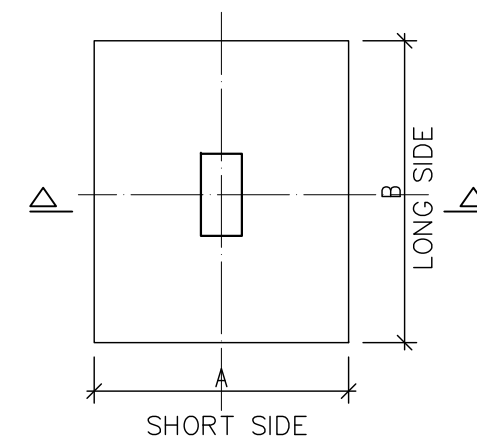


FOUNDATION AND COLUMN LAYOUT PLAN

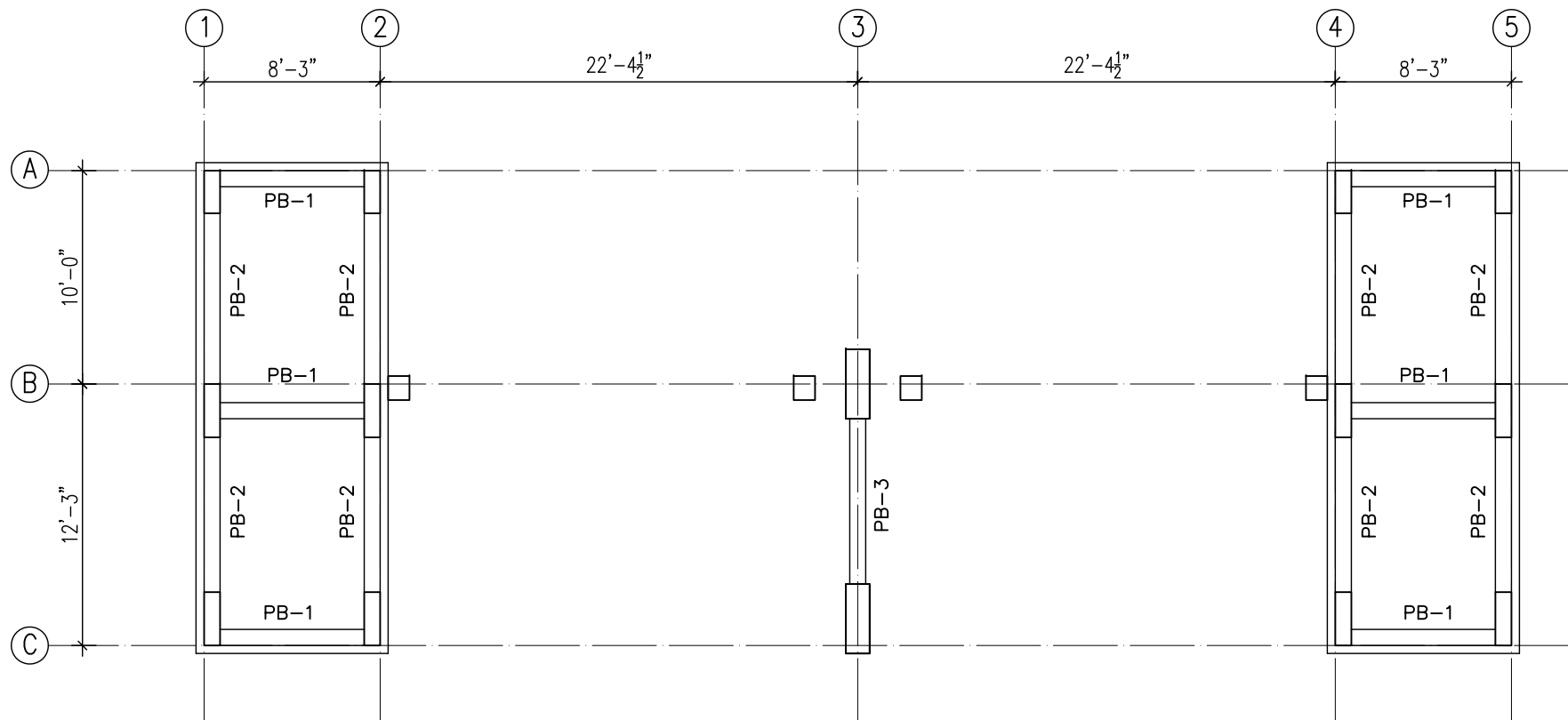


FOOTING SCHEDULE					
FOOTING MARK	S I Z E			R E I N F O R C E M E N T	
	SHORT SIZE (A)	LONG SIZE (B)	THICKNESS (C)	SHORT BOTTOM	LONG BOTTOM
F-1	4'-6"	6'-0"	15"	#4-6"	#4-6"
F-2	6'-6"	8'-6"	18"	#5-6"	#5-6"
CF-1	7'-6"	10'-6"	18"	#5-4"	#5-4"

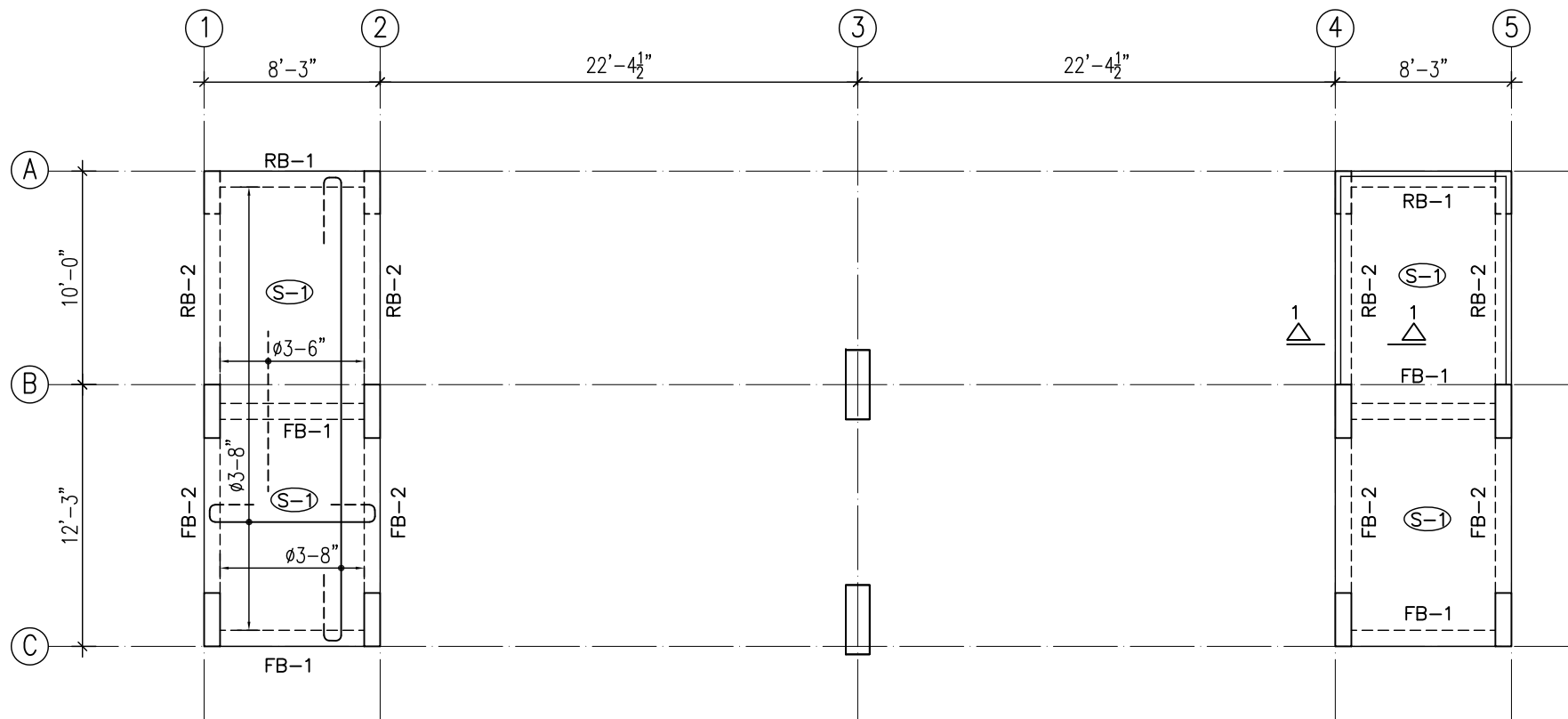
- NOTES:
- FOR GENERAL NOTES, REFER DRAWING NO. 4010/323/BD/09hG01.
 - READ THIS DRAWING IN CONJUNCTION WITH THE RELEVANT DRAWINGS.
 - ALL DIMENSIONS ARE IN FPS-UNITS, EXCEPT NOTED OTHERWISE.
 - DEPTH OF FOOTINGS SHALL BE 3'-6" BELOW NSL OF FGL WHICH EVER IS LOWER.



REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
FOUNDATION AND COLUMN LAYOUT PLAN & STRUCTURAL DETAILS					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. <u>NESPAK</u>	RECOMMENDED	VER./CKD.	APPROVED		
DWN. <u>MUNIR</u>	<u>M. HASNAIN</u>	<u>AAMIR RASHEED</u>	<u>AAMIR RASHEED</u>		
FILE <u>4010-AW-MG</u>	DATE	DRAWING NO.			REV.
CKD. <u>M. HASNAIN</u>	DEC, 2025	4010/323/C/10cG03			0
SUBM. <u>AAMIR RASHEED</u>					

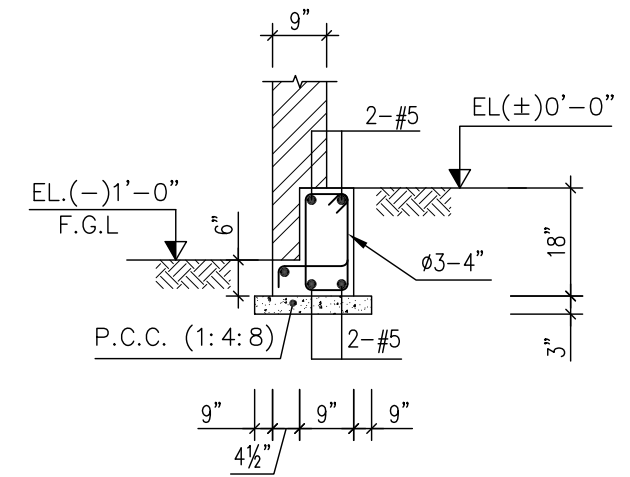


FRAMING PLAN AT EL.±0'-0"

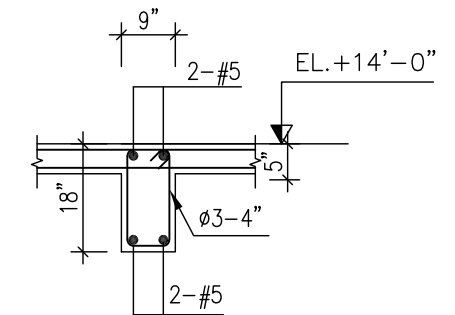


FRAMING / REINFORCEMENT PLAN AT EL.+14'-0"

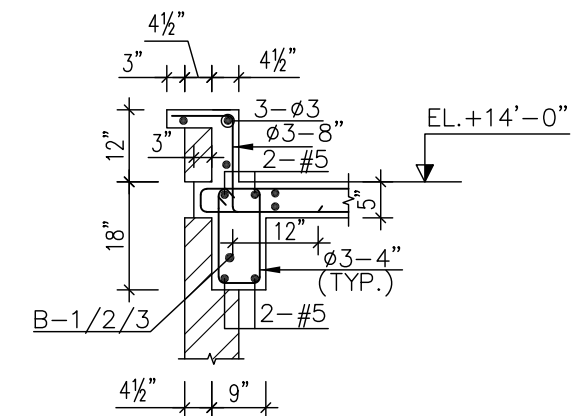
- NOTES:**
1. FOR GENERAL NOTES, REFER DRAWING NO. 4010/323/BD/09hg01.
 2. READ THIS DRAWING IN CONJUNCTION WITH THE RELEVANT DRAWINGS.
 3. ALL DIMENSIONS ARE IN FPS-UNITS, EXCEPT NOTED OTHERWISE.
 4. ALL BEAMS ARE 9"x18" EXCEPT NOTED OTHERWISE.
 5. ALL SLABS ARE 5" THICK EXCEPT NOTED OTHERWISE.
 6. ALL DISTRIBUTION BARS NOT SHOWN ON SLAB PLAN SHALL BE $\phi 3-12"$.



TYPICAL SECTION OF PLINTH BEAMS
PB-1 & 2 (9"x18")

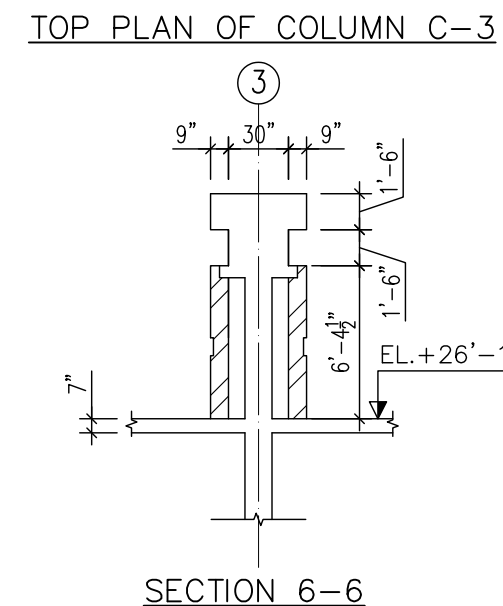
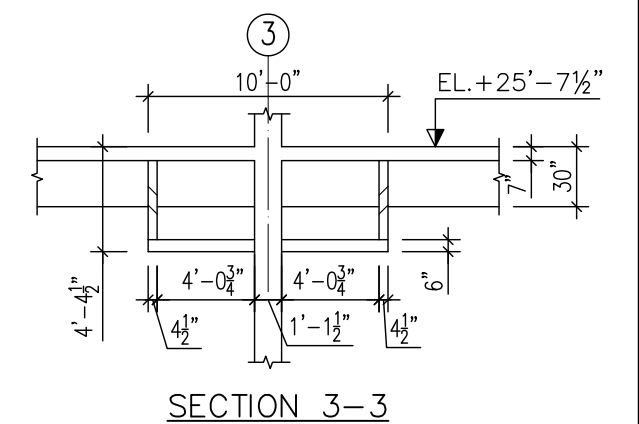
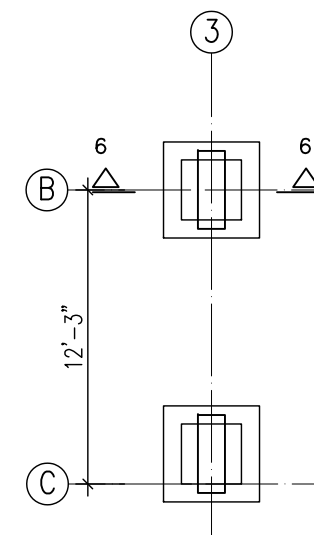
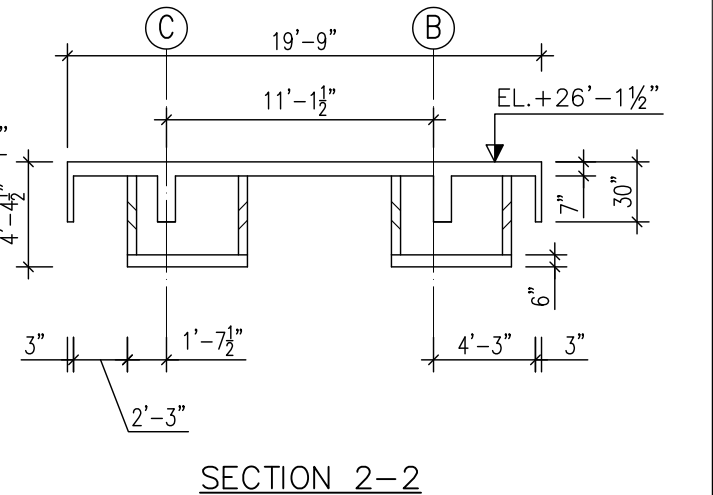
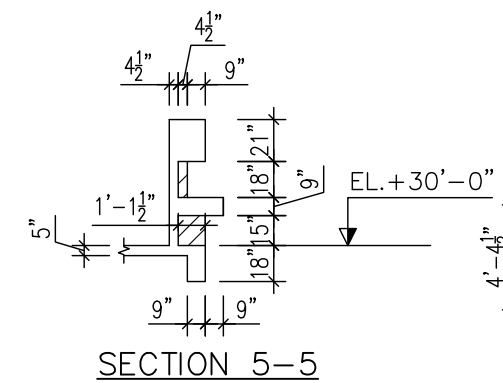
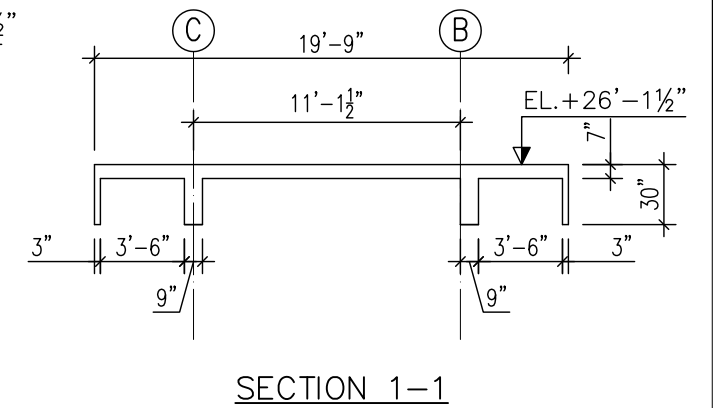
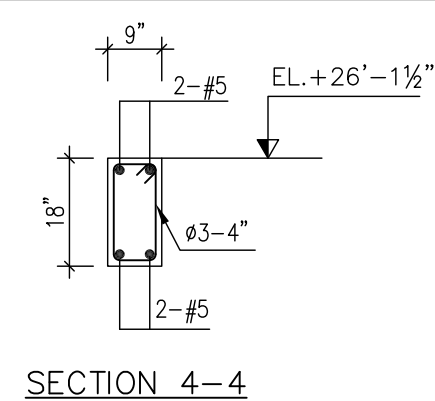
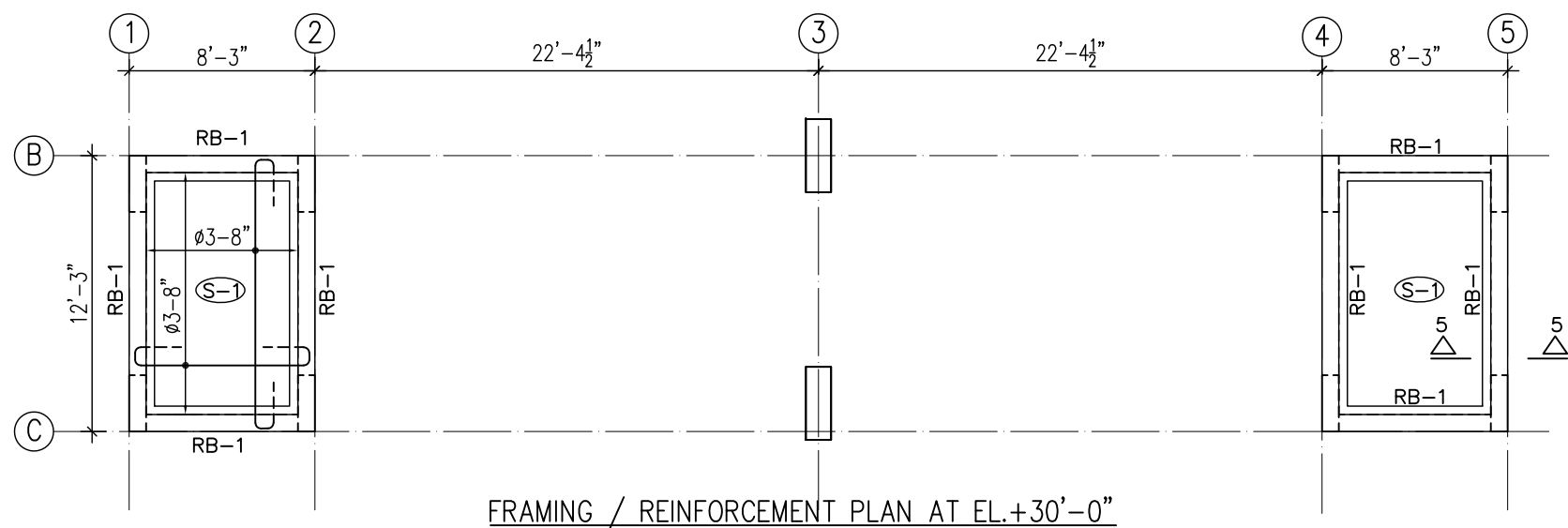
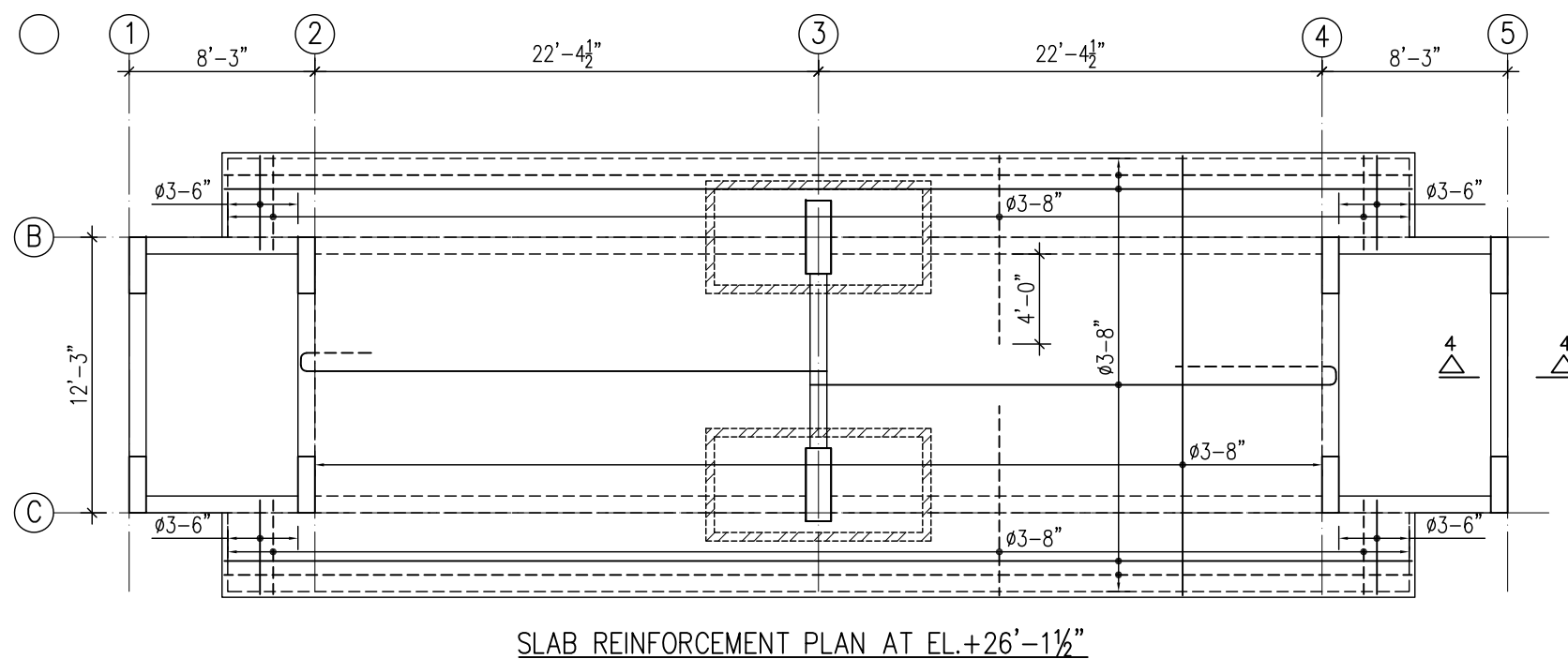
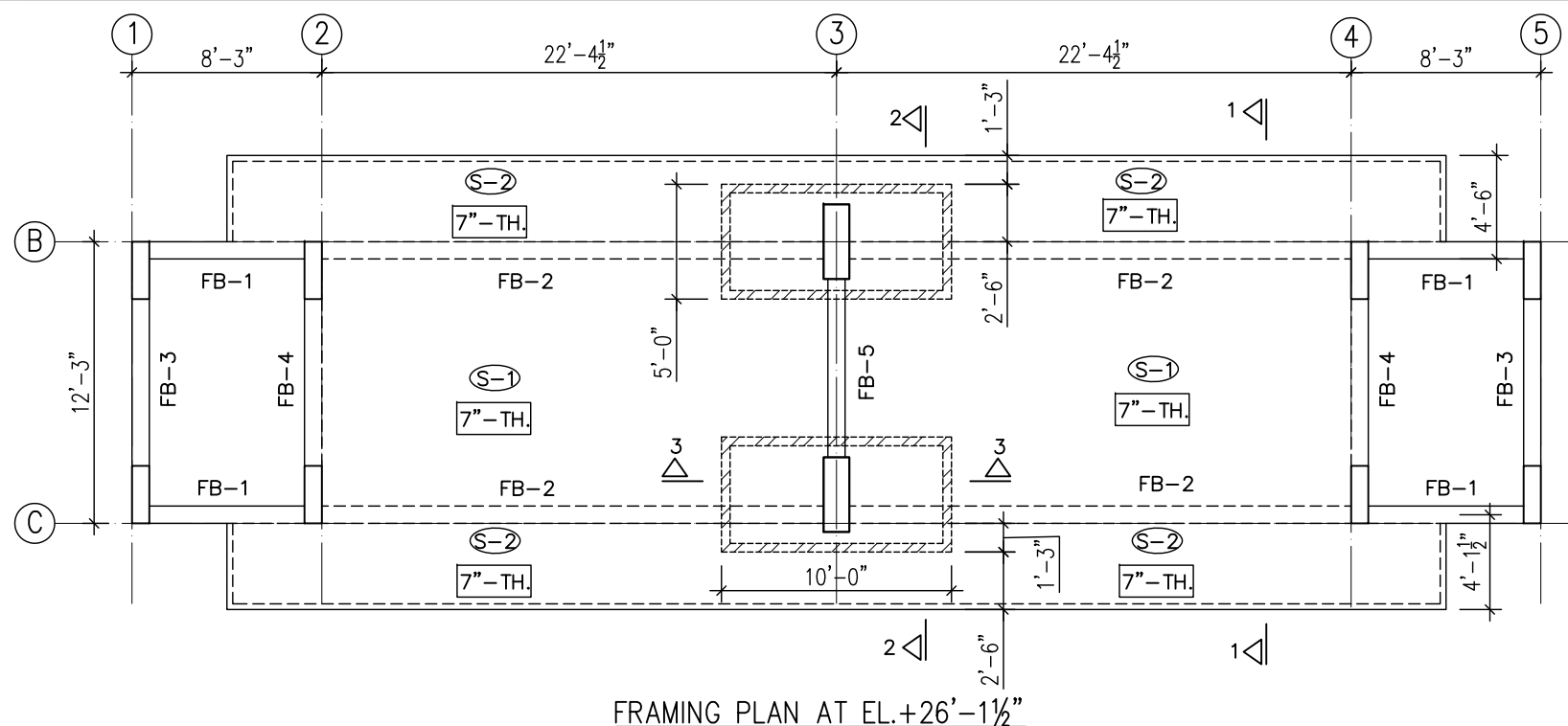


TYPICAL SECTION OF
INTERNAL FLOOR BEAMS



SECTION 1-1

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
FRAMING PLAN AT EL.(±)0'-0" & FRAMING / REINFORCEMENT PLAN AT EL.+14'-0"					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. MUNIR	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. M. HASNAIN		4010/323/C/10cG04			0
SUBM. AAMIR RASHEED	DEC. 2025				



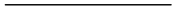
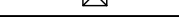
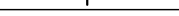
REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
FRAMING / REINFORCEMENT PLAN AT					
EL.+25'-7½" & EL.+30'-0"					
NESPAK NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESIGN: NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN: MUNIR	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE: 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD: M. HASNAIN		4010/323/C/10cG05			0
SUBM: AAMIR RASHEED	DEC, 2025				

GENERAL NOTES:

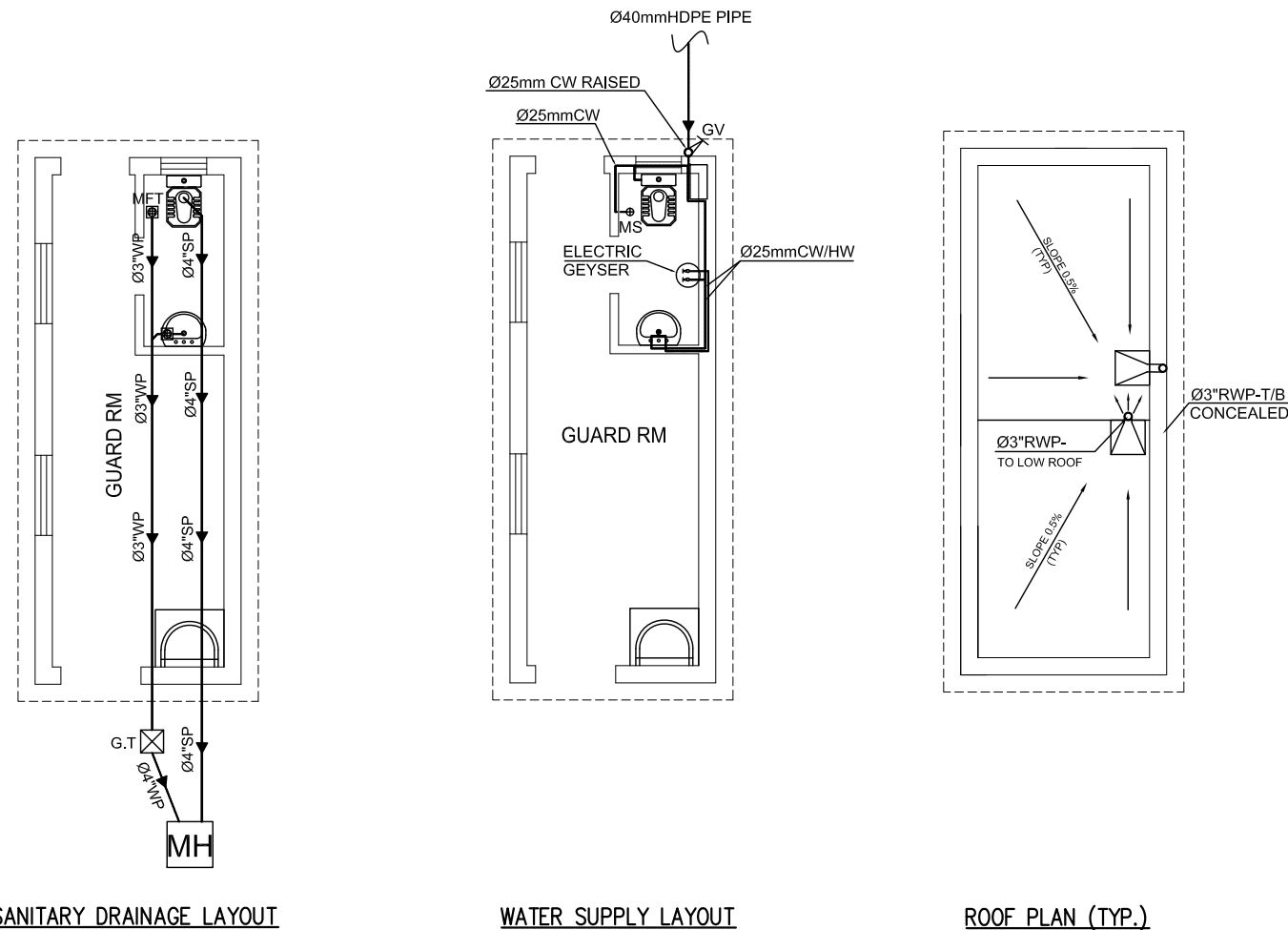
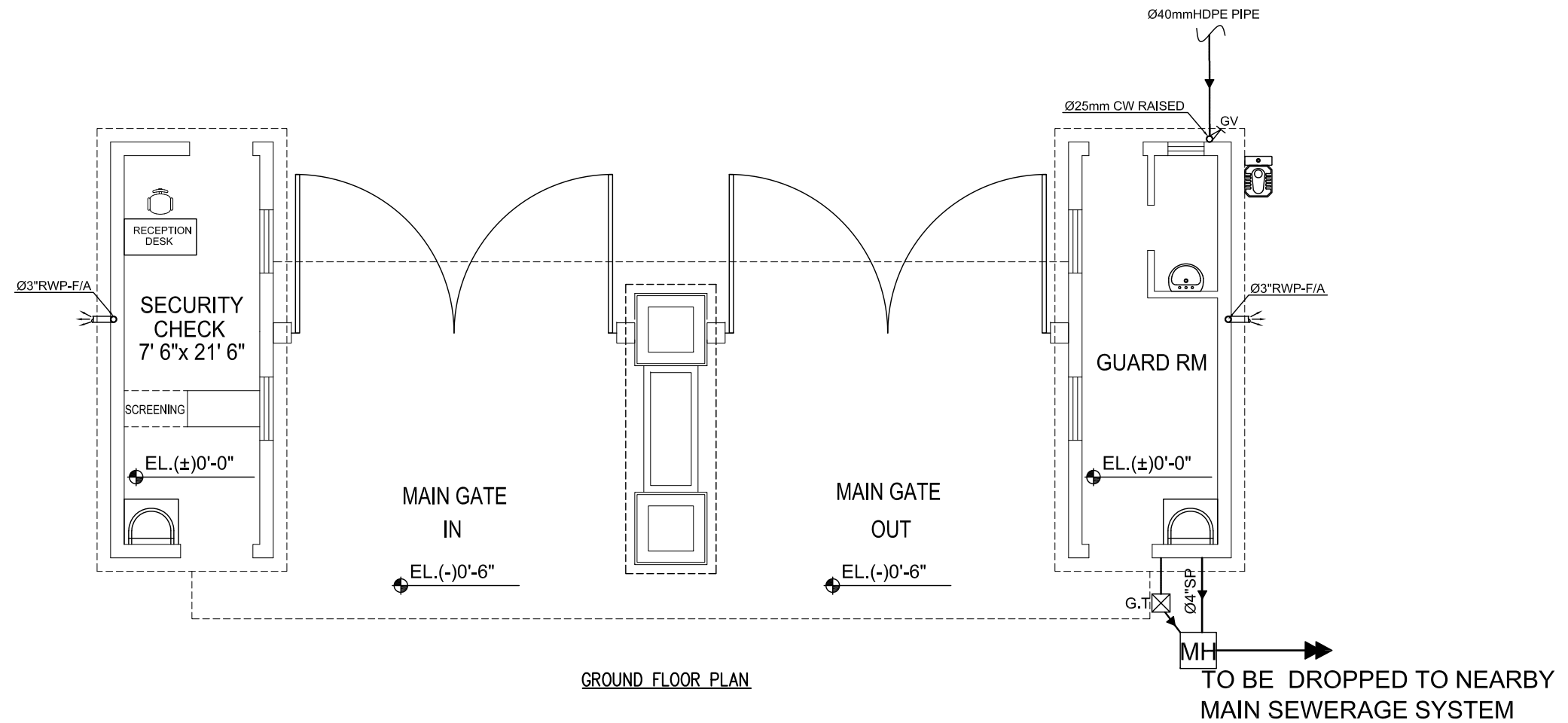
1. PIPE PASSING THROUGH WALL, FLOOR OR ROOF SHALL BE PROTECTED WITH SLEEVES.
2. CLEANOUT OR ACCESS DOOR SHALL BE PROVIDED AT THE BASE OF ALL DRAINAGE STACK AND AT EACH FLOOR LEVEL.
3. DRAINAGE STACKS SHALL BE CONNECTED TO HORIZONTAL FIXTURE DRAIN PIPES BY 90° SWEEP TEE OR Y AND 45° BEND.
4. DRAINAGE STACKS SHALL BE CONNECTED TO UNDERGROUND DRAIN PIPE BY EITHER 90° LARGE/LONG RADIUS BEND OR TWO 45° BENDS.
5. PIPE SIZES ARE IN INCHES.
6. PLUMBING SERVICES, SHALL BE CO-ORDINATED WITH OTHER SERVICES SUCH AS ELECTRICAL, HVAC ETC. TO AVOID CONFLICT OR INTERFERENCE WITH THEM.
7. SIZE OF FLOOR DRAIN UNLESS OTHERWISE STATED SHALL BE SAME AS THE SIZE OF OUTLET DRAIN PIPE.
8. WHEREVER FLOOR DRAIN/TRAP IS SHOWN, SLOPE FLOOR TOWARDS DRAIN/TRAP.
9. HORIZONTAL DRAINAGE PIPING OF 3 INCH DIAMETER & LESS SHALL BE INSTALLED WITH A SLOPE OF NOT LESS THEN 1/4 INCH PER FOOT, LARGER ONES WITH A SLPOE OF NOT LESS THEN 1/8 INCH PER FOOT.
10. VENT PIPES SHALL BE EXENDED ONE METER ABOVE ROOF FINISHED LEVEL AND VENT COWLS SHALL BE PROVIDED ON EACH VENT OUTLET.
11. THE "VERTICAL DISTANCE" FROM FIXTURE OUTLET TO THE TRAP WEIR SHALL PREFERABLY BE NOT MORE THAN 12 INCHES. HOWEVER, THIS "VERTICAL DISTANCE" FROM THE FIXTURE OUTLET TO THE TRAP WEIR SHALL NOT EXCEED 24 INCHES.
12. WHERE THE CHANGE OF DIRECTION IS 45° OR LESS, IT IS NOT NECESSARY TO PROVIDE A CLEAN OUT. BUT WHEN THE CHANGE IN DIRECTION IS MORE THAN 45°, A CLEAN OUT SHOULD BE REQUIRED.
13. CLEANOUTS SHALL BE SO INSTALLED THAT THERE IS A CLEARANCE OF NOT LESS THAN 18 INCHES FOR THE PURPOSE OF RODDING.
14. ALL TRAPS AND FLOOR DRAINS SHALL HAVE A WATER SEAL NOT LESS THAN 2 INCHES.
15. NO T-CONNECTION IS ALLOWED IN SOIL AND WASTE PIPING.
16. ALL PLUMBING DUCTS MUST HAVE ACCESS PANELS AT EACH FLOOR.
17. ALL PLUMBING DUCTS MUST BE PLASTERED WITH 1:3 C/S WATER PROOF PLASTER BEFORE INSTALLATION OF PIPES ETC.
18. TYPICAL OUTLET SIZE OF FIXTURES SHALL BE AS FOLLOWS:
WATER CLOSET = 4"
FLOOR DRAIN = 3"
SHOWER / TUB = 2"
19. MINIMUM SIZE OF WATER SUPPLY DISTRIBUTION PIPE SHALL BE 25mm.
20. MINIMUM SIZE OF SOIL PIPE DIAMETER FOR SHALL BE 100mm.
21. WATER FILTERS SHALL BE PROVIDED AT EACH WATER COOLER LOCATION, WITH THE SOURCE LINE.

ABBREVIATION	DESCRIPTION
Ø	DIAMETER OF PIPE
CW	COLD WATER PIPE
HW	HOT WATER PIPE
CW/HW	COLD WATER & HOT WATER PIPE
SP	SOIL PIPE
WP	WASTE PIPE
VP	VENT PIPE
S/S	SOIL STACK
W/S	WASTE STACK
V/S	VENT STACK
T/A	TO ABOVE
T/B	TO BELOW
F/A	FROM ABOVE
F/B	FROM BELOW
WT	WATER TAP
U/G.	UNDER GROUND
U/F.	UNDER FLOOR
GWH	GAS WATER HEATER
EWH	ELECTRIC WATER HEATER
EWC	ELECTRIC WATER COOLER

ABBREVIATION	DESCRIPTION
RWP	RAIN WATER PIPE
MH	MANHOLE
D/S	DRAINAGE STACK
GI	GALVANIZED IRON
PRV	PRESSURE REDUCING VALVE
HWR	HOT WATER RETURN
GWH	GAS WATER HEATER
GV	GATE VALVE
CV	CHECK VALVE
MS	MILD STEEL
FHC	FIRE HYDRANT CABINET
WC	WATER CLOSET
AF/C	ABOVE FALSE CEILING
(TYP)	TYPICAL
FT	FLOOR TRAP
H/L	HIGH LEVEL
U/F	UNDER FLOOR / LOW LEVEL
FHC	FIRE HOSE CABINET
WC	WATER CLOSET
N.T.S.	NOT TO SCALE
SH	SHOWER

SYMBOL	DESCRIPTION
	COLD WATER PIPE
	HOT WATER PIPE
	SOIL PIPE
	WASTE PIPE
	VENT PIPE
	GATE VALVE ON HORIZONTAL PIPE
	GATE VALVE ON VERTICAL PIPE
	CHECK VALVE OR NON-RETURN VALVE
	FLOOR CLEAN OUT
	FLOOR CLEAN OUT PLUG
	MULTI FLOOR TRAP
	FLOOR TRAP
	DIRECTION OF FLOW
	MUSLIM SHOWER
	WATER TAP
	GULLY TRAP
	GAS WATER HEATER
	PLUGGED
	SHOWER
	WATER COOLER
	FIRE HOSE CABINET
	ASIAN WATER CLOSET
	ENGLISH WATER CLOSET
	KITCHEN SINK
	VANITY
	WASH HAND BASIN

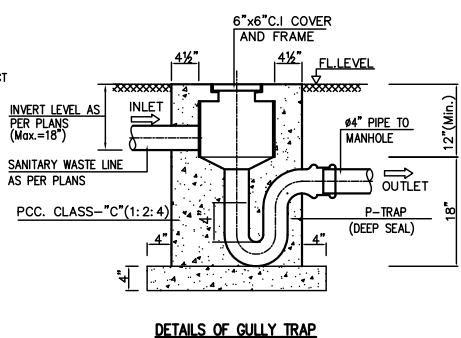
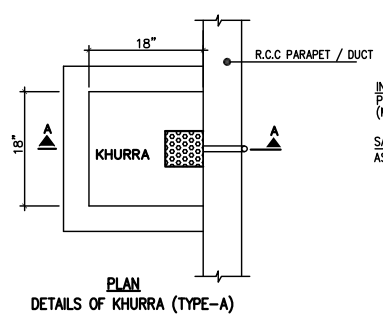
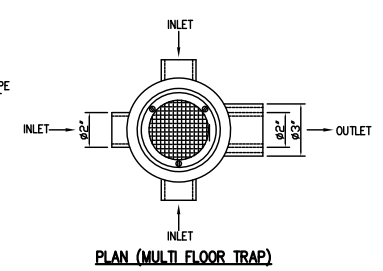
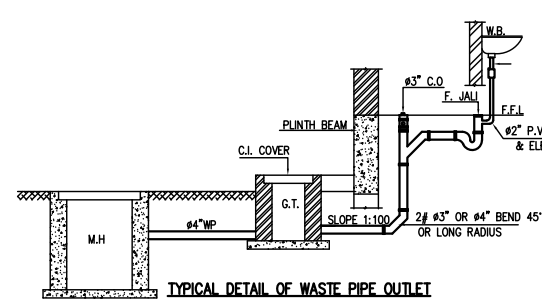
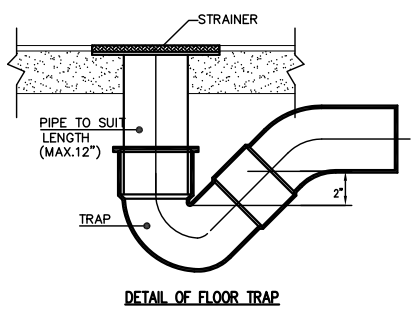
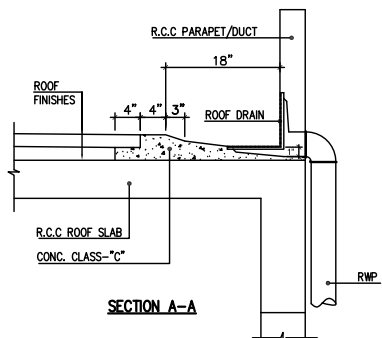
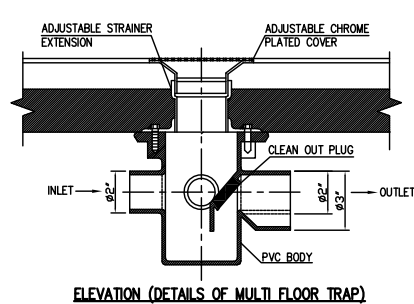
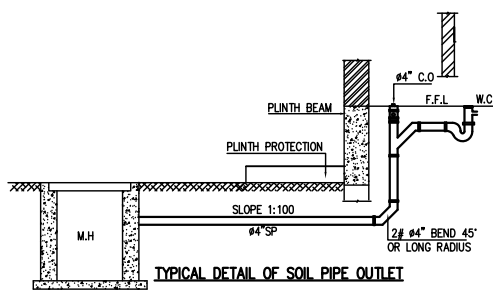
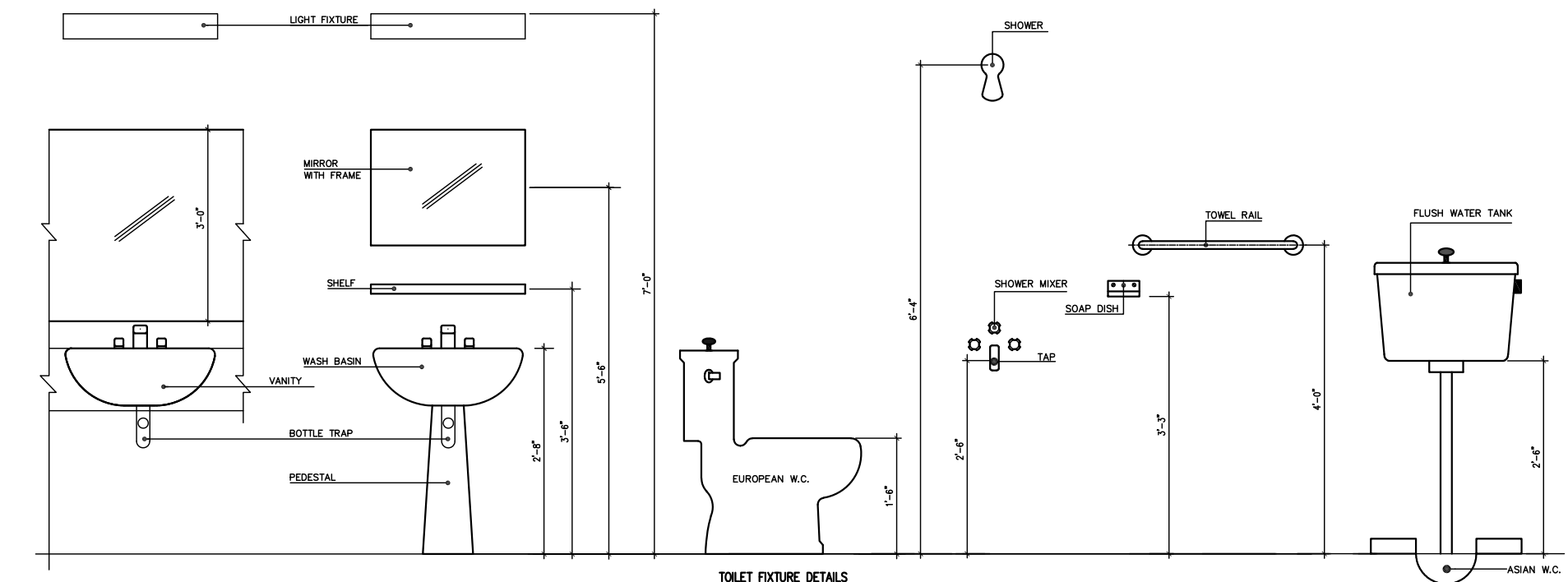
REV. No.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
LEGENDS & GENERAL NOTES (PLUMBING WORKS)					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. HASNAT	M.A. JAVED	M.A. JAVED	AAMIR RASHEED		
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. M.A. JAVED		4010/326/C/10cF01			0
SUBM. M.A. JAVED	DEC, 2025				



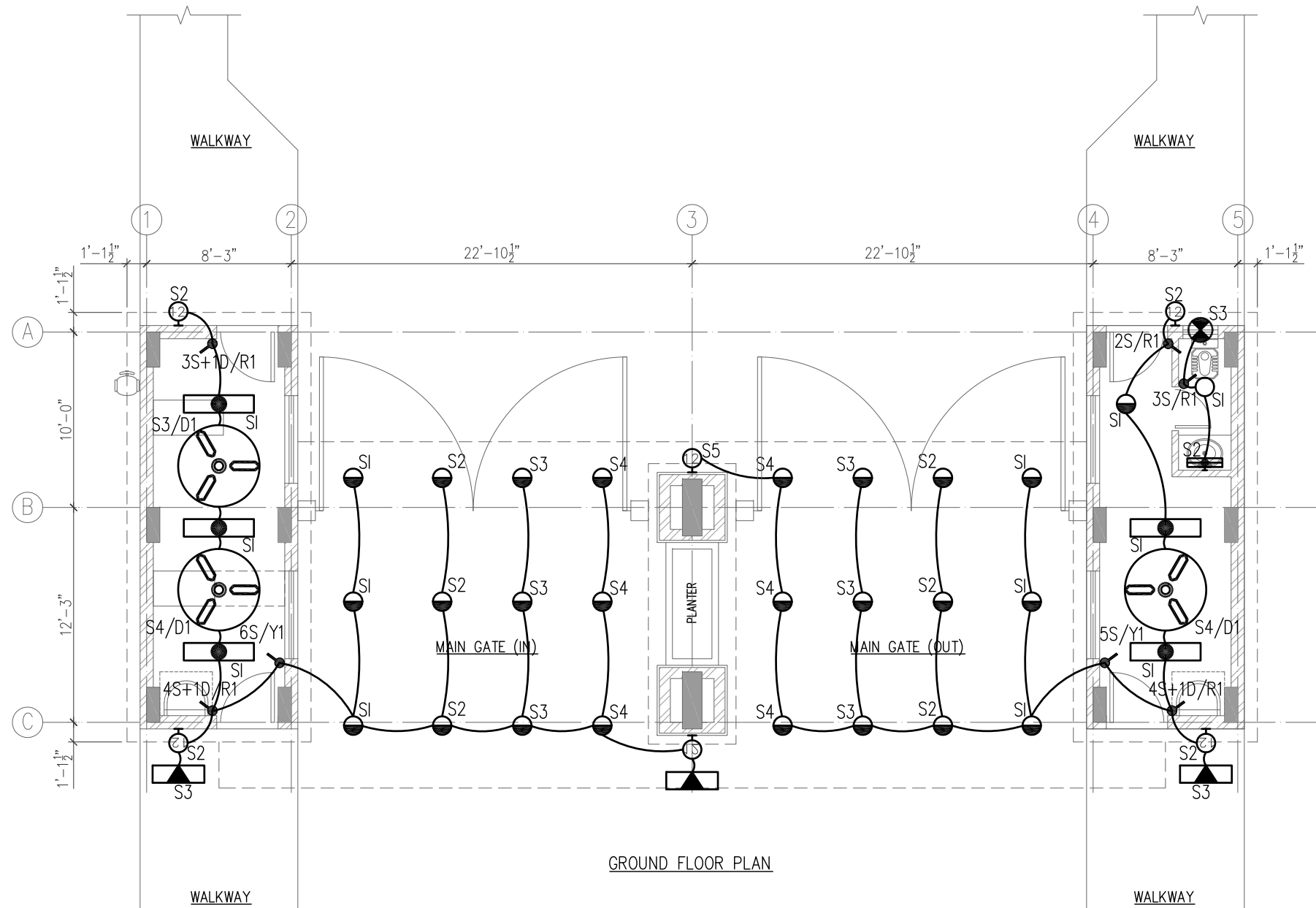
GENERAL NOTES:

1. ALL DIMENSIONS AND LEVELS ARE IN 'FPS' SYSTEM.
2. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT PROJECT DRAWINGS.
3. ALL EL. (LEVELS) ARE STRUCTURAL LEVELS.

REV. No.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
WATER SUPPLY AND SANITARY DRAINAGE LAYOUT					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. HASNAT	M.A. JAVED	M.A. JAVED	AAMIR RASHEED		
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. M.A. JAVED		4010/326/C/10cF02			0
SUBM. M.A. JAVED	DEC. 2025				



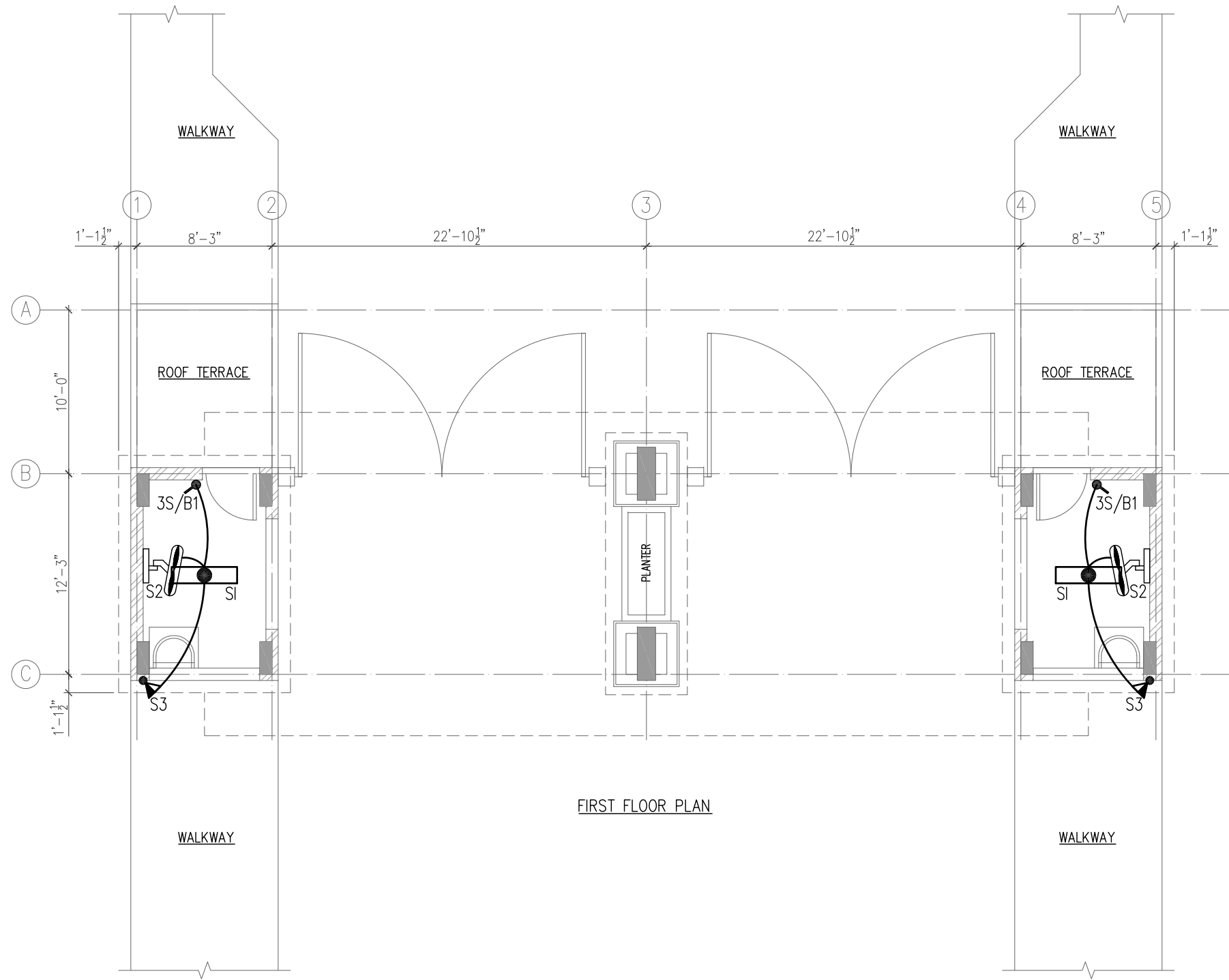
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UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
MISCELLANEOUS DETAILS (PLUMBING WORKS)					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. HASNAT	M.A. JAVED	M.A. JAVED	AAMIR RASHEED		
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. M.A. JAVED	DEC.' 2025		4010/326/C/10cF03		0
SUBM. M.A. JAVED					



LEGEND

-  UP DOWN LIGHT
-  IN GROUND FLOOD LIGHT
-  DOWN LIGHTER 18W
-  LED TUBE LIGHT
-  WALL BRACKET FAN
-  CEILING FAN
-  CEILING RECESSED LED LIGHT
-  EXHAUST FAN
-  10A SWITCH

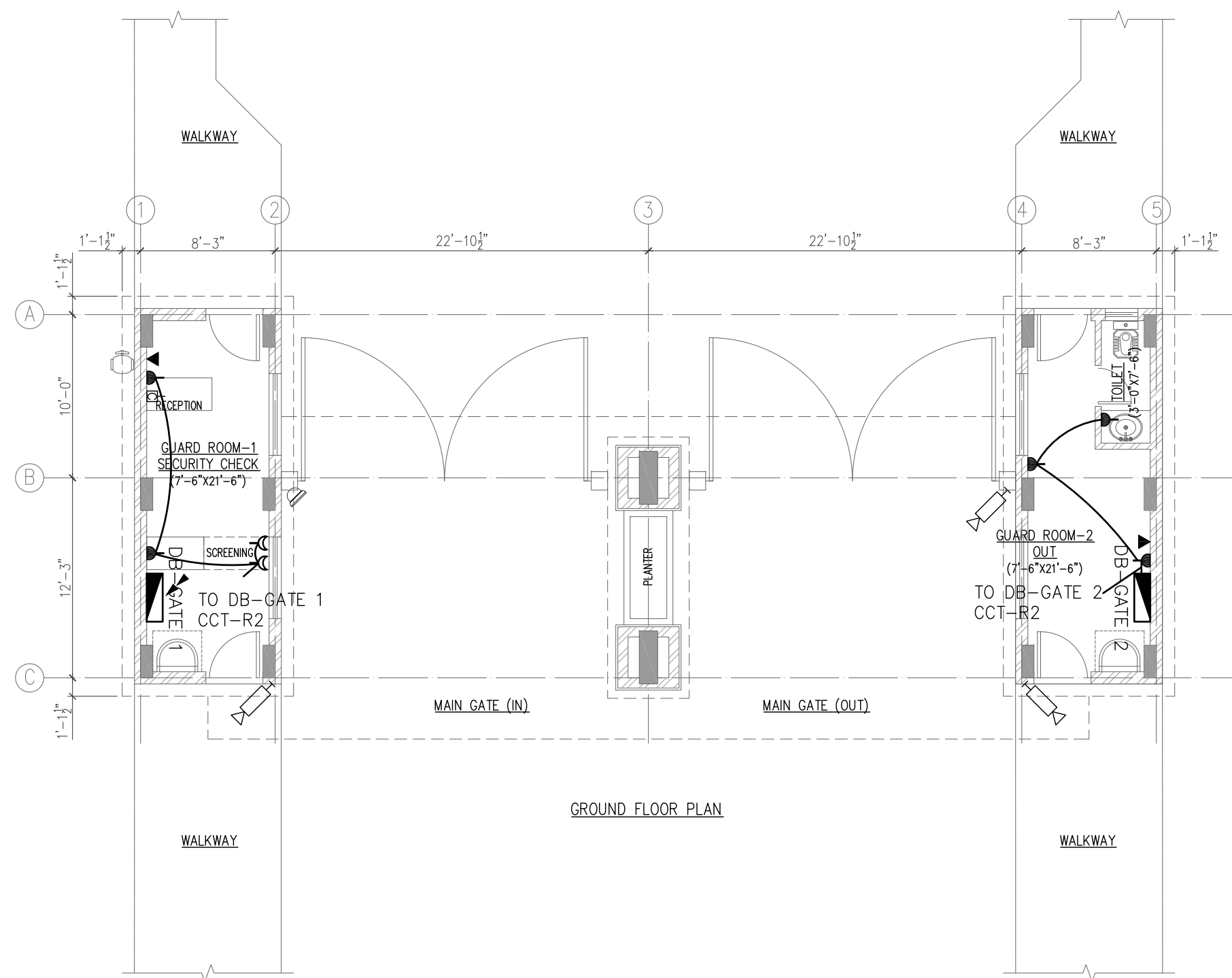
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UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
GROUND FLOOR PLAN					
LIGHTING LAYOUT					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. <u>NESPAK</u>	RECOMMENDED	VER./CKD.	APPROVED		
DWN. <u>NAVEED</u>	AMENAH AROOJ	AMENAH AROOJ	AAMIR RASHEED		
FILE <u>4010-AW-MS</u>	DATE	DRAWING NO.			REV.
CKD. <u>AMENAH AROOJ</u>		4010/325/C/10cE01			0
SUBM. <u>AAMIR RASHEED</u>	DEC, 2025				



LEGEND

-  DOWN LIGHTER
-  DOWN LIGHTER 18W
-  WALL BRACKET FAN
-  10A SWITCH

REV. NO.	DATE	DESCRIPTION		BY	CKD. APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
FIRST FLOOR PLAN					
LIGHTING LAYOUT					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED		VER./CKD.	APPROVED	
DWN. NAVEED	AMENAH AROOJ		AMENAH AROOJ	AMIR RASHEED	
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. AMENAH AROOJ	DEC, 2025	4010/325/C/10cE02			0
SUBM. AMIR RASHEED					

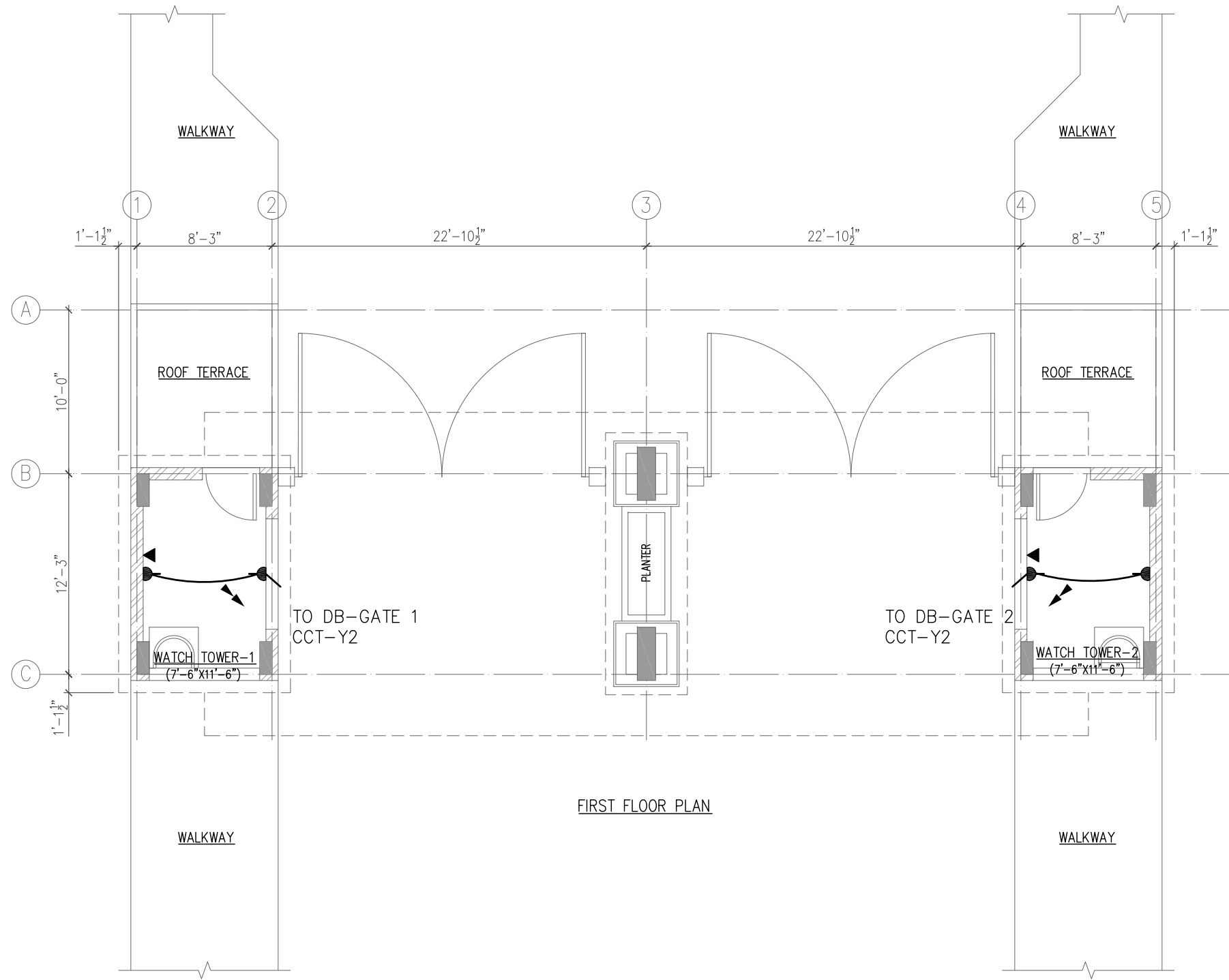


GROUND FLOOR PLAN

LEGEND

-  PTZ CAMERA
-  BULLET CAMERA
-  NETWORKING POINT
-  13Amp 3-PIN SWITCHED SOCKET
-  15Amp SWITCHED SOCKET
-  TELEPHONE POINT
-  DB(DISTRIBUTION BOARD)

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
GROUND FLOOR PLAN					
POWER, COMMUNICATION & CCTV LAYOUT					
		NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD			
DES. <u>NESPAK</u>	RECOMMENDED	VER./CKD.	APPROVED		
DWN. <u>NAVEED</u>	<u>AMENAH AROOJ</u>	<u>AMENAH AROOJ</u>	<u>AMIR RASHEED</u>		
FILE <u>4010-AW-MG</u>	DATE	DRAWING NO.			REV.
CKD. <u>AMENAH AROOJ</u>	DEC, '2025	4010/325/C/10cE03			0
SUBM. <u>AMIR RASHEED</u>					



LEGEND

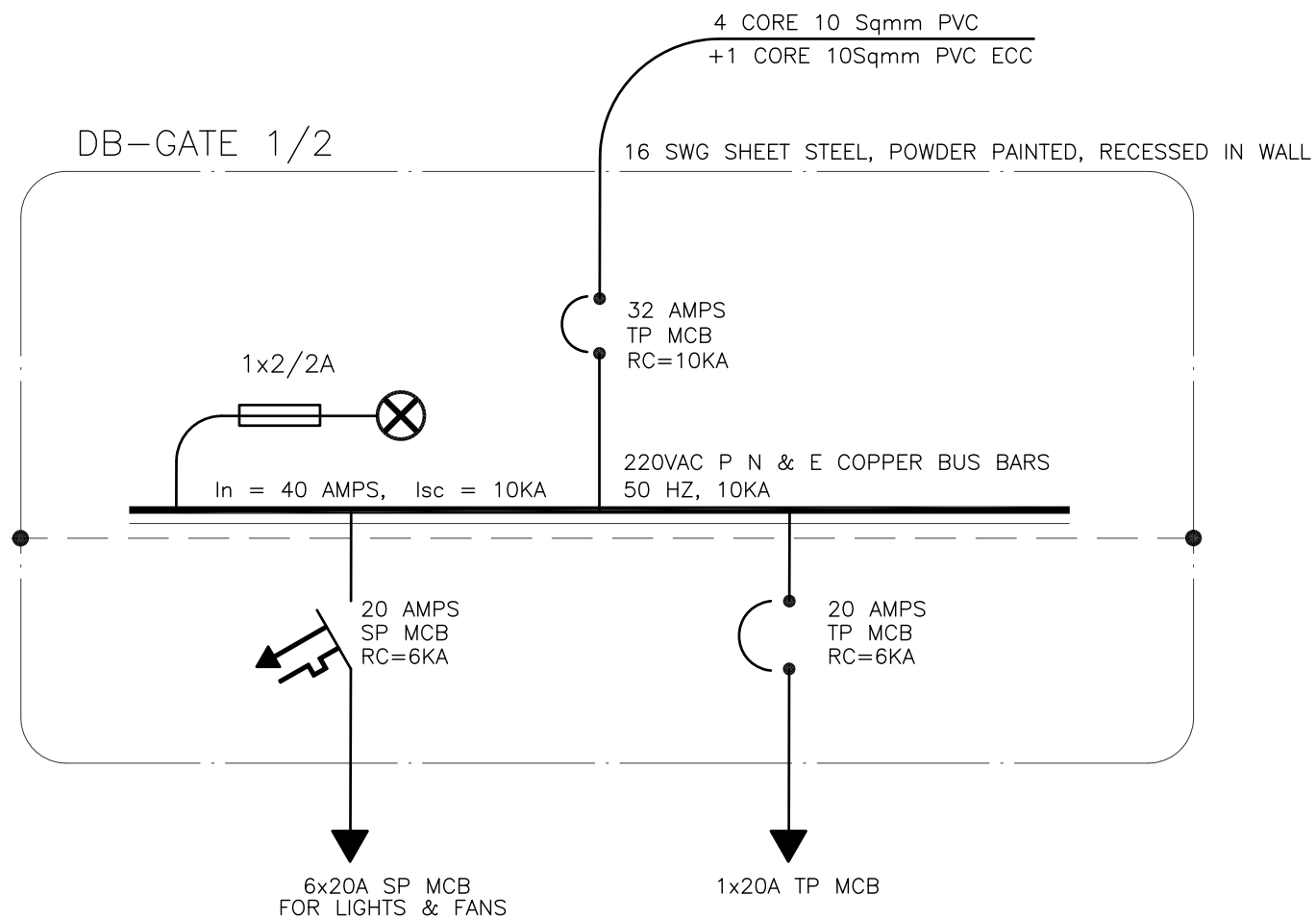


13Amp 3-PIN SWITCHED SOCKET

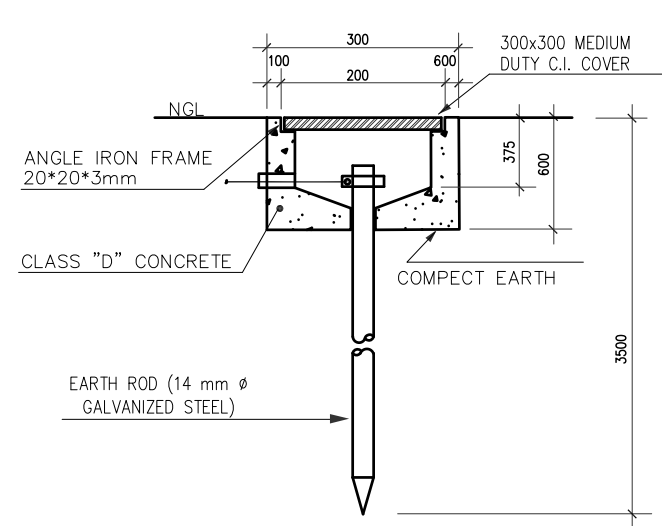


TELEPHONE POINT

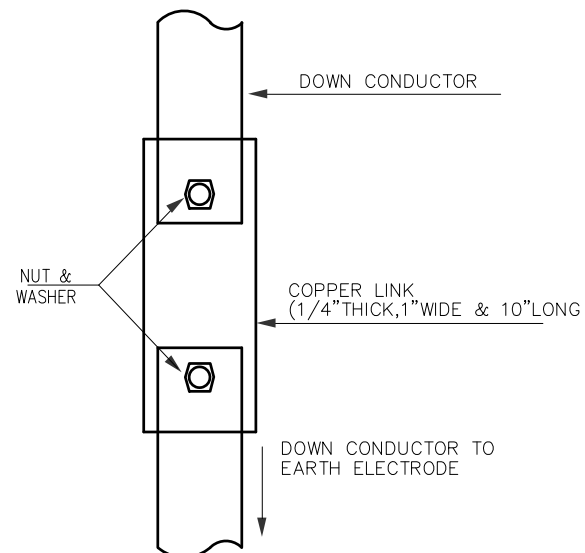
REV. NO.	DATE	DESCRIPTION		BY	CKD. APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
FIRST FLOOR PLAN					
POWER, COMMUNICATION & CCTV LAYOUT					
NEE PAC NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. NAVEED	AMENAH AROOJ	AMENAH AROOJ	AMIR RASHEED		
FILE 4010-AW-MG	DATE	DRAWING NO.			REV.
CKD. AMENAH AROOJ	DEC. 2025		4010/325/C/10cE04		0
SUBM. AAMIR RASHEED					



SINGLE LINE DIAGRAM



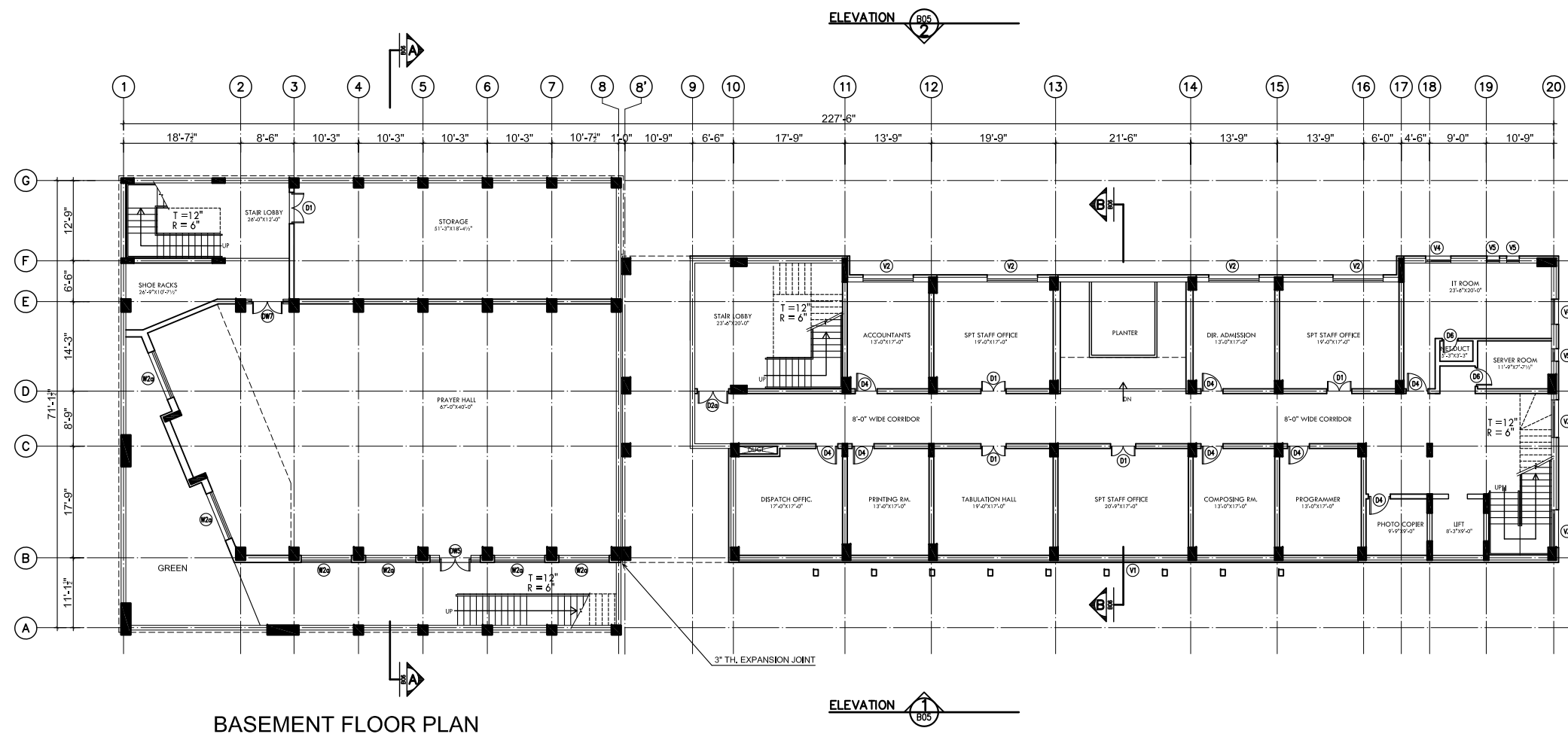
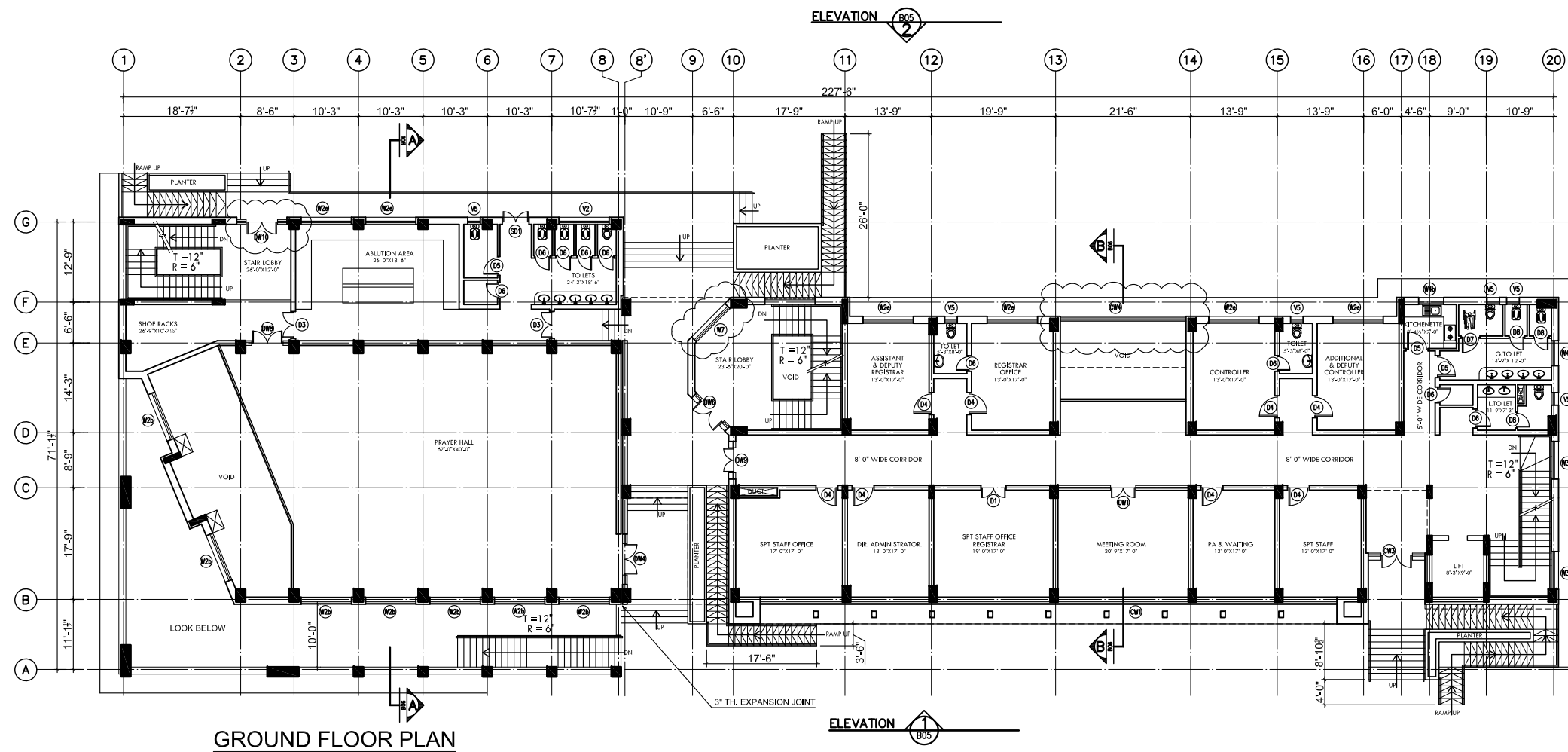
ROD TYPE EARTH ELECTRODE
(FOR LIGHTNING PROTECTION SYSTEM)
NTS



TESTING TERMINAL
DETAIL-2
NTS

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
MAIN GATE					
SINGLE LINE DIAGRAM, EARTHING & ROAD BLOCKER DETAILS					
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. NAVEED	AMENAH AROOJ	AMENAH AROOJ	AAMIR RASHEED		
FILE 4010-AW-MS	DATE	DRAWING NO.			REV.
CKD. AMENAH AROOJ		4010/325/C/10cE05			0
SUBM. AAMIR RASHEED	DEC, 2025				

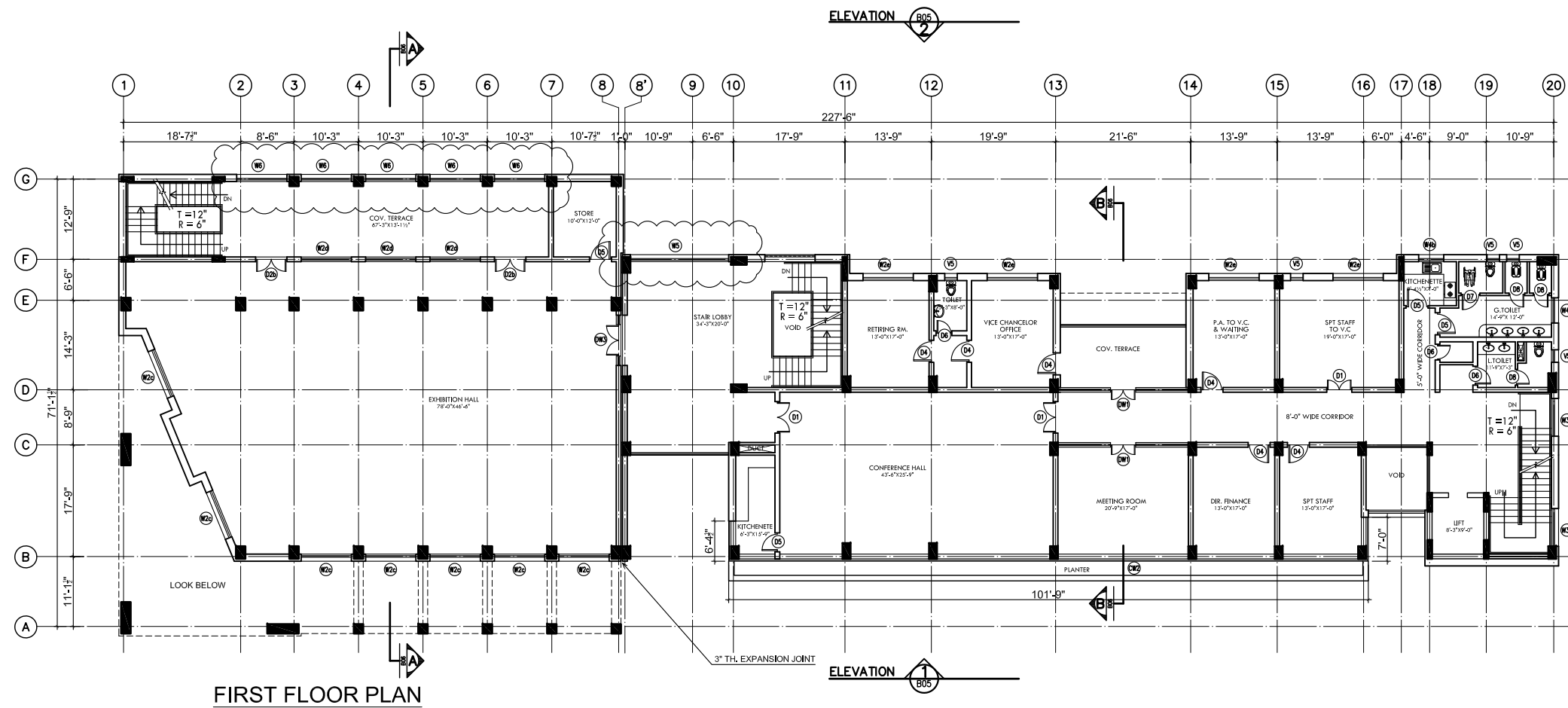
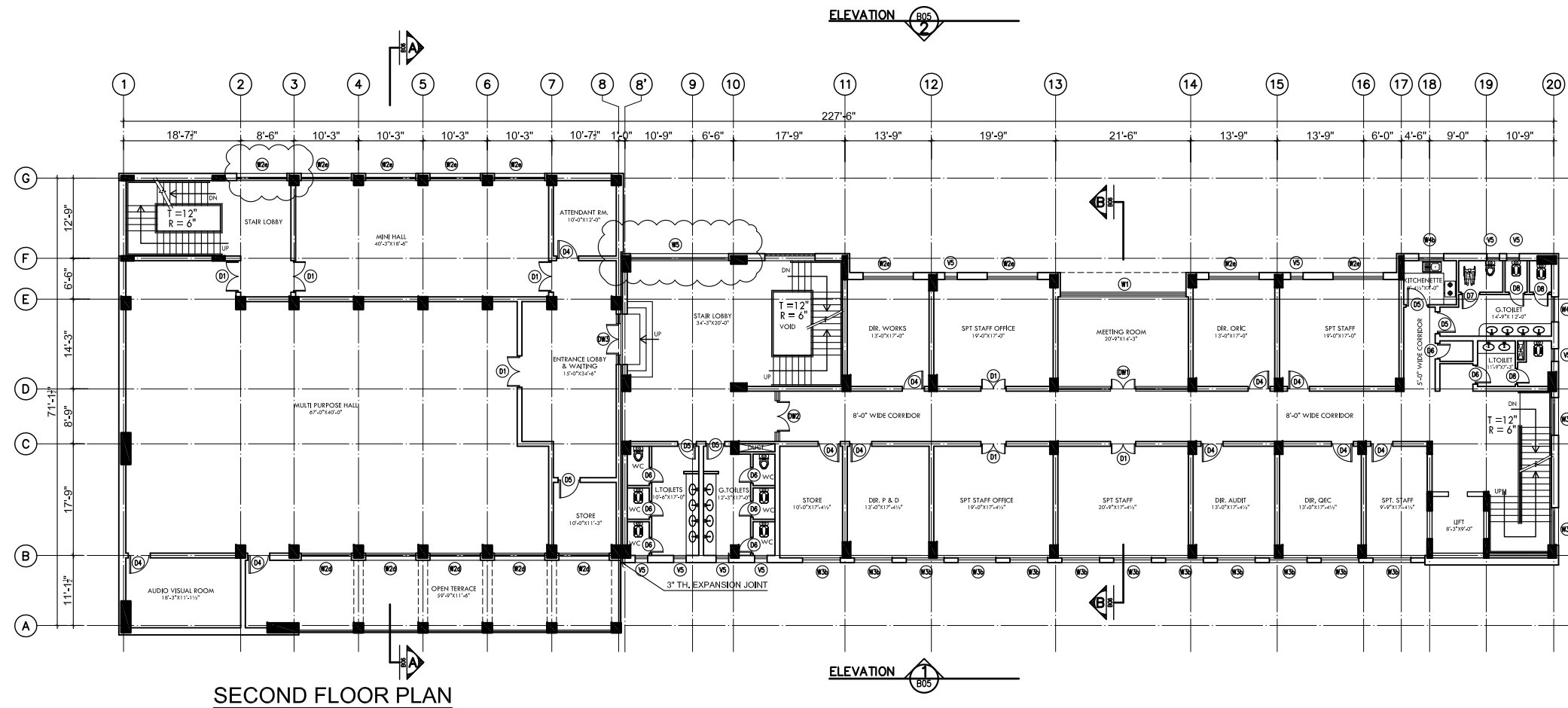
MISCELLANEOUS WORKS IN ADMINISTRATION BLOCK



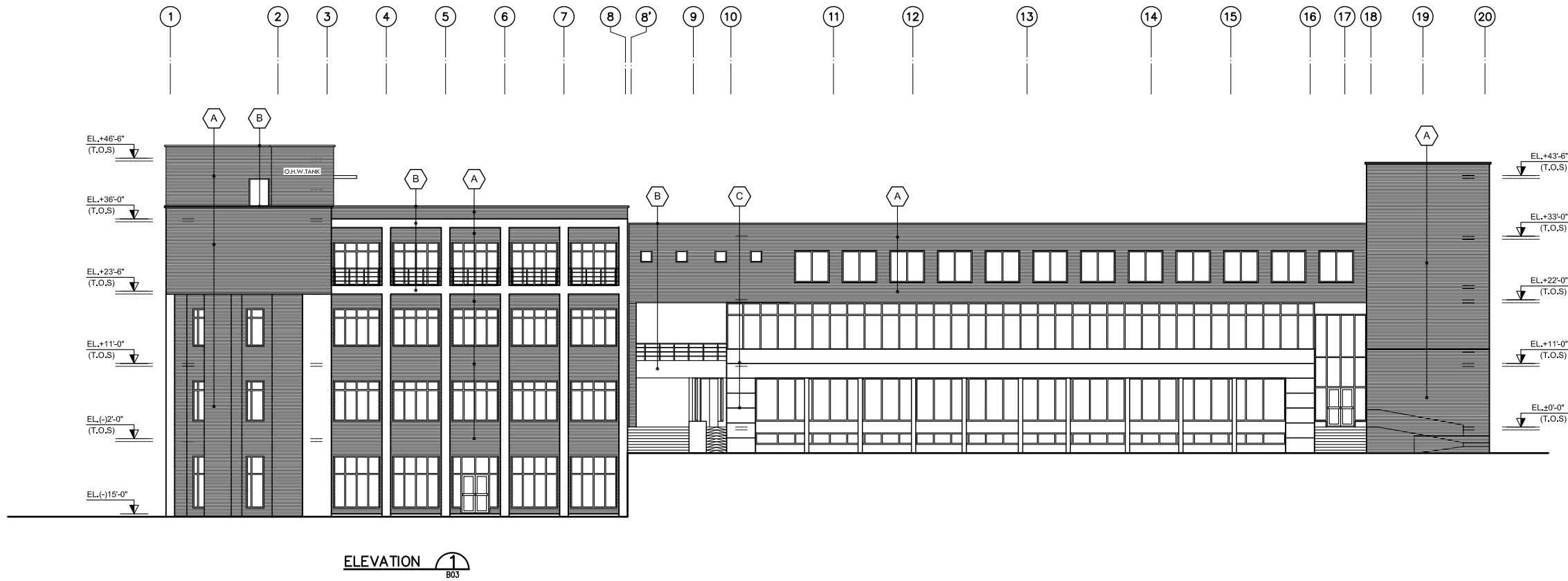
GENERAL NOTES:

1. ALL DIMENSIONS AND LEVELS ARE IN 'FPS' SYSTEM.
2. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT PROJECT DRAWINGS.
3. ALL EL. (LEVELS) ARE STRUCTURAL LEVELS.
4. EL. $\pm 0'-0"$ CORRESPONDS TO TOPOGRAPHIC SURVEY LEVEL OF +2383.50.
5. FIRST CLASS BRICK SHALL BE USED FOR ALL MASONRY WORKS.
6. ALL DOORS ARE $4\frac{1}{2}"$ OFFSET FROM THE WALL UNLESS OTHERWISE SPECIFIED.
7. FINISH FLOOR ARE 2" ABOVE THE STRUCTURAL LEVEL (EL.).
8. FINISH FLOORS FOR KITCHEN AND TOILET AREAS ARE $1\frac{1}{2}"$ ABOVE THE STRUCTURAL LEVEL (EL.).
9. ALL INTRENAL WALLS ARE 9" THICK BRICK MASONRY WALLS UNLESS OTHERWISE SPECIFIED.
10. ALL EXTRENAL WALLS ARE $13\frac{1}{2}"$ THICK BRICK MASONRY WALLS UNLESS OTHERWISE SPECIFIED.

DESIGN	23-02-24	REVISED AS SHOWN	W.R.	W.R.	W.R.
REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANICALLARY WORKS					
ADMINISTRATION BLOCK					
BASEMENT & GROUND FLOOR PLANS					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESIGN	RECOMMENDED	VER/CKD.	APPROVED		
DWN. M. SALEEM	WAJHA REHAN	AAMIR RASHEED	AAMIR RASHEED		
FILE	DATE	DRAWING NO.			REV.
CKD. FAHAD AKHTAR		4010/322/C/10dB01			0
SUBM. WAJHA REHAN	DEC. 2025				



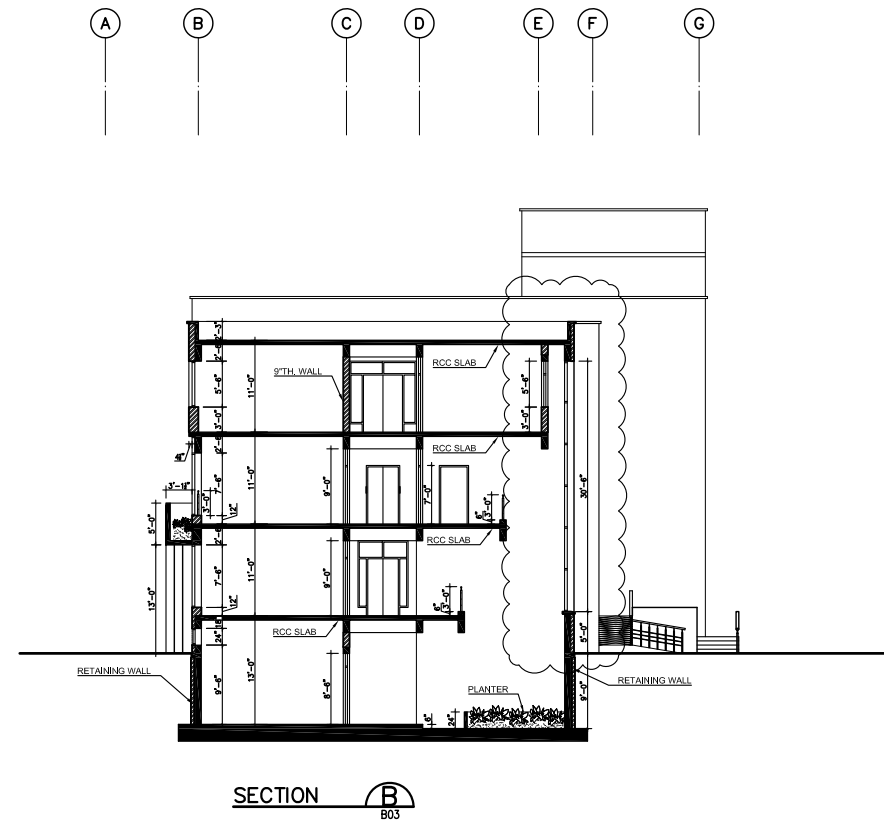
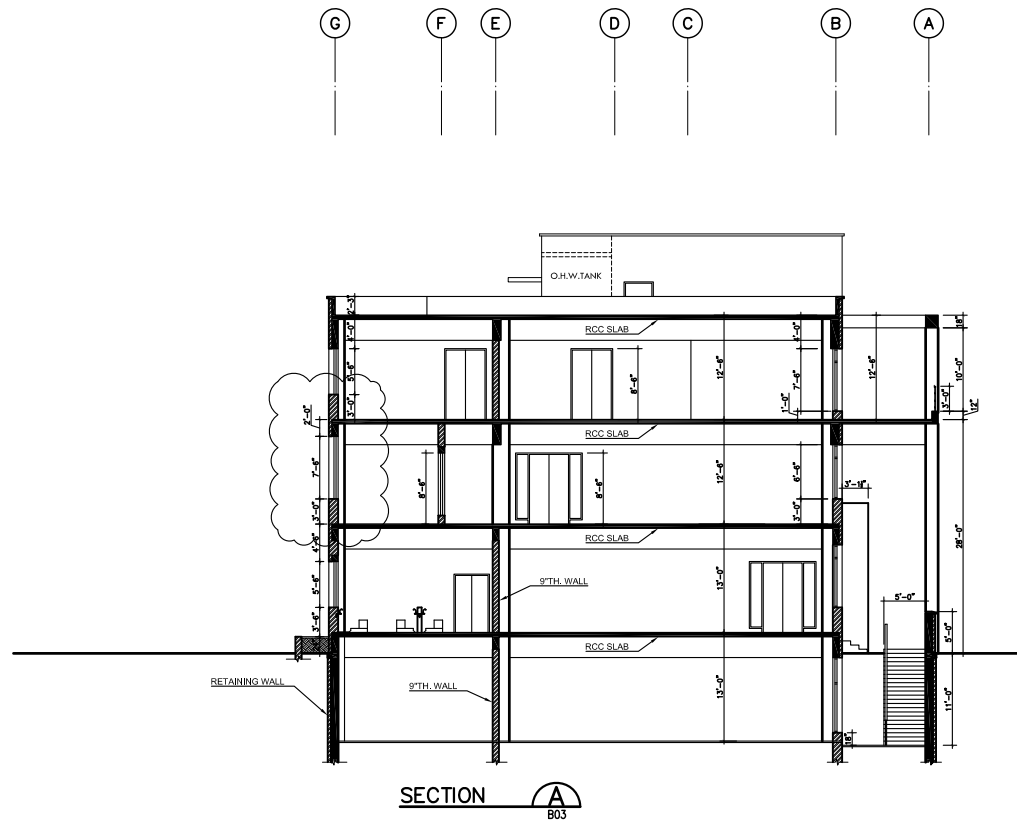
REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANICALLARY WORKS					
ADMINISTRATION BLOCK					
FIRST & SECOND FLOOR PLANS					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DES. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. M. SALEEM	WAJHA REHAN	AAMIR RASHEED	AAMIR RASHEED		
FILE	DATE	DRAWING NO.			REV.
CKD. FAHAD AKHTAR		4010/322/C/10dB02			0
SUBM. WAJHA REHAN	DEC. 2025				



LEGEND OF EXTERNAL FINISHES

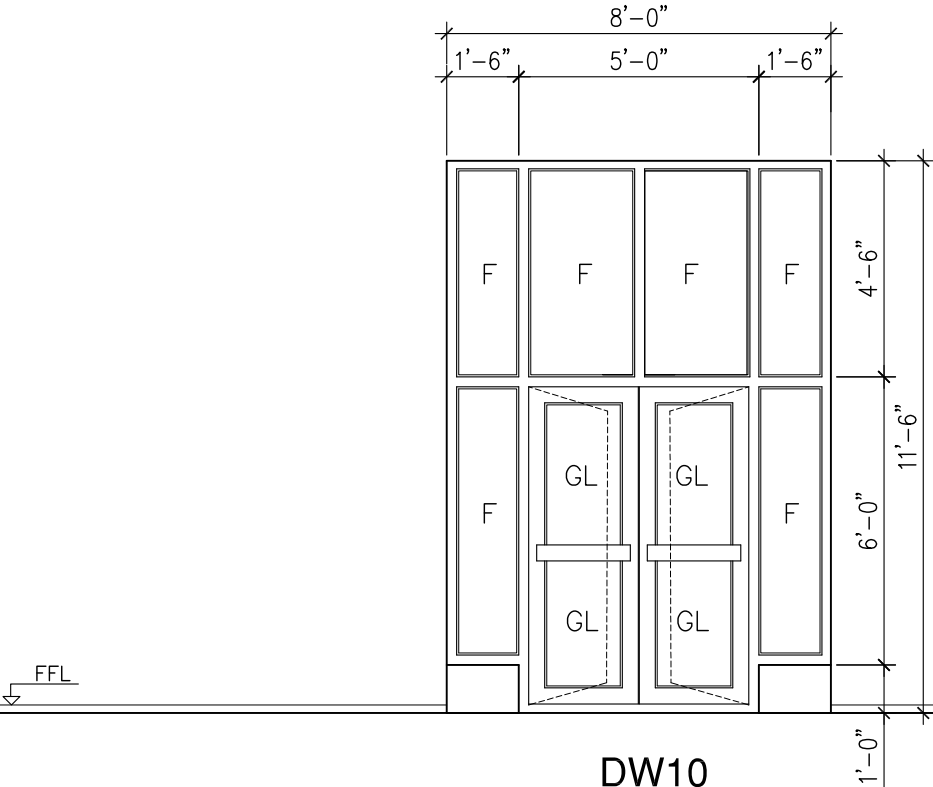
- A — BRICK FACING
- B — TEXTURE COATING
- C — TEXTURE COATING WITH GROOVE PLASTER
- D — CONCRETE JALI

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1) ANICALLARY WORKS ADMINISTRATION BLOCK ELEVATION -1 & 2					
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. M. SALEEM	WAJHA REHAN	AAMIR RASHEED	AAMIR RASHEED		
FILE	DATE	DRAWING NO.			REV.
CKD. FAHAD AKHTAR		4010/322/C/10dB03			0
SUBM. WAJHA REHAN	DEC. 2025				



REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1) ANICAILLARY WORKS ADMINISTRATION BLOCK SECTION -A & B					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. M. SALEEM	WAJHA REHAN	AAMIR RASHEED	AAMIR RASHEED		
FILE	DATE	DRAWING NO.			REV.
CKD. FAHAD AKHTAR		4010/322/C/10dB04			0
SUBM. WAJHA REHAN	DEC. 2025				

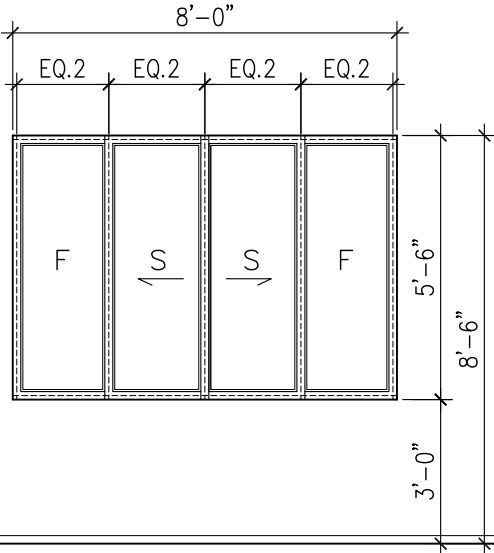
ARCHITECTURAL DETAILS



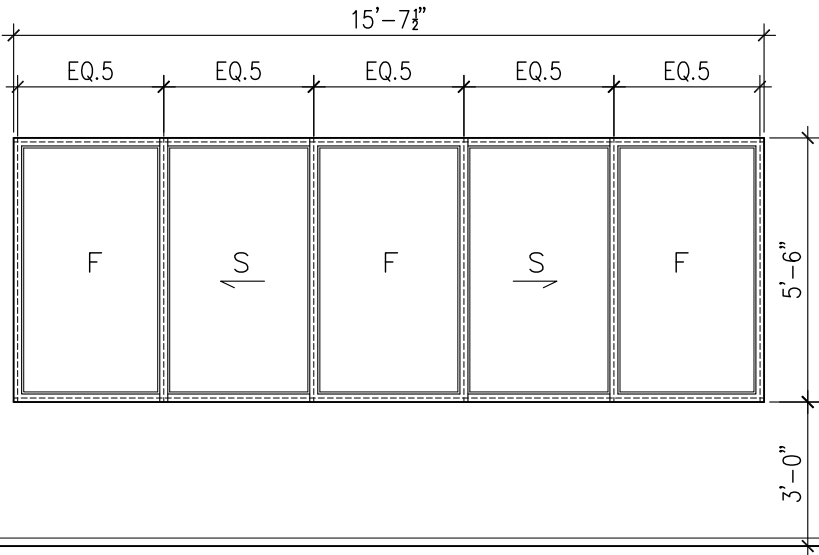
DW10

PROJECT		TITLE	
UNIVERSITY OF BUNER, BUNER ADMINISTRATION BLOCK (ANCILLARY WORKS)		ELEVATIONS OF DOORS & WINDOWS (1/3)	
	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE	NO.
		N.T.S	4010/322/C/10dB05
DATE		REV.	
		DEC.' 25	0

ARCHITECTURAL DETAILS



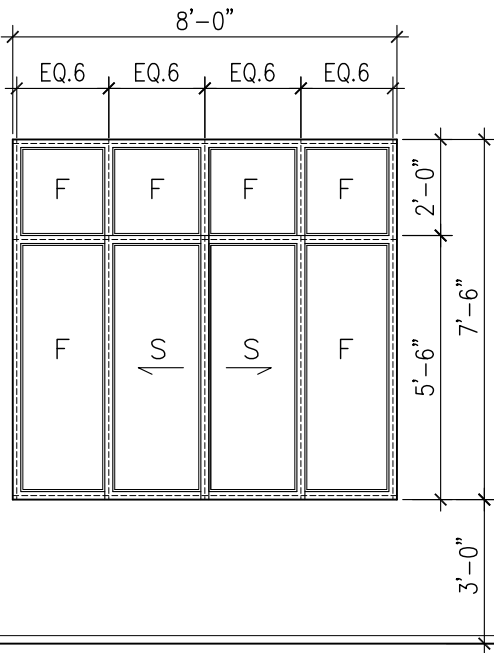
W2e



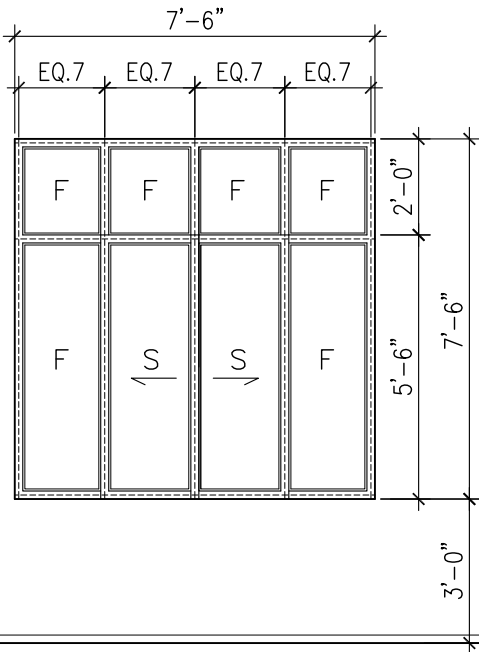
W5

PROJECT		TITLE	
UNIVERSITY OF BUNER, BUNER ADMINISTRATION BLOCK (ANCILLARY WORKS)		ELEVATIONS OF DOORS & WINDOWS (2/3)	
	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE	NO.
		N.T.S.	4010/322/C/10dB06
DATE		REV.	
		DEC.' 25	0

ARCHITECTURAL DETAILS



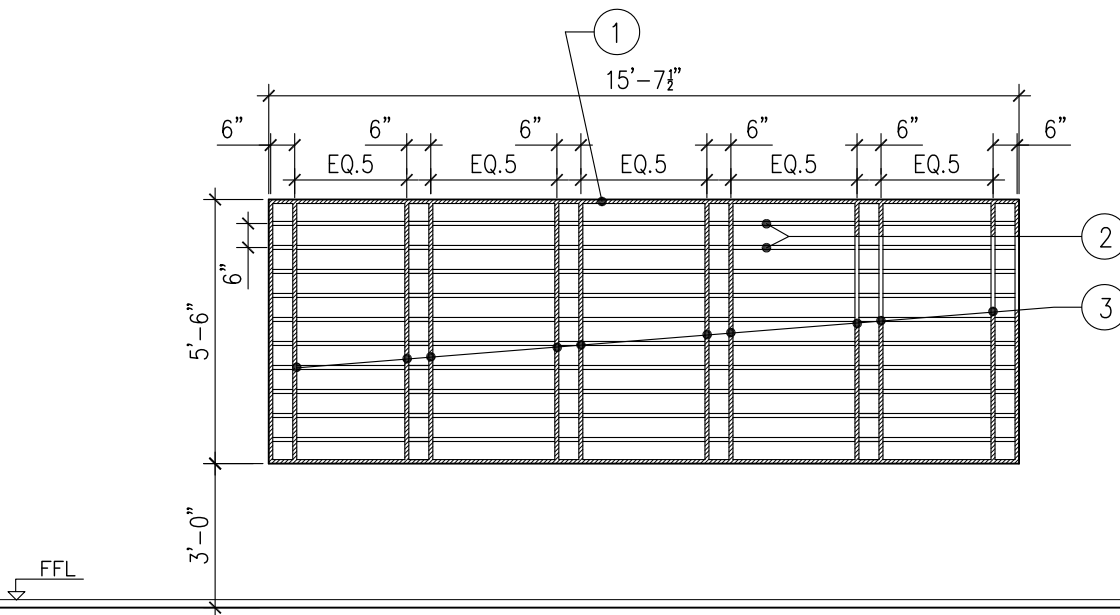
W6



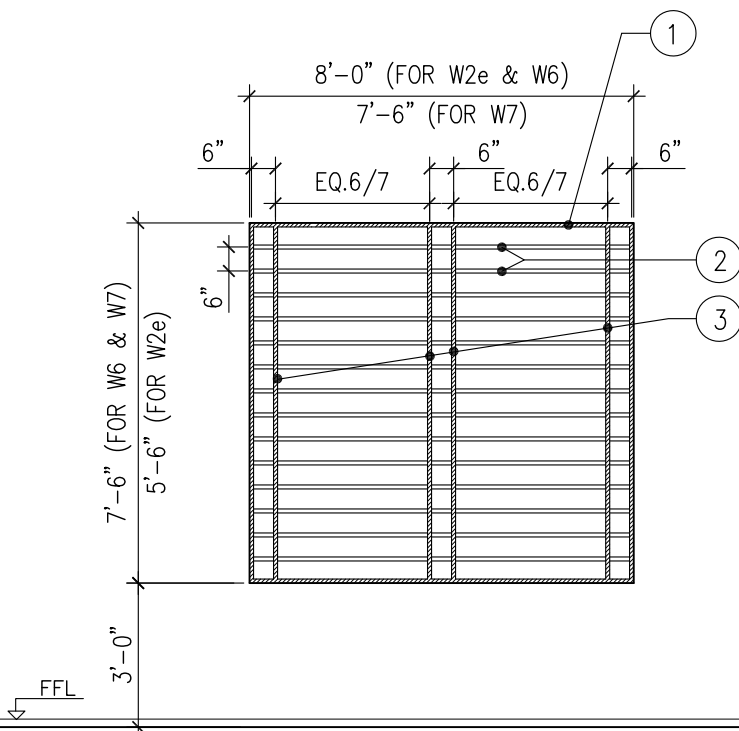
W7

PROJECT		TITLE	
UNIVERSITY OF BUNER, BUNER ADMINISTRATION BLOCK (ANCILLARY WORKS)		ELEVATIONS OF DOORS & WINDOWS (3/3)	
	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE	NO.
		N.T.S. DATE DEC.' 25	4010/322/C/10dB07 REV. 0

ARCHITECTURAL DETAILS



GRILL FOR W5



OUTER FRAME IN
① — 1"x1 1/2"x18-SWG. MS TUBE

ALL HORI. IN
② — 1/2"x1/2"x20-SWG. MS TUBE
@ 6" C/C.

VERTICAL MEMBERS IN
③ — 1"x1"x18-SWG. MS TUBE

GRILL FOR W2e, W6 & W7

PROJECT

UNIVERSITY OF BUNER, BUNER
ADMINISTRATION BLOCK (ANCILLARY WORKS)

TITLE

ELEVATION OF WINDOW GRILLS



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD. ISLAMABAD

SCALE

N.T.S

NO.

4010/322/C/10dB08

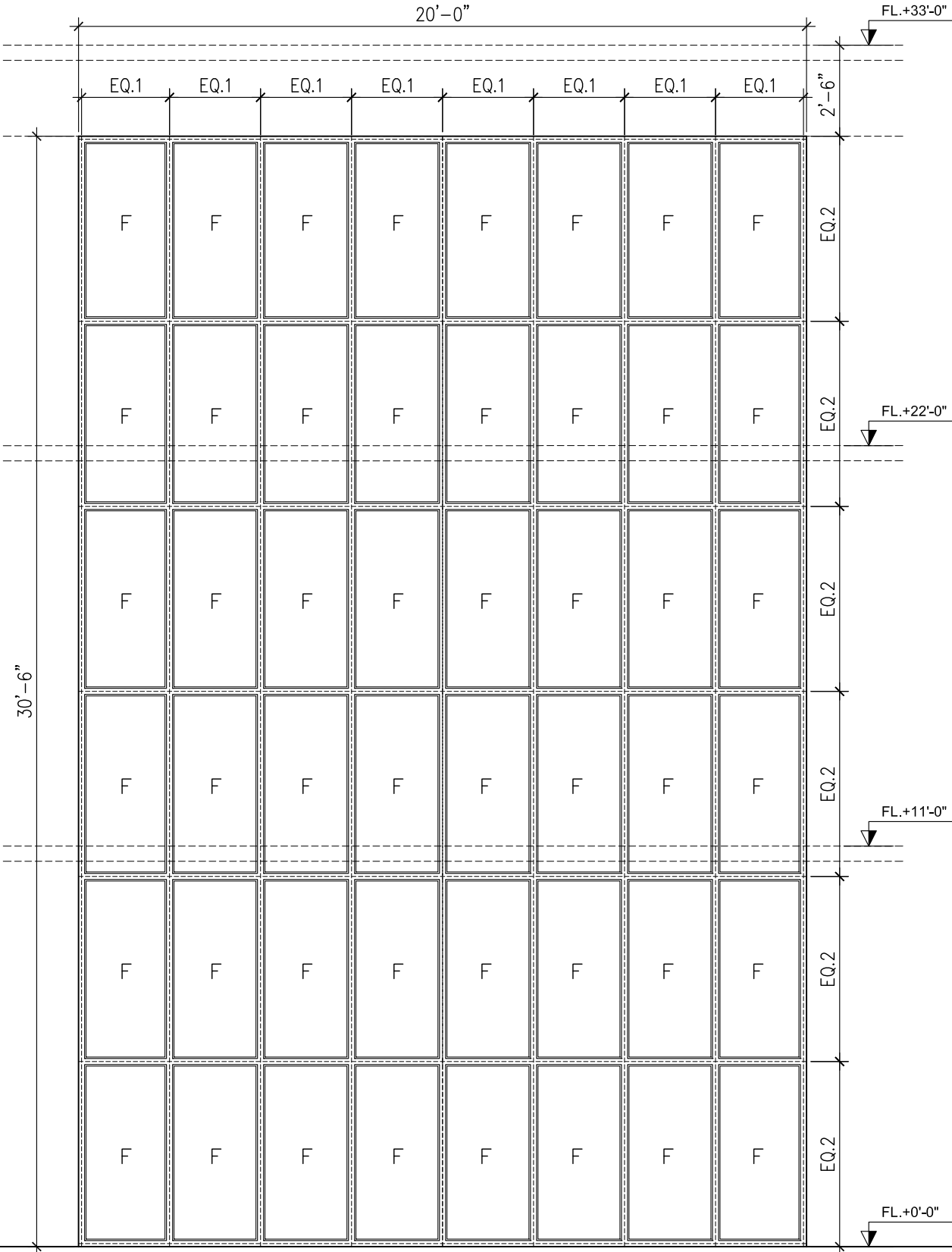
DATE

DEC.' 25

REV.

0

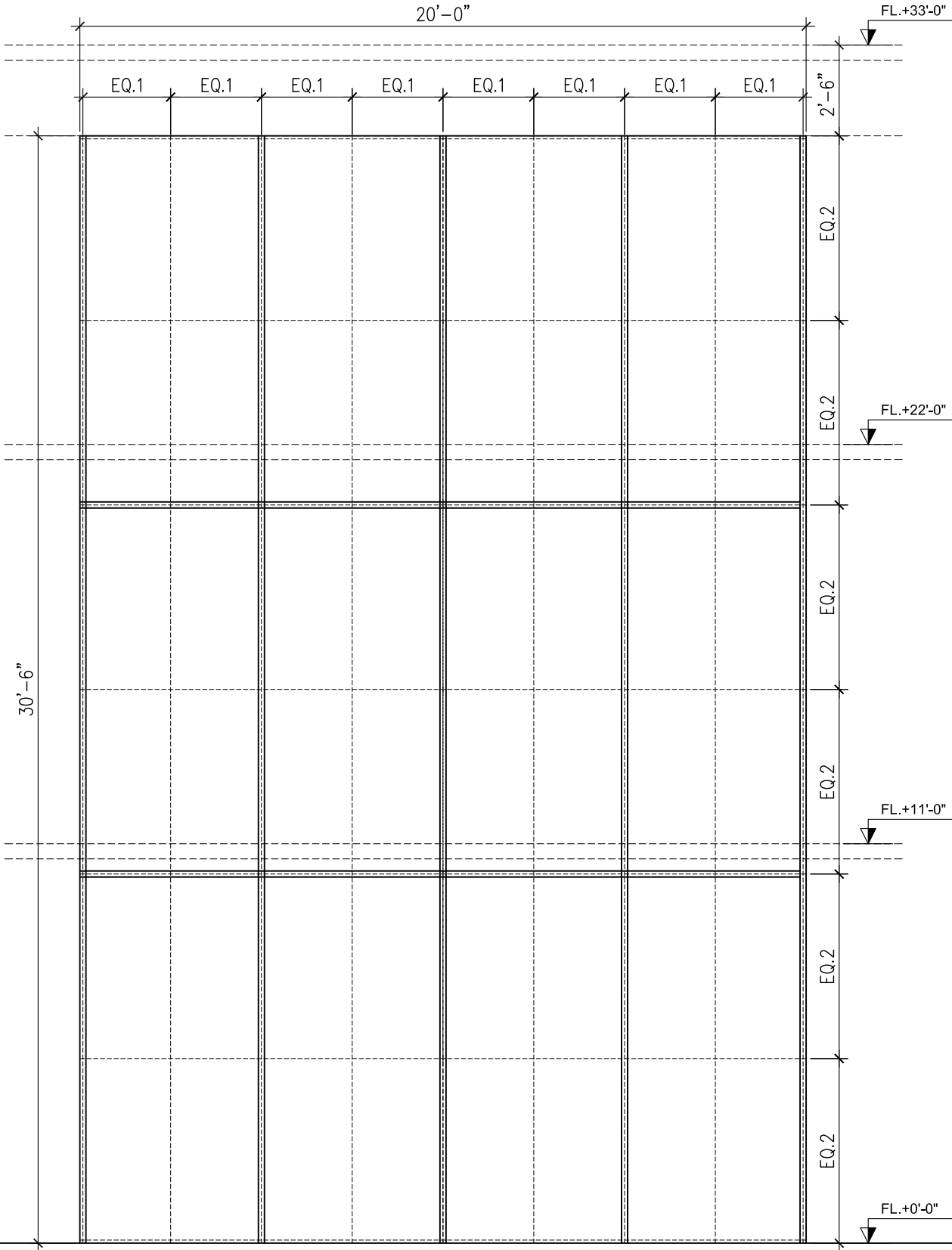
ARCHITECTURAL DETAILS



CW4

PROJECT		TITLE	
UNIVERSITY OF BUNER, BUNER ADMINISTRATION BLOCK (ANCILLARY WORKS)		ELEVATION OF CURTAIN WALL CW4	
	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE	NO.
		N.T.S	4010/322/C/10dB09
DATE		REV.	
		DEC.' 25	0

ARCHITECTURAL DETAILS



CW4 (PROPOSED ELEVATION OF STRUCTURAL STEEL FRAME)

PROJECT

UNIVERSITY OF BUNER, BUNER
ADMINISTRATION BLOCK (ANCILLARY WORKS)



NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD. ISLAMABAD

TITLE

STRUCTURAL STEEL FRAME
SUPPORTING THE CURTAIN WALL CW4

SCALE

N.T.S

DATE

DEC.' 25

NO.

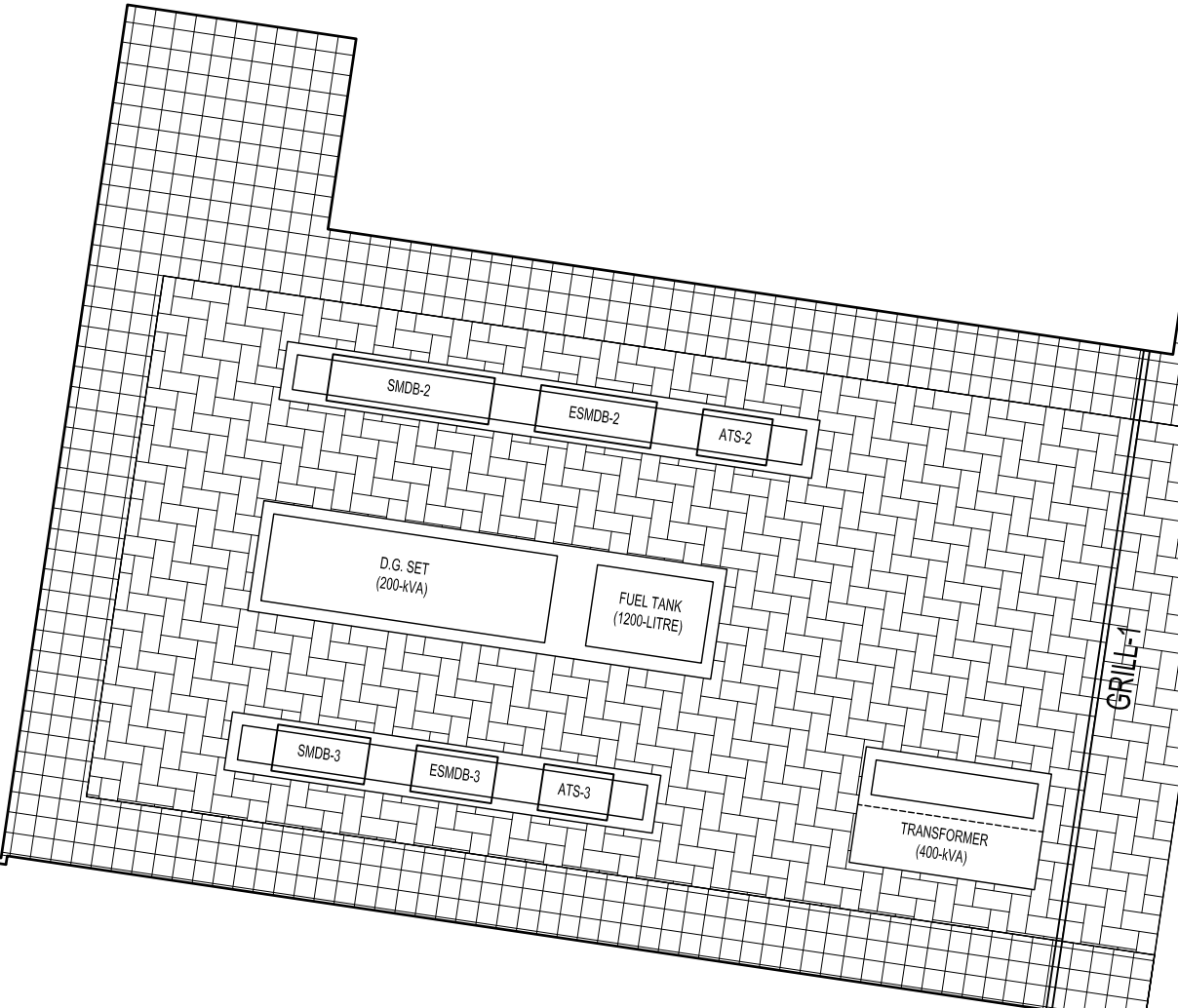
4010/322/C/10dB10

REV.

0

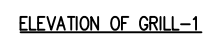
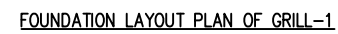
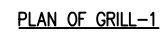
STEEL GRILL

ACADEMIC
BLOCK-A



ROAD-02

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
EXTERNAL DEVELOPMENT WORKS					
STEEL GRILL AROUND EXTERNAL ELECTRICAL EQUIPMENT					
GRILL-1 LOCATION PLAN					
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. FAHMEED	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE 4010-AW-FENCE	DATE	DRAWING NO.			REV.
CKD. M. HASNAIN		4010/323/C/10gG01			0
SUBM. AAMIR RASHEED	DEC, 2025				

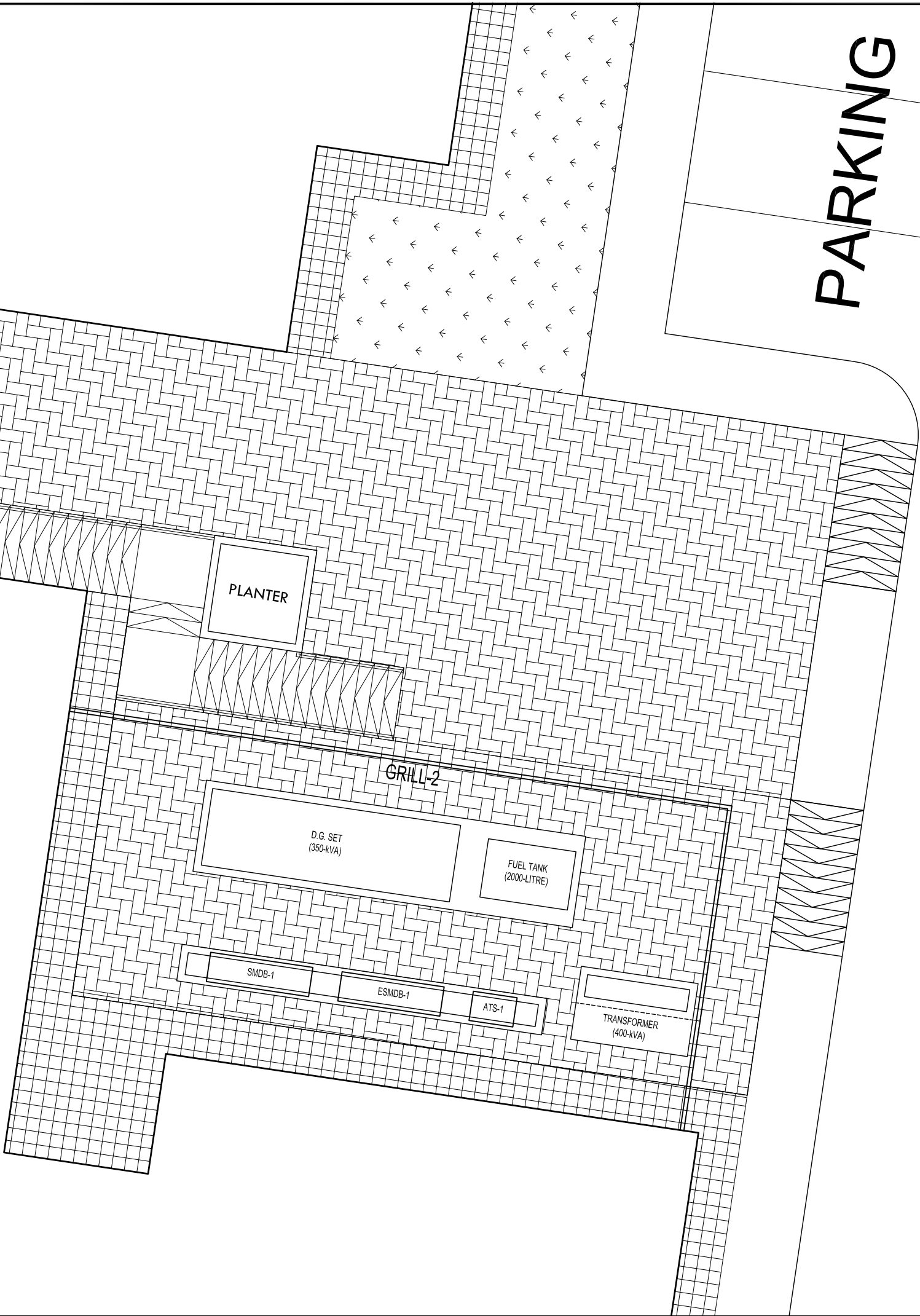


REV. NO.	DATE	DESCRIPTION				BY	CKD.	APPR.	
UNIVERSITY OF BUNER, BUNER									
UOB SWARI CAMPUS (PROJECT-1)									
EXTERNAL DEVELOPMENT WORKS									
STEEL GRILL AROUND EXTERNAL ELECTRICAL EQUIPMENT									
GRILL-1 DETAILS (SHEET 1 OF 1)									
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD									
DESIGN. NESPAK		RECOMMENDED		VER./CKD.		APPROVED			
DWN. FAHMEED		M. HASNAIN		AAMIR RASHEED		AAMIR RASHEED			
FILE 4010-AW-FENCE		DATE		DRAWING NO.				REV.	
CKD. M. HASNAIN				4010/323/C/10gG02				0	
SUBM. AAMIR RASHEED		DEC.' 2025							

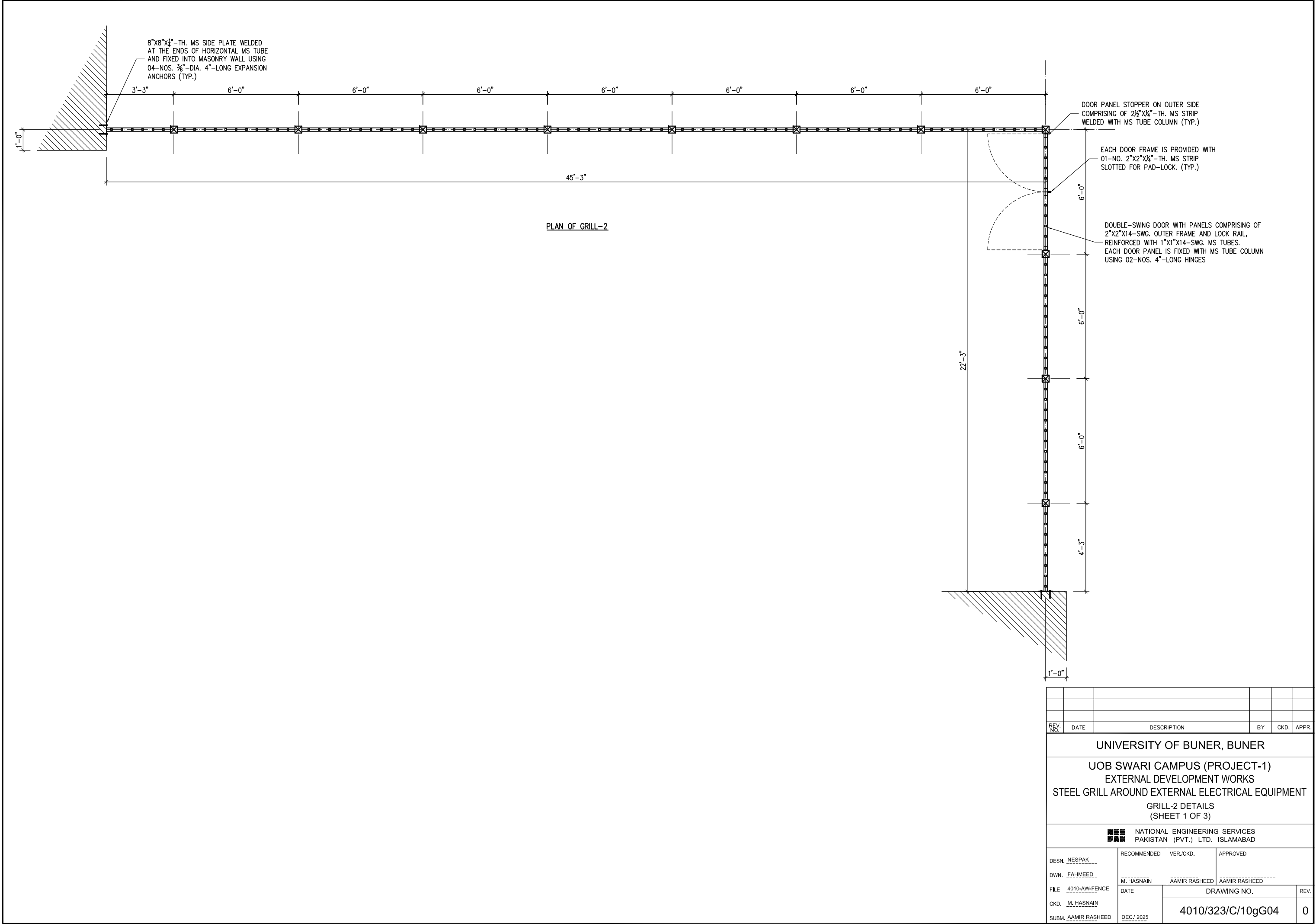
ACADEMIC
BLOCK-A

PARKING

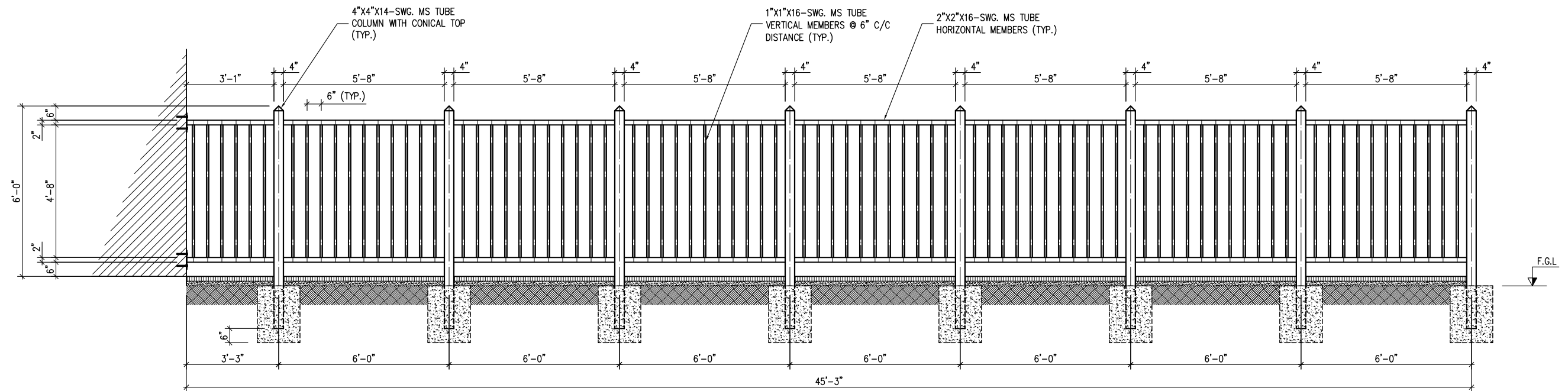
ROAD-02



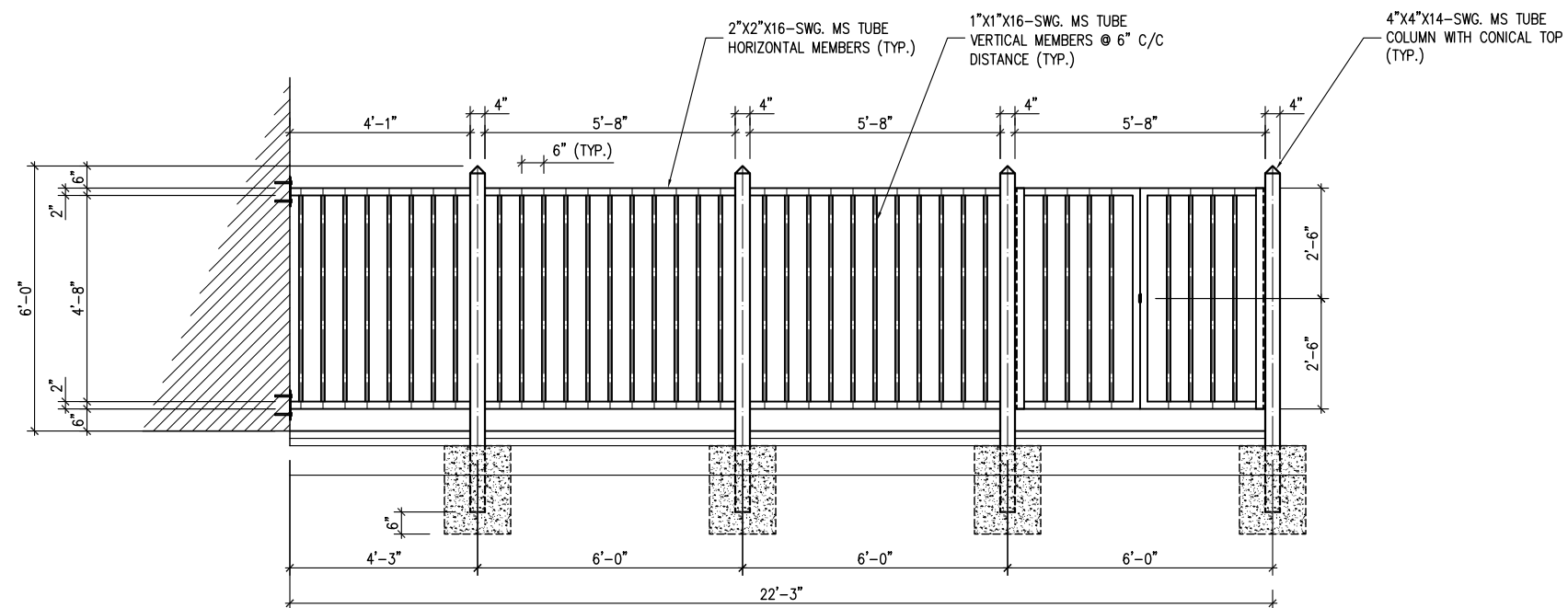
REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
EXTERNAL DEVELOPMENT WORKS					
STEEL GRILL AROUND EXTERNAL ELECTRICAL EQUIPMENT					
GRILL-2 LOCATION PLAN					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. FAHMEED	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE 4010-AW-FENCE	DATE	DRAWING NO.			REV.
CKD. M. HASNAIN		4010/323/C/10gG03			0
SUBM. AAMIR RASHEED	DEC, 2025				



REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1) EXTERNAL DEVELOPMENT WORKS STEEL GRILL AROUND EXTERNAL ELECTRICAL EQUIPMENT GRILL-2 DETAILS (SHEET 1 OF 3)					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESIGN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN. FAHMEED	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE 4010-AW-FENCE	DATE	DRAWING NO.			REV.
CKD. M. HASNAIN		4010/323/C/10gG04			0
SUBM. AAMIR RASHEED	DEC., 2025				



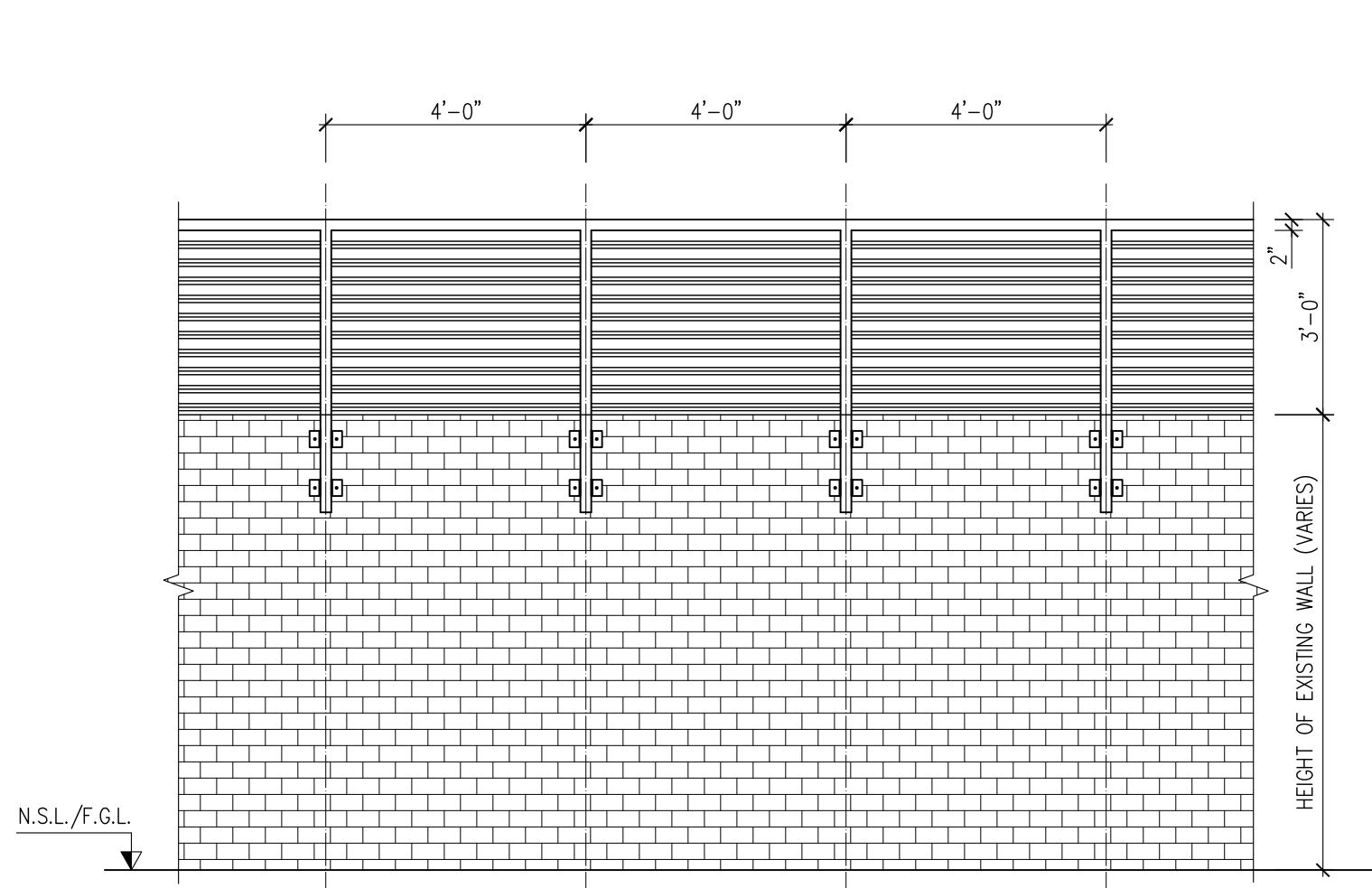
ELEVATION OF GRILL-2 (LONG SIDE)



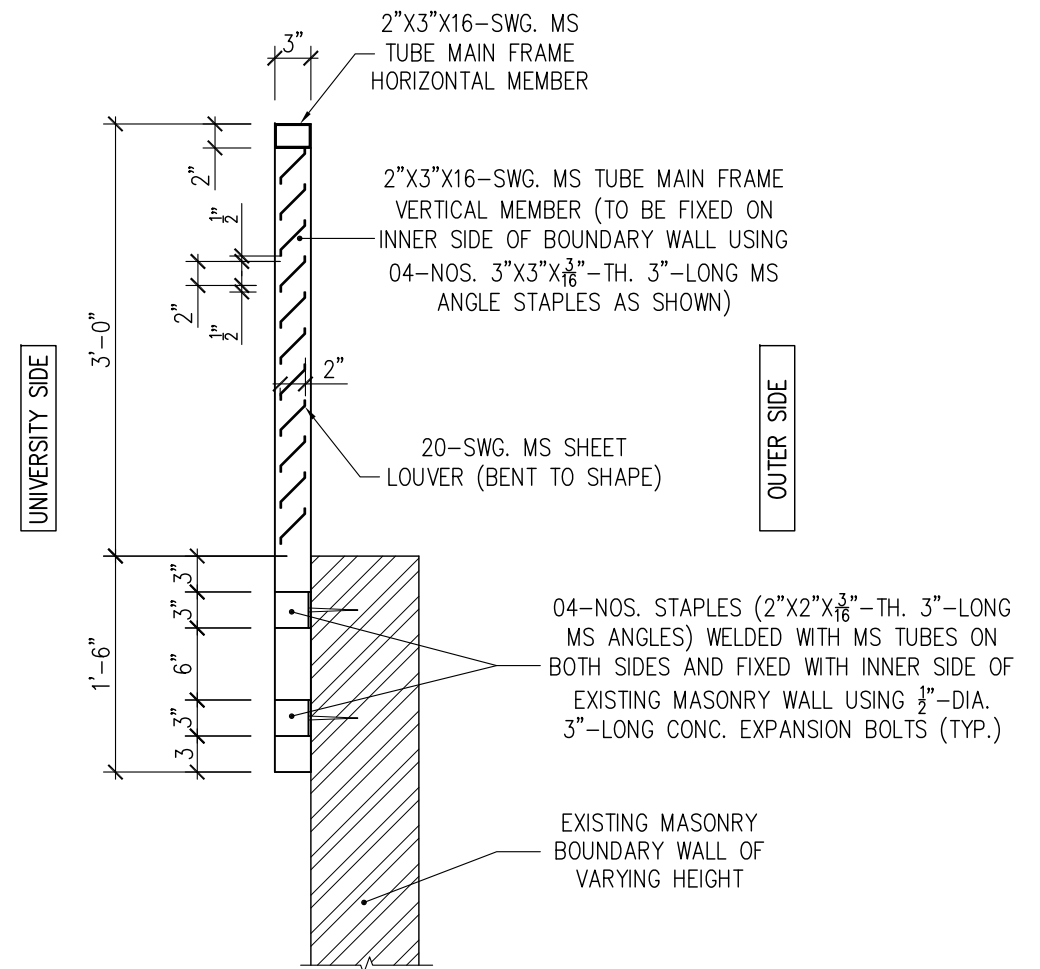
ELEVATION OF GRILL-2 (SHORT SIDE)

REV. NO.	DATE	DESCRIPTION					BY	CKD.	APPR.		
UNIVERSITY OF BUNER, BUNER											
UOB SWARI CAMPUS (PROJECT-1) EXTERNAL DEVELOPMENT WORKS STEEL GRILL AROUND EXTERNAL ELECTRICAL EQUIPMENT GRILL-2 DETAILS (SHEET 3 OF 3)											
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD											
DESIGN. NESPAK	RECOMMENDED		VER./CKD.		APPROVED						
DWN. FAHMEED	M. HASNAIN		AAMIR RASHEED		AAMIR RASHEED						
FILE 4010-AW-FENCE	DATE		DRAWING NO.						REV.		
CKD. M. HASNAIN	SUBM. AAMIR RASHEED		DEC. 2025		4010/323/C/10gG06						0

HEIGHT EXTENSION & REHABILITATION OF EXISTING BOUNDARY WALL



TYP. ELEVATION OF BOUNDARY WALL
(WITH LOUVERS)



TYP. SECTION OF LOUVERS

SPECIAL NOTES FOR STRUCTURAL STEEL WORK

1. ALL FABRICATION, PAINTING, ERECTION AND QUALITY CONTROL IS TO BE DONE IN ACCORDANCE WITH THE LATEST AISC SPECIFICATIONS.
2. ALL STRUCTURAL STEEL SHALL CONFORM TO THE REQUIREMENTS OF ASTM A-36 OR EQUIVALENT.
3. ALL WELDING SHALL BE DONE IN ACCORDANCE WITH THE REQUIREMENTS OF AMERICAN WELDING SOCIETY (AWS) SPECIFICATIONS USING ELECTRODES E70XX.
4. ALL BOLTS SHALL CONFORM TO ASTM A307 OR A325.
5. SURFACE PREPARATION OF ALL STRUCTURAL STEEL FOR PAINTING SHALL BE IN ACCORDANCE WITH THE LATEST ISSUE OF "STEEL STRUCTURES PAINTING COUNCIL" SPECIFICATIONS SSPC-SP6 FOR COMMERCIAL BLAST CLEANING.
6. ALL STEEL SHALL BE GIVEN ONE SHOP COAT OF RED LEAD OXIDE PRIMER AND FIELD TOUCHUP EXCEPT FOR SURFACES TO BE EMBEDDED IN CONCRETE OR CONTACT SURFACES OF FRICTION BOLTED CONNECTIONS.

GENERAL NOTES:

1. ALL UNITS ARE IN FPS EXCEPT NOTED OTHERWISE.
2. READ RELEVANT DRAWINGS FOR FURTHER DETAILS AND LAYOUT.
3. CONTRACTOR SHALL SUBMIT DRAWING FOR APPROVAL OF THE ENGINEER PRIOR EXECUTION.
4. SIDE ADJUSTMENT SHALL BE DONE AS PER DIRECTION OF THE ENGINEER.

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.
UNIVERSITY OF BUNER, BUNER					
UOB SWARI CAMPUS (PROJECT-1)					
ANCILLARY WORKS					
HEIGHT EXTENSION & REHABILITATION					
OF EXISTING BOUNDARY WALL					
 NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD					
DESIGN: NESPAK	RECOMMENDED	VER./CKD.	APPROVED		
DWN: FAHMEED	M. HASNAIN	AAMIR RASHEED	AAMIR RASHEED		
FILE: 4010-AW	DATE	DRAWING NO.			REV.
CKD: M. HASNAIN		4010/323/C/10eG01			0
SUBM: AAMIR RASHEED	DEC, 2025				



UNIVERSITY OF BUNER SWARI, DISTRICT BUNER

DEVELOPMENT OF UNIVERSITY OF BUNER AT SWARI (PHASE-I)

CONSTRUCTION OF BUILDINGS AND INFRASTRUCTURE WORKS AT SWARI CAMPUS OF UNIVERSITY OF BUNER (PACKAGE-5)

CONSTRUCTION OF ANCILLARY WORKS

PRICE BID

BIDDING DOCUMENTS (VOLUME – IV)

LETTER OF BID – FINANCIAL PROPOSAL
PREAMBLE TO ENGINEER'S ESTIMATE
ENGINEER'S ESTIMATE
INTEGRITY PACT

SEPTEMBER 2026

LETTER OF BID – FINANCIAL PROPOSAL

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:

[insert date (as day, month and year) of Bid submission]

Request for Bid No.:

Ancillary Works in University of Buner, Swari (Phase-I, Package-5)

Name of Project.:

Construction of Ancillary Works in University of Buner, Swari (Phase-I, Package-5)

To:

Project Director
University of Buner (UoB)
Swari, District Buner

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]*.
- (d)

Name of Recipient	Address	Reason	Amount

(If none has been paid or is to be paid, indicate "none.")

- (e) **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: **[insert complete name of the Bidder]*

Name of the person duly authorized to sign the Bid on behalf of the Bidder: *** [insert complete name of person duly authorized to sign the Bid]*

Title of the person signing the Bid: *[insert complete title of the person signing the Bid]*

Signature of the person named above: *[insert signature of person whose name and capacity are shown above]*

Date signed *[insert date of signing]* **day of** *[insert month]*, *[insert year]*

*: 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.

PREAMBLE TO ENGINEER'S ESTIMATE

**CONSTRUCTION OF ANCILLARY WORKS IN UNIVERSITY OF BUNER,
SWARI CAMPUS
(PHASE-I, PACKAGE-5)**

PREAMBLE TO ENGINEER'S ESTIMATE

1. **FOR SCHEDULED AND NON-SCHEDULED ITEMS, THE BIDDER SHALL QUOTE PERCENTAGE ABOVE OR BELOW ON THE AMOUNT PUT TO BID GIVEN IN THE SUMMARY OF ESTIMATE.**
2. The Engineer's Estimate shall be read in conjunction with the Conditions of Contract, Specifications and Drawings.
3. The quantities given in the Engineer's Estimate are estimated and provisional, and are given to provide a common basis for bidding. The basis for payment will be the actual quantities of work executed and measured by the Contractor and verified by the Engineer and valued at the rates and prices entered in the Summary of Estimate, where applicable, and otherwise at such rates and prices as the Engineer may fix in accordance with provisions of the Contract.
4. The rates and prices quoted in the Summary of Estimate, except insofar as it is otherwise provided under the Contract, include all costs of Contractor's plant, labour, supervision, materials, execution, insurance, profit, taxes and duties, together with all general risks, liabilities and obligations set out or implied in the Contract. Furthermore, all duties, taxes and other levies payable by the Contractor under the Contract, or for any other cause, as on the date 28 days prior to deadline for submission of Bid, shall be included in the rates and prices and the total Bid Price submitted by the Bidder.
5. The whole cost of complying with the provisions of the Contract shall be included in the rates provided in the Summary of Estimate. Where no items are provided, the cost shall be deemed to be distributed among the rates and prices for the other related items of the Works.
6. General directions and description of work and materials are not necessarily repeated nor summarised in the Engineer's Estimate. References to the relevant sections of the Bidding Documents shall be made.
7. In case of any discrepancy in description, unit or rate of any Scheduled Item provided in the Engineer's Estimate with the description or unit of any Scheduled Item in the Khyber Pakhtunkhwa Market Rate System KP-MRS 2025 (1st Bi-Annual), the description and unit of item as provided in the KP-MRS 2025 (1st Bi-Annual) shall prevail.
8. The items mentioned in the Engineer's Estimate consist of furnishing all plant, labor, equipment, machinery, appliances, materials, fittings, fixtures, fabrication, erection and installation required for completing the items/works. The work shall be done in accordance with the Drawings, Technical Specifications, Engineer's Estimate and directions of the Engineer complete in all respect.
9. For Scheduled Items, KP-MRS Technical Specifications for Materials and Workmanship shall be applicable. Whereas, for Non-Scheduled Items, Technical Specifications enclosed in Volume-II (Technical Provisions) of the Bidding / Contract Documents shall be applicable. "Ref. Specification Section" indicates the specification section number which as a whole or part (for which the Engineer shall be the sole judge) of these Specifications are to be followed during execution of the item of work in accordance with the applicable drawings.
10. Complete description of items of works in the Engineer's Estimate, general directions, conditions and limitations of works, location and place of works, applicable methods, means to be adopted, type and quality of materials, use of tools, plant, and machinery are not necessarily mentioned in the Bill of Quantities. These shall be referred to in accordance with the Drawings and Technical Specifications.

11. The bidder may ensure himself of the correctness of quantities and application of the individual items of works as per the Drawings, Technical Specifications and Contract Documents.
12. Notwithstanding provision of Clause 13 of the General Conditions of Contract Part-I, no claim for extra payment will be admissible on account of anticipated profit or variation in overheads expenditure for the works not actually performed nor will any adjustment in the unit rate set forth in the Bill of Quantities be made because of any increase or decrease in the quantities indicated therein.
13. Unless otherwise stated in the text of the Engineer's Estimate, the quantities have to be measured and paid in accordance with the Measurement and Payment Clauses given in the relevant Technical Specifications or in accordance with implied meaning of the specifications. Any special method of measurement stated in the text of estimate is limited to the concerned items only.
14. The following abbreviations for the Units have been used in the estimate:

Unit	Abbreviations
Running foot	Rft.
Square foot	Sft.
Cubic feet	Cft.
Kilogram	Kg.
Metric Ton	M. Ton
Per Number	Each, Number, No.
Lump Sum Job	Job, Lot

Authorized Signature and official Seal: _____

Name: _____

Date: _____

ENGINEER'S ESTIMATE

**CONSTRUCTION OF ANCILLARY WORKS IN UNIVERSITY OF BUNER,
SWARI CAMPUS
(PHASE-I, PACKAGE-5)**

ENGINEER'S ESTIMATE

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S. No.	Description	Page No.
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AW-10b	WIDENING OF ACCESS ROAD (COMMERCE COLLEGE SIDE CARRIAGE WAY)	
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AW-10f	HEIGHT EXTENSION & REHABILITATION OF EXISTING BOUNDARY WALL	
	Civil Works	C-1 to 2

Authorized Signature and official Seal: _____

Name: _____

Date: _____

**CONSTRUCTION OF ANCILLARY WORKS IN UNIVERSITY OF BUNER,
SWARI CAMPUS
(PHASE-I, PACKAGE-5)**

ENGINEER'S ESTIMATE – SUMMARY

S. No.	Description	Cost of Scheduled Items (Rs.)	Cost of Non-Scheduled Items (Rs.)	Total Cost (Rs.)
AW-10a	CONNECTIVITY OF UNIVERSITY DRAINS WITH MUNICIPAL DRAINS			
	Civil & Plumbing Works	15,619,809	163,480	15,783,289
	Sub-Total (AW-10a)	15,619,809	163,480	15,783,289
AW-10b	WIDENING OF ACCESS ROAD (COMMERCE COLLEGE SIDE CARRIAGE WAY)			
	Road & Walkways (Civil Works)	19,295,469	331,230	19,626,699
	Storm Drainage System (Civil & Plumbing Works)	7,349,171	48,800	7,397,971
	External Electrical Works (Electrical Works)	2,052,420	3,574,630	5,627,050
	Sub-Total (AW-10b)	28,697,060	3,954,660	32,651,720
AW-10c	MAIN GATE			
	Civil Works	14,419,737	1,556,835	15,976,572
	Plumbing Works	763,270	64,880	828,150
	Electrical Works	2,942,477	4,013,220	6,955,697
	Sub-Total (AW-10c)	18,125,484	5,634,935	23,760,419
AW-10d	MISCELLANEOUS WORKS IN ADMINISTRATION BLOCK			
	Civil Works	2,304,785	916,565	3,221,350
	Sub-Total (AW-10d)	2,304,785	916,565	3,221,350
AW-10e	STEEL GRILL			
	Civil Works	37,811	494,080	531,891
	Sub-Total (AW-10e)	37,811	494,080	531,891

**CONSTRUCTION OF ANCILLARY WORKS IN UNIVERSITY OF BUNER,
SWARI CAMPUS
(PHASE-I, PACKAGE-5)**

ENGINEER'S ESTIMATE – SUMMARY (CONTINUED)

S. No.	Description	Cost of Scheduled Items (Rs.)	Cost of Non-Scheduled Items (Rs.)	Total Cost (Rs.)
AW-10f	HEIGHT EXTENSION & REHABILITATION OF EXISTING BOUNDARY WALL			
	Civil Works	3,239,786	1,979,160	5,218,946
	Sub-Total (AW-10f)	3,239,786	1,979,160	5,218,946
Engineer's Estimate (Total – I = Sum of 10a to 10f)		68,024,736	13,142,880	81,167,616
Premium (Percentage) Above or Below (To be quoted separately on Scheduled and Non-Scheduled Items)				
Cost Including Premium (Total – II) (Cost of Scheduled and Non-Scheduled Items)				
Bid Price (Total – III) (Sum of Costs of Scheduled and Non-Scheduled Items Including Premium)				
Bid Price (Total – III) in words				

Note-1: The Bidder shall carry over the Bid Price (Total - III) amount to Letter of Bid – Financial Proposal (LoB-FP).

PROVISIONAL SUM

For Employer's Share of the DAAB Members' Fee and Expenses in Accordance with GC Clause 21

= **Rs. 1,000,000/-**
(Rupees one million only)

Note-2: The Bidder shall not consider the amount stated against the Provision Sum while quoting his Bid Price.

Authorized Signature and official Seal: _____

Name: _____

Date: _____

**UNIVERSITY OF BUNER, DISTRICT BUNER
 UOB SWARI CAMPUS (PROJECT-1)**

ANCILLARY WORKS

CONNECTIVITY OF UNIVERSITY DRAINS WITH MUNICIPAL DRAINS

ENGINEER'S ESTIMATE

CIVIL AND PLUMBING WORKS

ITEM NO.	KPK MRS- 2025 (1st Bi Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

GENERAL NOTE

Supply, installation, testing and commissioning of the following items of work, including all labour, tools, plant, accessories, etc. required for completion of each item as per specifications and as approved by the Engineer.

SCHEDULED ITEMS

CARRIAGE

AW-10a-C/P-01	01-01-d	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: 250 -1000 Meter	800 Rft	8.94	83.11	743.00
AW-10a-C/P-02	01-01-e	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: 2nd Km or corresponding distance in miles	0.6 Mile	26.81	266.13	7,134.95
AW-10a-C/P-03	01-01-f	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: 3rd to 5th Kilometer or corresponding distance in miles	1 Mile	53.63	175.47	9,410.46
AW-10a-C/P-04	01-01-g	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: 6th to 10th Kilometer or corresponding distance in miles	1 Mile	53.63	145.80	7,819.25
AW-10a-C/P-05	01-01-h	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: beyond 10th Kilometer or corresponding distance in miles	1 Mile	35.75	88.99	3,181.39

EARTHWORK (EXCAVATION AND EMBANKMENT)

AW-10a-C/P-06	03-09-a	Earth excavation in open cut upto 3m depth for drains, pipes etc & disposal: in Ordinary Soil	1000 Cft.	19.81	15,346.22	304,008.62
AW-10a-C/P-07	03-11-a	Excavation in shingle or gravel formation & rock not requiring blast, undressed, 50m lead: Dry	1000 Cft.	1.13	9,605.85	10,854.61
AW-10a-C/P-08	03-18-a	Filling, watering and ramming earth under floor with surplus earth from foundation etc.	1000 Cft	1.94	4,125.52	8,003.51
AW-10a-C/P-09	03-67-d	Structural Backfill using Granular Material brought from outside	1000 Cft	0.10	58,923.34	5,892.33

DISMANTLING [DEMOLITION]

AW-10a-C/P-10	04-08	Dismantling stone ware drain including base concrete	100 Cft	63.43	2,481.93	157,428.82
AW-10a-C/P-11	04-13	Dismantling Brickwork in lime & cement mortar	100 Cft	60.00	5,860.11	351,606.60
AW-10a-C/P-12	04-20-a	Dismantling RCC, separating Reinforcement, cleaning & straighting the same	100 Cft	49.25	24,819.30	1,222,350.53

CIVIL AND PLUMBING WORKS

ITEM NO.	KPK MRS- 2025 (1st Bi Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
AW-10a- C/P-13	04-20-b-i	Dismantling of structures & obstructions	100 Cft	49.33	10,466.64	516,319.35
<u>CONCRETE</u>						
AW-10a- C/P-14	06-05-f	Plain Cement Concrete including placing, compacting, finishing and curing (Ratio 1:2:4)	100 Cft	1.00	52,579.94	52,579.94
AW-10a- C/P-15	06-05-h	Plain Cement Concrete including placing, compacting, finishing & curing (Ratio 1:3:6)	100 Cft	1.00	43,161.23	43,161.23
AW-10a- C/P-16	06-05-i	Plain Cement Concrete including placing, compacting, finishing and curing (Ratio 1:4:8)	100 Cft	19.98	38,089.56	761,029.41
AW-10a- C/P-17	06-07-a-03	RCC in roof slab, beam, column & other structural members, insitu or precast. (1:2:4)	100 Cft	42.50	60,021.78	2,550,925.65
AW-10a- C/P-18	06-07-b-03	RCC in raft foundation slab, base slab of column & ret. wall etc, not including in 06-06. (1:2:4)	100 Cft	21.80	60,021.78	1,308,474.73
AW-10a- C/P-19	06-08-b	Supply & fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade 60)	100 Kg	48.32	33,431.77	1,615,423.13
AW-10a- C/P-20	06-08-c	Supply & fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade 40)	100 Kg	85.13	33,027.93	2,811,667.68
AW-10a- C/P-21	06-47-a	Erection and removal of Form work with Steel Surface Finishing for RCC or Plain Concrete in any shape - Position / Horizontal	100 Sft.	32.56	9,829.62	320,052.43
AW-10a- C/P-22	06-47-b	Erection and removal of Form work with Steel Surface Finishing for RCC or Plain cement Concrete in any shape - Position / Vertical	100 Sft.	165.24	10,233.47	1,690,978.58
<u>BRICK MASONRY</u>						
AW-10a- C/P-23	7-30	Supplying and filling sand under floor or plugging in wells	100 Cft	5.00	7,827.13	39,135.65
<u>FLOORING</u>						
AW-10a- C/P-24	10-49-a	Providing and Fixing Precast Concrete 7000 psi TUFF Tiles 50mm thick over bed of 2" thick sand & 4" thick brick ballast/stone ballast complete.	100 Sft	57.84	14,813.06	856,787.39
<u>ROAD & BRIDGES</u>						
AW-10a- C/P-25	16-73-c	Providing and fixing kerb stone (12"x12"x6") in cement sand mortar 1:3 in center media or roundabout as specified	100 Rft	25.70	28,654.23	736,413.71
<u>PLUMBING, SANITARY INSTALLATION & GAS FITTINGS</u>						
AW-10a- C/P-26	14-144-b	Supplying and Fixing UPVC soil waste and vent pipe class B of following diameter for storm drainage:				
		4" dia	Rft	100.00	797.22	79,722.00

CIVIL AND PLUMBING WORKS

ITEM NO.	KPK MRS- 2025 (1st Bi Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

SEWERAGE

AW-10a- C/P-27	23-03-a-03	Providing & laying R.C.C. pipe sewers, moulded with cement concrete 1:1-1/2:3 conforming to ASTM specification C-76-79, Class II, Wall B, including carriage, lowering in trenches to correct alignment and grade, jointing with rubber ring, cutting pipes where necessary, testing, etc. complete:- 18" i/d, wall thickness 2.5".	Rft	100.00	1,487.04	148,704.00
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Cost of Scheduled Items (Rs.)						15,619,809
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CIVIL AND PLUMBING WORKS

ITEM NO.	KPK MRS- 2025 (1st Bi Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

NON-SCHEDULED ITEMS

CONCRETE

AW-10a- C/P-28	AW-10a- C/P-NS-01	Additional cost for using Sulphate Resistant Cement (SRC) in Sub-Structue instead of Ordinary Portland Cement (OPC) (considering 50 kg of bag).	Bags	1,340.00	122.00	163,480.00
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Cost of Non-Scheduled Items (Rs.)						163,480
Total Cost of Scheduled Items & Non-Scheduled Items (Rs.)						15,783,289

UNIVERSITY OF BUNER, DISTRICT BUNER
UOB SWARI CAMPUS (PROJECT-1)
ANCILLARY WORKS
WIDENING OF ACCESS ROAD
(COMMERCE COLLEGE SIDE CARRIAGE WAY)
ENGINEER'S ESTIMATE

CIVIL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

GENERAL NOTE

Supply, installation, testing and commissioning of the following items of work, including all labour, tools, plant, accessories, etc. required for completion of each item as per specifications and as approved by the Engineer.

SCHEDULED ITEMS

CARRIAGE

AW-10b-C-01	01-01-a	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : First 50 Meter or 164 ft.	50 Meter	375.08	149.72	56,156.98
AW-10b-C-02	01-01-b	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : Second 50 Meter or 164 ft.	50 Meter	375.08	28.55	10,708.53
AW-10b-C-03	01-01-c	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : 3rd 50 Meter to 5th 50 Meter or corresponding distance in ft.	50 Meter	1,125.23	18.48	20,794.25
AW-10b-C-04	01-01-d	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : 250 -1000 Meter	250 Meter	1,125.23	83.11	93,517.87
AW-10b-C-05	01-01-e	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : 2nd Km or corresponding	1 Km	375.08	266.13	99,820.04
AW-10b-C-06	01-01-f	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : 3rd to 5th Kilometer or	1.61 Km	698.97	175.47	122,648.27
AW-10b-C-07	01-01-g	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : 6th to 10th Kilometer or corresponding distance in miles	1.61 Km	1,166.49	145.80	170,074.24
AW-10b-C-08	01-01-h	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : beyond 10th Kilometer or corresponding distance in miles	1.61 Km	375.08	88.99	33,378.37

EARTHWORK (EXCAVATION AND EMBANKMENT)

AW-10b-C-09	03-07-a	Earth fill in lawns including dressing & compaction with earth available from cutting / excavation	1000 Cft	4.00	6,756.37	27,025.48
AW-10b-C-10	03-58	Turfing of lawn with Dacca Grass	1000 Sft	4.00	31,566.28	126,265.12
AW-10b-C-11	03-18-c	Provide and Fill River Bed Filter Material For Widening Portion.	100 Cft	336.00	5,479.43	1,841,088.48
AW-10b-C-12	03-62	Clearing and Grubbing by mechanical means	1000 Sft	0.50	3,889.78	1,944.89

CIVIL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
AW-10b-C-13	03-65	Compaction of Natural Ground	1000 Sft	0.50	4,601.04	2,300.52
AW-10b-C-14	03-66-a	Roadway excavation in surplus / unsuitable common material	1000 Cft	33.04	22,400.24	740,103.93
AW-10b-C-15	03-67-a-i	Structural Excavation in Common Material	1000 Cft	2.35	17,691.81	41,575.75
AW-10b-C-16	03-70-a	Formation of Embankment from Roadway Excavation in Common Material including compaction by power roller.	1000 Cft	14.70	25,908.19	380,850.39
AW-10b-C-17	03-70-c	Formation of Embankment from borrow excavation in common material including compaction by power roller.	1000 Cft	0.50	33,702.71	16,851.36
AW-10b-C-18	03-71-a	Subgrade preparation in Earth cut: Mod. AASHTO 95%	1000 Sft	25.90	9,180.90	237,785.31
<u>DISMANTLING (DEMOLITION)</u>						
AW-10b-C-19	04-13	Dismantling brick work in lime or cement mortar	100 Cft.	157.97	5,860.11	925,721.58
AW-10b-C-20	04-19-a	Dismantling : Plain Cement Concrete 1:4:8	100 Cft.	5.00	7,583.68	37,918.40
AW-10b-C-21	04-19-b	Dismantling : Plain Cement Concrete 1:3:6	100 Cft.	5.00	12,409.65	62,048.25
AW-10b-C-22	04-19-c	Dismantling : Plain Cement Concrete 1:2:4	100 Cft.	5.00	15,167.35	75,836.75
<u>CONCRETE</u>						
AW-10b-C-23	06-05-f	Plain Cement Concrete including placing, compacting, finishing and curing (Ratio 1:2:4)	100 Cft	120.10	52,579.94	6,314,850.79
AW-10b-C-24	06-05-h	Plain Cement Concrete including placing, compacting, finishing & curing (Ratio 1:3:6)	100 Cft	1.00	43,161.23	43,161.23
AW-10b-C-25	06-05-i	Plain Cement Concrete including placing, compacting, finishing and curing (Ratio 1:4:8)	100 Cft	92.00	38,089.56	3,504,239.52
AW-10b-C-26	6-47-b	Erection and removal of Form work with Steel Surface Finishing for RCC or Plain cement Concrete in any shape - Position / Vertical	100 Sft.	21.00	10,233.47	214,902.87
<u>FLOORING</u>						
AW-10b-C-27	10-49-a	Providing and Fixing Precast Concrete 7000 psi TUFF Tiles 50mm thick over bed of 2" thick sand	100 Sft	40.00	14,813.06	592,522.40
<u>PAINTING AND VARNISHING</u>						
AW-10b-C-28	13-19	Paint on Concrete work (Kerb stone, Barrier)	Sft.	2,600.00	132.57	344,682.00

CIVIL WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

ROAD & BRIDGES

AW-10b-C-29	16-04-a	Granular Sub Base Course using Pit Run Gravel	1000 Cft	16.00	7,685.75	122,972.00
AW-10b-C-30	16-05-a	Aggregate Base Course	100 Cft	120.00	13,921.56	1,670,587.20
AW-10b-C-31	16-12	Scarification Of Existing Road Pavement Structure	1000 Cft	18.61	16,205.64	301,586.96
AW-10b-C-32	16-73-a	Providing and fixing kerb stone (12"x18"x6") in cement sand mortar 1:3 in center media or roundabout as specified	100 Rft	30.00	35,384.98	1,061,549.40

Cost of Scheduled Items (Rs.)						19,295,469
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CIVIL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

NON-SCHEDULED ITEMS

CONCRETE

AW-10b-C- 33	AW-10b-C- NS-01	Additional cost for using Sulphate Resistant Cement (SRC) in Sub-Structure instead of Ordinary Portland Cement (OPC) (considering 50 kg of bag).	Bags	2,715.00	122.00	331,230.00
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Cost of Non-Scheduled Items (Rs.)						331,230
Total Cost of Scheduled Items & Non-Scheduled Items (Rs.)						19,626,699

**UNIVERSITY OF BUNER, DISTRICT BUNER
 UOB SWARI CAMPUS (PROJECT-1)**

ANCILLARY WORKS

**WIDENING OF ACCESS ROAD
 (STORM DRAINAGE SYSTEM)**

ENGINEER'S ESTIMATE

CIVIL AND PLUMBING WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

GENERAL NOTE

Supply, installation, testing and commissioning of the following items of work, including all labour, tools, plant, accessories, etc. required for completion of each item as per specifications and as approved by the Engineer.

SCHEDULED ITEMS

CARRIAGE

AW-10b- C/P-01	01-01-a	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : First 50 Meter or 164 ft.	50 Meter	93.71	149.72	14,030.26
AW-10b- C/P-02	01-01-b	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : Second 50 Meter or 164 ft.	50 Meter	93.71	28.55	2,675.42
AW-10b- C/P-03	01-01-c	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : 3rd 50 Meter to 5th 50 Meter or corresponding distance in ft.	50 Meter	281.14	18.48	5,195.47
AW-10b- C/P-04	01-01-d	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : 250 -1000 Meter	250 Meter	281.14	83.11	23,365.55
AW-10b- C/P-05	01-01-e	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : 2nd Km or corresponding	1 Km	93.71	266.13	24,939.04
AW-10b- C/P-06	01-01-f	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : 3rd to 5th Kilometer or	1.61 Km	174.68	175.47	30,651.10
AW-10b- C/P-07	01-01-g	Carriage of 100 cft / 5 tonne of all materials , by truck or other means : 6th to 10th Kilometer or corresponding distance in miles	1.61 Km	291.45	145.80	42,493.41

EARTHWORK (EXCAVATION AND EMBANKMENT)

AW-10b- C/P-08	03-09-a	Earth excavation in open cut upto 1.5m depth for drains, pipes etc & disposal : in Ordinary Soil	1000 Cft.	9.58	15,346.22	147,016.79
AW-10b- C/P-09	03-11-a	Excavation in shingle or gravel formation & rock not requiring blast, undressed, 50m lead : Dry	1000 Cft.	1.07	9,605.85	10,278.26
AW-10b- C/P-10	03-67-c	Structural backfill using Common Material available at site.	1000 Cft	1.29	16,800.04	21,672.05
AW-10b- C/P-11	03-67-d	Structural Backfill using Granular Material brought from outside	1000 Cft	1.00	58,923.34	58,923.34

CIVIL AND PLUMBING WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

CONCRETE

AW-10b-C/P-12	06-05-f	Plain Cement Concrete including placing, compacting, finishing and curing (Ratio 1:2:4)	100 Cft	1.00	52,579.94	52,579.94
AW-10b-C/P-13	06-05-h	Plain Cement Concrete including placing, compacting, finishing & curing (Ratio 1:3:6)	100 Cft	1.00	43,161.23	43,161.23
AW-10b-C/P-14	06-05-i	Plain Cement Concrete including placing, compacting, finishing and curing (Ratio 1:4:8)	100 Cft	9.42	38,089.56	358,803.66
AW-10b-C/P-15	06-07-a-03	RCC in roof slab, beam, column & other structural members, insitu or precast. (1:2:4)	100 Cft	31.09	60,021.78	1,866,077.14
AW-10b-C/P-16	06-07-b-03	RCC in raft foundation slab, base slab of column & ret. wall etc, not including in 06-06. (1:2:4)	100 Cft	13.45	60,021.78	807,292.94
AW-10b-C/P-17	06-08-c	Supply & fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade 40)	100 Kg	80.81	33,027.93	2,668,987.02
AW-10b-C/P-18	6-47-a	Erection and removal of Form work with Steel Surface Finshing for RCC or Plain Concrete in any shape - Position / Horizontal	100 Sft.	17.06	9,829.62	167,693.32
AW-10b-C/P-19	6-47-b	Erection and removal of Form work with Steel Surface Finshing for RCC or Plain cement Concrete in any shape - Position / Vertical	100 Sft.	85.26	10,233.47	872,505.65

BRICK MASONRY

AW-10b-C/P-20	7-30	Supplying and filling sand under floor or plugging in wells	100 Cft	5.00	7,827.13	39,135.65
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SEWERAGE

AW-10b-C/P-21	23-03-a-01	Providing & laying R.C.C. pipe sewers, moulded with cement concrete 1:1-1/2:3 conforming to ASTM specification C-76-79, Class II, Wall B, including carriage, lowering in trenches to correct alignment and grade, jointing with rubber ring, cutting pipes where necessary, testing, etc. complete:- 12" i/d, wall thickness 2".	Rft	100.00	916.94	91,694.00
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Cost of Scheduled Items (Rs.)						7,349,171
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CIVIL AND PLUMBING WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

NON-SCHEDULED ITEMS

CONCRETE

AW-10b- C/P-22	AW-10b- C/P-NS-01	Additional cost for using Sulphate Resistant Cement (SRC) in Sub-Structure instead of Ordinary Portland Cement (OPC) (considering 50 kg of bag).	Bags	400.00	122.00	48,800.00
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Cost of Non-Scheduled Items (Rs.)						48,800
Total Cost of Scheduled Items & Non-Scheduled Items (Rs.)						7,397,971

**UNIVERSITY OF BUNER, DISTRICT BUNER
 UOB SWARI CAMPUS (PROJECT-1)**

ANCILLARY WORKS

**WIDENING OF ACCESS ROAD
 (EXTERNAL ELECTRICAL WORKS)**

ENGINEER'S ESTIMATE

CIVIL & ELECTRICAL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

GENERAL NOTE

Supply, installation, testing and commissioning of the following items of work, including all labour, tools, plant, accessories, etc. required for completion of each item as per specifications and as approved by the Engineer.

SCHEDULED ITEMS

CIVIL WORKS FOR CABLES

AW-10b-E-01	03-51	Excavation of trench in all kinds of soils except cutting in rock for pipelines upto 1.5m depth (for electrical cables)	1000 Cft	7.50	9,789.84	73,423.80
AW-10b-E-02	03-67-c	Structural backfill using Common Material available at site.	1000 Cft	3.60	16,800.04	60,480.14
AW-10b-E-03	07-30	Supplying and filling sand under floor or plugging in wells	100 Cft	36.00	7,827.13	281,776.68

NOTE:

The above items must be executed as follows:

- a) Excavation in all kind of material including back filling, compaction, layer of bricks 9" in width and warning tape for lighting cables trench width 2' & height 3' complete in all respect as per specifications and as directed by the Engineer .

CIVIL WORKS FOR POLE FOUNDATIONS

AW-10b-E-04	03-49-a	Excavation in open cut for sewers & manhole except shingle, gravel & rock : Upto 2m (for electrical works)	1000 Cft	0.33	12,397.39	4,091.14
AW-10b-E-05	06-05-i	Plain Cement Concrete incl. placing, compacting, finishing & curing (Ratio 1:4:8)	100 Cft	0.50	38,089.56	19,044.78
AW-10b-E-06	06-07-a-03	RCC in roof slab, beam, column & other structural members, insitu or precast. Type C (1:2:4)	100 Cft	3.28	60,021.78	196,871.44
AW-10b-E-07	06-08-c	Supply & fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade 40)	100 Kg	5.95	33,027.93	196,516.18
AW-10b-E-08	11-08-b	Cement plaster 1:3 upto 20' height 1/2" thick	100 Sft	0.84	5,521.89	4,638.39

CIVIL & ELECTRICAL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

WIRING IN CONCEALED CONDUITS

AW-10b-E-09	15-06-a	Supply and Erection single core PVC insulated+sheathed copper conductor 250/440 V grade cable : 3/0.029"(1.5mm ²).	Rft	2,500.00	41.89	104,725.00
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NOTE: The wiring shall be done as following.

- a Wiring from connector to light fixtures of 3 Nos. One core 1.5 Sqmm PVC insulated 300/500 Volts grade solid or stranded copper conductor cables in conduit (**for all poles**).

PVC PIPES

AW-10b-E-10	24-18-c-03	Providing, laying, cutting, jointing, testing and disinfecting UPVC pressure pipeline in trenches (conforming to BS 3505 manufactured) jointed with socket, elbow, tee, bend and plug bend etc. manufactured by the respective manufacturer complete as per specifications. uPVC Pressure Pipes Class D (12 Bar) 2" Nominal Pipe Size (NPS)	Rft	100.00	236.52	23,652.00
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LIGHTNING PROTECTION SYSTEM

AW-10b-E-11	15-106	Supply, installation, testing & commissioning of Lightning Protection System (for poles)	Each	12.00	38,998.57	467,982.84
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LIGHT POLES

AW-10b-E-12	15-36-f	Supply and Fixing SMD Type LED Road light Fixture (90-100 watts)	Each	12.00	51,601.49	619,217.88
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Cost of Scheduled Items (Rs.)						2,052,420
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CIVIL & ELECTRICAL WORKS

ITEM NO.	KPK MRS- 2025 (1st Bi Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

NON-SCHEDULED ITEMS

CONCRETE

AW-10b-C-13	AW-10b-E-NS-01	Additional cost for using Sulphate Resistant Cement (SRC) in Sub-Structure instead of Ordinary Portland Cement (OPC) (considering 50 kg of bag).	Bags	65.00	122.00	7,930.00
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LT CABLES

(Ref. Specification Section-8001, 8212)

AW-10b-E-14	AW-10b-E-NS-02	10 sqmm, 4 core Cu/PVC/PVC/SWA stranded copper conductor cable, 600/1000 V grade directly buried in ground from LCPs to pole & pole to pole.	Rft	550.00	1,830.00	1,006,500.00
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AW-10b-E-15	AW-10b-E-NS-03	Supply & Installation of Weather Proof control box to be fixed inside the poles (in lower portion) for cable termination including making opening in the pole, providing openable door with lock, SP breaker, din rail, fixing of cables etc complete in all respect.	No.	12.00	11,620.00	139,440.00
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LIGHT POLES

(Ref. Specification Section-8001, 8212,8262)

AW-10b-E-16	AW-10b-E-NS-04	Single arm round conical Pole, hot dipped galvanized 10m, overall thickness 4.5mm Arm length 1.5 meters each with OD 60 mm, base dia 200mm and top dia 100mm with base plate arrangement 450mm x 450 mm x 25mm, Stiffners size (250mm x 100mm x 20mm),J Bolt, complete in all respects as per drawing.	No.	12.00	201,730.00	2,420,760.00
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Cost of Non-Scheduled Items (Rs.)						3,574,630
Total Cost of Scheduled Items & Non-Scheduled Items (Rs.)						5,627,050

**UNIVERSITY OF BUNER, DISTRICT BUNER
 UOB SWARI CAMPUS (PROJECT-1)**

ANCILLARY WORKS

MAIN GATE

ENGINEER'S ESTIMATE

CIVIL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

GENERAL NOTE

Supply, installation, testing and commissioning of the following items of work, including all labour, tools, plant, accessories, etc. required for completion of each item as per specifications and as approved by the Engineer.

SCHEDULED ITEMS

CARRIAGE

AW-10c-C-01	01-01-d	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: 250 -1000 Meter	800 Rft	1.10	83.11	91.42
AW-10c-C-02	01-01-e	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: 2nd Km or corresponding	0.6 Mile	3.28	266.13	872.91
AW-10c-C-03	01-01-f	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: 3rd to 5th Kilometer or	1 Mile	6.57	175.47	1,152.84
AW-10c-C-04	01-01-g	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: 6th to 10th Kilometer or corresponding distance in miles	1 Mile	6.57	145.80	957.91
AW-10c-C-05	01-01-h	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: beyond 10th Kilometer or corresponding distance in miles	1 Mile	4.38	88.99	389.78

EARTHWORK (EXCAVATION AND EMBANKMENT)

AW-10c-C-06	03-18-a	Filling watering and ramming earth under floor with surplus earth from foundation etc.	1000 Cft	4.90	4,125.52	20,215.05
AW-10c-C-07	03-25-b	Excavation in foundation of building, bridges etc complete: in ordinary soil	1000 Cft	6.94	11,123.68	77,198.34
AW-10c-C-08	03-67-d	Structural Backfill using Granular Material brought from outside	1000 Cft	0.68	58,923.34	40,067.87

DISMANTLING (DEMOLITION)

AW-10c-C-09	04-13	Dismantling brick work in lime or cement mortar	100 Cft	3.79	5,860.11	22,209.82
AW-10c-C-10	04-20-a	Dismantling RCC, separating reinforcement, cleaning & straightening the same	100 Cft	10.22	24,819.30	253,653.25

CIVIL WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

CONCRETE

AW-10c-C-11	06-02	Dry rammed shingle brick ballast or stone ballast 1.5" to 2" gauge	100 Cft	2.15	10,059.61	21,628.16
AW-10c-C-12	06-05-f	Plain Cement Concrete including placing, compacting, finishing and curing (Ratio 1:2:4)	100 Cft	0.90	52,579.94	47,321.95
AW-10c-C-13	06-05-h	Plain Cement Concrete including placing, compacting, finishing & curing (Ratio 1:3:6)	100 Cft	0.15	43,161.23	6,474.18
AW-10c-C-14	06-05-i	Plain Cement Concrete including placing, compacting, finishing & curing (Ratio 1:4:8)	100 Cft	4.85	38,089.56	184,734.37
AW-10c-C-15	06-07-a-02	RCC in roof slab, beam, column & other structural members, insitu or precast. (1:1.5:3)	100 Cft	29.88	68,584.25	2,049,297.39
AW-10c-C-16	06-07-a-03	RCC in roof slab, beam, column & other structural members, insitu or precast. (1:2:4)	100 Cft.	0.35	60,021.78	21,007.62
AW-10c-C-17	06-07-b-02	RCC in raft foundation slab, base slab of column & ret.wall etc, not including in 06-07-a-02 (1:1.5:3)	100 Cft	10.36	68,579.94	710,488.18
AW-10c-C-18	06-07-b-03	RCC in raft foundation slab, base slab of column & ret. wall etc, not including in 06-07-a-03 (1:2:4)	100 Cft	0.15	60,021.78	9,003.27
AW-10c-C-19	06-08-b	Supply & fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade 60)	100 Kg	133.00	33,431.77	4,446,425.41
AW-10c-C-20	06-08-c	Supply & fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade 40)	100 Kg	54.15	33,027.93	1,788,462.41
AW-10c-C-21	06-23	Fill expansion joints with bitumen, sand & saw dust in Ratio 1:2:2	Rft	1,440.00	55.76	80,294.40
AW-10c-C-22	6-47-a	Erection and removal of Form work with Steel Surface Finshing for RCC or Plain Concrete in any shape - Position / Horizontal	100 Sft	22.66	9,829.62	222,739.19
AW-10c-C-23	6-47-b	Erection and removal of Form work with Steel Surface Finshing for RCC or Plain cement Concrete in any shape - Position / Vertical	100 Sft	64.13	10,233.47	656,272.43

BRICK MASONRY

AW-10c-C-24	07-04-a-04	1st class brick work in foundation and plinth in Cement, sand mortar 1:5	100 Cft	0.15	51,096.42	7,664.46
AW-10c-C-25	07-05-a-04	1st class brick work in ground floor Cement, sand mortar 1:5	100 Cft	9.83	54,523.03	535,961.38
AW-10c-C-26	07-05-a-04 + 07-06-a	1st class brick work in first floor Cement, sand mortar 1:5	100 Cft	7.15	56,579.58	404,544.00
AW-10c-C-27	07-05-a-04 + 07-06-b	1st class brick work in second floor Cement, sand mortar 1:5	100 Cft	4.25	59,199.39	251,597.41

CIVIL WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

AW-10c-C-28	07-13	Extra for face work (half brick thick) using special bricks instead of first class bricks.	100 Sft.	28.83	2,619.82	75,529.41
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ROOFING

AW-10c-C-29	09-16	Khuras on roof 2'x2'x6"	Each	4.00	1,611.77	6,447.08
AW-10c-C-30	09-19	Plain galvanized iron sheet flashing, 22 guage	100 Sft.	0.85	23,557.96	20,024.27

FLOORING

AW-10c-C-31	10-03-a	Provide, lay, water & ram 4" thick clean coarse sand under floor / brick paving, complete	100 Sft	1.00	11,003.05	11,003.05
AW-10c-C-32	10-14-b	Cement concrete tiles laid in 1:2 c/s mortar over 3/4" thick bed of c/s mortar 1:2: 12" x 12" x 1"	100 Sft	4.80	16,723.47	80,272.66
AW-10c-C-33	10-15-d	Provide & lay topping of concrete 1:2:4, including surface finishing & dividing in panels: 2" thick	100 Sft.	1.85	14,497.44	26,820.26
AW-10c-C-34	10-26-c-i	Provide & lay marble fine dressed stone flooring on surface in white cement complete: 3/4" thick 12 x 24 Sunny White Marble.	100 Sft.	3.05	29,960.72	91,380.20
AW-10c-C-35	10-35-a	Provide grey cement skirting 3/8" thick complete 1:2 cement, sand mortar.	100 Sft.	0.26	11,277.39	2,932.12
AW-10c-C-36	10-45-a-ii	Provide & lay marble fine dressed stone dado or skirting in white cement complete: 0.5" thick 12 x 12 Sunny White Marble.	100 Sft.	8.95	28,829.96	258,028.14
AW-10c-C-37	10-47-c	Providing and Fixing marble strip 1.5 inch wide 3/8 inch thick for dividing the floor into panels.	100 Rft.	0.60	3,910.67	2,346.40
AW-10c-C-38	10-55-j	Providing and Fixing of Bath Room Tiles 12"x18" of approved quality	100 Sft.	1.95	25,961.65	50,625.22

SURFACE RENDERING

AW-10c-C-39	11-09-b	Cement plaster 1:4 upto 20' height 1/2" thick	100 Sft	27.17	5,262.49	142,981.85
AW-10c-C-40	11-09-b +11-26	Cement plaster 1:4 20' to 30' height 1/2" thick	100 Sft	41.09	5,905.03	242,637.68
AW-10c-C-41	11-09-b +2x11-26	Cement plaster 1:4 30' to 40' height 1/2" thick	100 Sft	16.15	6,547.57	105,743.26
AW-10c-C-42	11-10-c	Cement plaster 3/8" thick under soffit of RCC roof slabs only upto 20' height: (1:4)	100 Sft	3.30	5,057.11	16,688.46
AW-10c-C-43	11-10-c +11-26	Cement plaster 3/8" thick under soffit of RCC roof slabs only 20' to 30' height: (1:4)	100 Sft	15.10	5,699.65	86,064.72

CIVIL WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
AW-10c-C-44	11-18-b	Cement pointing struck joints, on walls, upto 20' height: Ratio 1:3	100 Sft	15.15	5,371.51	81,378.38
AW-10c-C-45	11-18-b +11-26	Cement pointing struck joints, on walls, 20'to 30' height: Ratio 1:3	100 Sft	9.55	6,014.05	57,434.18
AW-10c-C-46	11-18-b +2x11-26	Cement pointing struck joints, on walls, 30'to 40' height: Ratio 1:3	100 Sft	5.65	6,656.59	37,609.73
AW-10c-C-47	11-20-a	Priming coat of chalk under distemper	100 Sft	25.70	446.12	11,465.28
AW-10c-C-48	11-20-b	Providing and applying wall putty of 2mm thickness over plastered surface to prepare the surface even and smooth complete.	100 Sft	25.70	904.81	23,253.62
AW-10c-C-49	11-21-a-03	Distempering New surface: Three coats	100 Sft	25.70	2,349.64	60,385.75
AW-10c-C-50	11-29	Extra cost of labour & material for red oxide pigment in cement pointing to match bricks	100 Sft	30.35	1,048.48	31,821.37
WOOD WORK, WOODEN ALUMINUM JOINERY						
AW-10c-C-51	12-65-a-06	Supply and Fixing aluminium door/window, Sliding Window Premium model (2.00 mm gauge) 4" section	Sft	90.00	1,658.25	149,242.50
AW-10c-C-52	12-64-c-05	Supply and Fixing aluminium door/window, Fly Screen Shutter Premium model (2.00 mm gauge) 2" section	Sft	45.00	431.65	19,424.25
AW-10c-C-53	12-79	Supply and fixing UPVC Flush doors with 60mm wide frame 2-2.5mm wall thickness inclusive of all accessories and galvanized iron support in any available Plain colour	Sft	20.00	1,357.65	27,153.00
PAINTING AND VARNISHING						
AW-10c-C-54	13-08-a	Bitumen coating to plastered / cement concrete surface: 20 lbs. per 100 sft.	100 Sft	80.10	2,587.52	207,260.35
AW-10c-C-55	13-25-a	Preparing surface & painting with snowcem / weathershield paint: First coat (upto 20' height).	100 Sft/ coat	14.30	3,485.43	49,841.65
AW-10c-C-56	13-25-b	Preparing surface & painting with snowcem / weathershield paint: 2nd & subsequent coats (upto 20' height).	100 Sft/ coat	28.60	1,921.08	54,942.89
AW-10c-C-57	13-25-a +13-24	Preparing surface & painting with snowcem / weathershield paint: First coat (from 20' to 30' height).	100 Sft/ coat	33.05	3,661.92	121,026.46
AW-10c-C-58	13-25-b +13-24	Preparing surface & painting with snowcem / weathershield paint: 2nd & subsequent coats (from 20' to 30' height).	100 Sft/ coat	66.10	2,097.57	138,649.38
AW-10c-C-59	13-25-a +2x13-24	Preparing surface & painting with snowcem / weathershield paint: First coat (from 30' to 40' height).	100 Sft/ coat	17.00	3,838.41	65,252.97

CIVIL WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

AW-10c-C-60	13-25-b +2x13-24	Preparing surface & painting with snowcem / weathershield paint: 2nd & subsequent coats (from 30' to 40' height).	100 Sft/coat	34.00	2,274.06	77,318.04
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PLUMBING WORKS

AW-10c-C-61	14-97	Supply of 150 Micron Polythene sheet of approved quality.	Kg	5.00	726.92	3,634.60
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MISCELLANEOUS

AW-10c-C-62	28-15	Pre anti Termite Treatment in the building mixed with water of mixing ratio as per the manufacturer's certified manual.	100 Sft	45.95	999.14	45,910.48
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AW-10c-C-63	28-18	Providing and fixing with steel nails and washers, the chicken wire mesh of approved quality, at joint of concrete and masonry work (4" wide strip) before plastering etc complete.	Sft	755.00	101.30	76,481.50
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Cost of Scheduled Items (Rs.)						14,419,737
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CIVIL WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

NON-SCHEDULED ITEMS

CONCRETE

AW-10c-C-63	AW-10c-C-NS-01	Additional cost for using Sulphate Resistant Cement (SRC) in Sub-Structure instead of Ordinary Portland Cement (OPC) (considering 50 kg of bag).	Bags	300.00	122.00	36,600.00
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DISMANTLING (DEMOLITION)

AW-10c-C-65	AW-10c-C-NS-02	Removal of existing Steel Gate (Main and Wicket) carefully and handing over the same to University, complete in all respect.	Job	2.00	6,100.00	12,200.00
AW-10c-C-66	AW-10c-C-NS-03	Removal of existing Wooden Door carefully and handing over the same to University, complete in all respect.	Job	1.00	1,525.00	1,525.00
AW-10c-C-67	AW-10c-C-NS-04	Removal of existing Entrance Shed (MS and Fiber Glass Sheet) carefully and handing over the same to University, complete in all respect.	Job	1.00	7,755.00	7,755.00

IRON WORK

AW-10c-C-68	AW-10c-C-NS-05	Providing & Fixing of MS Door comprising of 2"x2"x1/4"-Th. MS Angle Frame fixed with hold fasts, 1 1/2"x3"x16-SWG. MS Box Section Shutter Frame, 1 1/2"x4"x16-SWG. MS Box Section Lock Rail, 1 1/2"x1 1/2"x18-SWG. MS U-Shape Stiffeners @ 15" c/c and 18-SWG. MS Sheet on both sides etc. All members shall be weld connected and finished including cutting, grinding and painting complete in all respect as per drawings and technical specifications and directed by the Engineer.	Sft	185.00	2,545.00	470,825.00
AW-10c-C-69	AW-10c-C-NS-06	Providing and fixing of MS Main Gate as per drawings. Gate shall comprise of 2"x3"x14-SWG. MS Tube (main frame horizontal and vertical members), 1 1/2"x2"x14-SWG. MS Tube (secondary horizontal members), 18-SWG MS Sheet at selected portions, 3"x3/16"-thick MS Strip bent to shape under rollers (fixed in the road structure using underside welded strips at 2'-0" c/c distance), hinges, hold fasts, lock/earl, sliding bolt, tower bolts, handles and rollers etc. All members shall be weld connected and finished including cutting, grinding and painting complete in all respect as per drawings and technical specifications and directed by the Engineer.	Sft.	425.00	1,460.00	620,500.00
AW-10c-C-70	AW-10c-C-NS-07	Providing & fixing MS Grill in windows comprising of 1"x1 1/2"x18-SWG. MS Tube outer frame, 1"x1"x18-SWG. MS Tube vertical inner Frame and 1/2"x1/2"x20-SWG. MS Tube horizontal inner Frame etc. All members shall be weld connected and finished including cutting, grinding and painting complete in all respect as per drawings and technical specifications and directed by the Engineer.	Sft	125.00	390.00	48,750.00

CIVIL WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

AW-10c-C-71	AW-10c-C-NS-08	Providing & Fixing of MS Stair Ladder comprising of 2"x4"x¼" MS Channel (main members), 1½"x1½"x¼"-Th. MS Angle (steps), ½"x½" MS Solid square bar (vertical members in railing), 2"-dia. 16-SWG. MS Round Pipe (top hand rail), MS plates for fixing into the foundation pad and on wall/RCC slab using concrete expansion bolts etc. All members shall be weld connected and finished including cutting, grinding and painting complete in all respect as per drawings and technical specifications and directed by the Engineer.	Job	2.00	98,000.00	196,000.00
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AW-10c-C-72	AW-10c-C-NS-09	Providing & Fixing of MS Monkey Ladder comprising of 2"x2"x¼"-Th. MS Angle (main vertical members), 1½"x1½"x¼"-Th. MS Angle (steps), 2"x3/16" MS Strips (vertical and horizontal), MS plates for fixing into the foundation pad and on wall/RCC slab using concrete expansion bolts etc. All members shall be weld connected and finished including cutting, grinding and painting complete in all respect as per drawings and technical specifications and directed by the Engineer.	Job	2.00	81,340.00	162,680.00
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Cost of Non-Scheduled Items (Rs.)						1,556,835
Total Cost of Scheduled Items & Non-Scheduled Items (Rs.)						15,976,572

**UNIVERSITY OF BUNER, DISTRICT BUNER
 UOB SWARI CAMPUS (PROJECT-1)**

ANCILLARY WORKS

MAIN GATE

ENGINEER'S ESTIMATE

PLUMBING WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

GENERAL NOTE

Supply, installation, testing and commissioning of the following items of work, including all labour, tools, plant, accessories, etc. required for completion of each item as per specifications and as approved by the Engineer.

SCHEDULED ITEMS

SANITARY FIXTURES AND FITTINGS

AW-10c-P-01	14-03-a + 14-25-a + 14-44-b + 14-78 + 14-157	Providing and fitting glazed earthenware White water closet (WC), squatter type (orisa pattern) combined with foot rest, including low level plastic flushing cistern 3 gallons (13.63 litres) capacity,PVC flushing bend 1.5", P-Trap (uPVC), 1/2" CP tee stop-cock, complete in all respects.	Each	1.00	14,144.79	14,144.79
AW-10c-P-02	14-05-a-01 + 14-25a + 14-29-b + 14-45-a	Providing & Fixing glazed earthen ware White wash hand basin (WHB) with pedestal (Best Quality) complete of size 22"x16" including bracket set, waste coupling, CP swan-neck double way cock 1/2"dia , 1/2" CP tee stop-cocks(02 Nos.), and CP bottle trough with waste pipe 1.25"(32mm) i/d, etc. complete in all respects.	Each	1.00	19,539.38	19,539.38
AW-10c-P-03	14-13	Providing & Fixing CP soap dish.	Each	1.00	1,146.77	1,146.77
AW-10c-P-04	14-16-a	Providing & Fixing CP towel rail complete: 24" long, 3/4" dia.	Each	1.00	1,468.50	1,468.50
AW-10c-P-05	14-17-a	Providing & Fixing best quality looking glass 5mm thick neatly fitted on masonry wall etc as per instruction of Engineer in-charge complete. Mirror 60x45cm (24"x18") size	Each	1.00	2,940.41	2,940.41
AW-10c-P-06	14-18-a	Providing & Fixing best quality 5mm glass shelf (60x13 cm) 24"x5" with chromium plated brackets & railing.	Each	1.00	1,471.48	1,471.48
AW-10c-P-07	14-86	Providing & fixing chromium plated double bib-cock with Muslim Shower of approved quality Complete is all respects	Each	1.00	3,313.13	3,313.13
AW-10c-P-08	15-220-b + 14-25-a	Supply and fixing of 15-25 Litres Electric Geyser including all accessories and fittings, CP tee stop cock 1.5cm (1/2") (02 Nos.) of approved quality, complete in all respects.	Each	1.00	37,498.37	37,498.37

PLUMBING WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

AW-10c-P-09	23-05-a	Constructing gully grating chamber complete with CI gully trap, weighing 81 lbs. frame hinged.	Each	1.00	13,232.06	13,232.06
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WATER SUPPLY PIPES AND FITTINGS

Providing, laying cutting, jointing, testing PPRC pipeline in walls/trenches with pipes (confirming to DIN 8077/8078, PN 20 of approved quality & fittings conforming to DIN 16962,PN25 of the same manufacturer) for cold/hot water supply systems including specials complete in all respect as per specifications:

AW-10c-P-10	14-35-g	1/2" i/d (25mm o/d)	Rft	50.00	65.75	3,287.50
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Supply and Fixing CI manhole cover with frame etc (heavy Type) of approved quality complete (on manhole)

AW-10c-P-11	14-37-c	24" dia (610 mm)	Each	1.00	3,576.33	3,576.33
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SOIL, WASTE, VENT AND STORM DRAINAGE PIPES

Supplying and Fixing UPVC soil waste and vent pipe class B of following diameter for sanitary drainage:

AW-10c-P-12	14-144-a	6" dia	Rft	10.00	1,451.17	14,511.70
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AW-10c-P-13	14-144-b	4" dia	Rft	30.00	797.22	23,916.60
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AW-10c-P-14	14-144-c	3" dia	Rft	30.00	581.82	17,454.60
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Supplying and Fixing UPVC soil waste and vent pipe class B of following diameter for storm drainage:

AW-10c-P-15	14-144-c	3" dia	Rft	70.00	581.82	40,727.40
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uPVC Soil, Waste and vent pipes conforming to ISO:3633 type "B" or BS-4514/5255 class "A" ,including imported rubber ring/solvent cement fittings, jointing, cutting, and breaking concrete/masonry and then making it good, applying painting, cleaning and testing etc. complete in all respects.(for sanitary drainage)

AW-10c-P-16	14-144-d	2" dia	Rft	10.00	367.08	3,670.80
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AW-10c-P-17	14-164	uPVC Multi Floor Trap (110x75mm) including strainer; supports; making required number of connections; breaking concrete or masonry work & then making it good; etc.	Each	2.00	2,289.71	4,579.42
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PLUMBING WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

VALVES

Providing & Fixing gun metal peet/gate valve (screwed) of following diameters:

AW-10c-P-18	14-28-f	3/4" dia (20mm)	Each	1.00	1,547.92	1,547.92
AW-10c-P-19	14-28-b	1-1/2" dia (40mm)	Each	1.00	2,425.61	2,425.61

FIRE FIGHTING

AW-10c-P-20	14-172-a	Supplying and fixing of Dry Chemical Powder Fire Extinguisher 6Kg Capacity complete in all respect	Each	2.00	13,951.52	27,903.04
AW-10c-P-21	14-172-b	Supplying and fixing of Foam Type fire extinguishers capacity 12 liters complete in all respect	Each	2.00	15,566.90	31,133.80

EXTERNAL WORKS

AW-10c-P-22	03-51	Excavation of trench in all kinds of soils except cutting in rock for pipelines upto 1.5m depth	1000 Cft	7.20	9,789.84	70,486.85
AW-10c-P-23	03-67-c	Structural backfill using Common Material available at site.	1000 Cft	3.60	16,800.04	60,480.14
AW-10c-P-24	7-30	Supplying and filling sand under floor or plugging in wells	100 Cft	35.00	7,827.13	273,949.55
AW-10c-P-25	24-30-c-04	Providing, laying, cutting, jointing, testing and disinfecting High Density Polyethylene Pipe (HDPE) Din-8074/Din-8075/ISO-4427 in trenches, complete in all respects PN-12.5.				
		(40 mm dia)	Rft.	800.00	111.08	88,864.00

Cost of Scheduled Items (Rs.)					763,270
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PLUMBING WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

NON-SCHEDULED ITEMS

RAIN WATER DRAINAGE PIPES AND **(Ref. Specification Section-5100)**

AW-10c-P- 26 AW-10c-P- NS-01 Supply & installation of C.I. roof drain of following diameters, including strainer, flushing material, and all accessories for complete installation, as per specifications.

(a) 3 inches Each 4.00 16,220.00 64,880.00

Cost of Non-Scheduled Items (Rs.)						64,880
Total Cost of Scheduled Items & Non-Scheduled Items (Rs.)						828,150

**UNIVERSITY OF BUNER, DISTRICT BUNER
 UOB SWARI CAMPUS (PROJECT-1)**

ANCILLARY WORKS

MAIN GATE

ENGINEER'S ESTIMATE

ELECTRICAL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

GENERAL NOTE

Supply, installation, testing and commissioning of the following items of work, including all labour, tools, plant, accessories, etc. required for completion of each item as per specifications and as approved by the Engineer.

SCHEDULED ITEMS

CIVIL WORKS FOR CABLES

AW-10c-E-01	03-51	Excavation of trench in all kinds of soils except cutting in rock for pipelines upto 1.5m depth (for electrical cables)	1000 Cft	12.00	9,789.84	117,478.08
AW-10c-E-02	03-67-c	Structural backfill using Common Material available at site.	1000 Cft	6.00	16,800.04	100,800.24
AW-10c-E-03	7-30	Supplying and filling sand under floor or plugging in wells	100 Cft	60.00	7,827.13	469,627.80

NOTE:

The above items must be executed as follows:

- a) Excavation in all kind of material including back filling, compaction, layer of bricks 9" in width and warning tape for lighting cables trench width 2' & height 3' complete in all respect as per specifications and as directed by the Engineer .

CABLE PULLING PIT (5-Nos. 2'x2'x3')

AW-10c-E-04	03-49-a	Excavation in open cut for sewers & manhole except shingle, gravel & rock : Upto 2m (for electrical works)	1000 Cft	0.30	12,397.39	3,719.22
AW-10c-E-05	03-67-c	Structural backfill using Common Material available at site.	1000 Cft	0.30	16,800.04	5,040.01
AW-10c-E-06	06-05-i	Plain Cement Concrete incl. placing, compacting, finishing & curing (Ratio 1:4:8)	100 Cft	0.20	38,089.56	7,617.91
AW-10c-E-07	06-07-a-03	RCC in roof slab, beam, column & other structural members, insitu or precast. Type C (1:2:4)	100 Cft	1.20	60,021.78	72,026.14
AW-10c-E-08	06-08-c	Supply & fabricate M.S. reinforcement for cement concrete (Hot rolled deformed bars Grade 40)	100 Kg	2.72	33,027.93	89,835.97
AW-10c-E-09	11-08-b	Cement plaster 1:3 upto 20' height 1/2" thick	100 Sft	1.30	5,521.89	7,178.46

ELECTRICAL WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

AW-10c-E-10	07-30	Supplying and filling sand under floor or plugging in wells	100 Sft	2.75	7,827.13	21,524.61
AW-10c-E-11	24-33-d	Supplying and fixing, cast iron manhole cover with frame, etc. (Heavy Type) of approved quality complete. 24" (600 mm) dia	Each	5.00	4,875.61	24,378.05

NOTE:

The above items must be executed as follows:

- a Cable pulling pit (2'-0" X 2'-0" X 3') made of RCC walls(1:2:4) and CI cover with MS angle frame for easy pulling of LT cables including all accessories located as per drawings.

FANS & EXHAUST FANS

AW-10c-E-12	15-68-c	Supply and Erection best quality AC ceiling fan complete with GI rod, canopy, blades & regulator: 56" sweep.	Each	3.00	11,062.20	33,186.60
AW-10c-E-13	15-69-a	Supply & Erection best quality exhaust fan complete with shutter & regulator: 12" sweep.	Each	1.00	4,542.08	4,542.08
AW-10c-E-14	15-67	Making hole in wall with necessary masonry work for exhaust fan any size complete	Each	1.00	351.61	351.61
AW-10c-E-15	15-78	Supply and Fixing of 18" dia Direct axial Wall Bracket fan,1450Rpm, Max 50db sound level Fan shall be made with 99% purity Copper windings.	Each	2.00	10,915.71	21,831.42

NOTE:The contractor/supplier shall ensure that the supplied fans are wound with pure 99.9% pure enamelled copper winding.The core of the fans shall be made from grain oriented electrical steel sheet.The exhaust fans shall follow the same standards described above. Moreover all fans should be NEECA approved.The fans shall be installed at the bottom level of structural beams. The contractor is required to get the approval from the site staff.

WIRING IN CONCEALED CONDUITS

AW-10c-E-16	15-06-a	Supply and Erection single core PVC insulated+sheathed copper conductor 250/440 V grade cable : 3/0.029"(1.5mm ²) .	Rft	1,400.00	41.89	58,646.00
AW-10c-E-17	15-06-c	Supply and Erection single core PVC insulated+sheathed copper conductor 250/440 V grade cable : 7/0.029"(2.5mm ²) .	Rft	1,100.00	73.13	80,443.00
AW-10c-E-18	15-02-b-02	Supply and Erection PVC pipe for wiring purpose complete Recessed in walls including chase etc : 3/4" i/d (for wiring)	Rft.	250.00	141.01	35,252.50
AW-10c-E-19	15-02-b-03	Supply and Erection PVC pipe for wiring purpose complete Recessed in walls including chase etc : 1" i/d (for wiring)	Rft.	600.00	144.57	86,742.00

ELECTRICAL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

NOTE: The wiring shall be done as following.

- a Wiring of light circuit from Distribution Board to switch, including circuit wiring between switches on the same circuit with Two nos. single core 2.5 Sqmm and One no.1.5 sq mm PVC insulated 300/500 Volts grade stranded copper conductor cables in concealed 1 " PVC conduits including PVC conduit, conduit accessories (junction box, pull box, metal fan box etc) complete in all respects.
- b Wiring from switch to light or fan point (1 way / 2 way) with 3 Nos. single core 1.5 Sqmm PVC insulated 300/500 Volts grade stranded copper conductor cables in concealed 1" PVC conduit including PVC conduit, conduit accessories (junction box, pull box, metal fan box etc) complete in all respects.
- c Wiring from light to light with 3 Nos. single core 1.5 Sqmm PVC insulated 300/500 Volts grade stranded copper conductor cables in concealed 3/4" PVC conduit including PVC conduit, conduit accessories (junction box, pull box, metal fan box etc) complete in all respects.
- d Wiring of circuit from Distribution Board to 13A , 230 Volts, 3 pin switched socket outlet with Two nos. single core 2.5 sqmm and One no. 1.5 sqmm PVC insulated 300/500 Volts grade solid or stranded copper conductor cables in 1" dia concealed PVC conduit laid underfloor including PVC conduit, conduit accessories, etc. complete in all respects.
- e Wiring from 13 Amps, 3 pin socket to socket with Two nos. single core 2.5 Sqmm and One no. 1.5 sq mm PVC insulated 300/500 Volts grade stranded copper conductor cables in concealed 1" PVC conduit laid underfloor including PVC conduit, conduit accessories, etc.complete in all respects.

LIGHT FIXTURES

AW-10c-E- 15-36-j-12 20	Supply, installation, connecting, testing & commissioning of 10W LED Down Light Fixture suitable for 1300 lux, as per instruction of Engineer, surface mounted circular shape or equivalent	No.	2.00	1,773.77	3,547.54
AW-10c-E- 15-36-i-10 21	Supply, installation, testing and commissioning of Watt LED BULKHEAD light fixture, of best quality.20 -30w	Each	2.00	2,089.55	4,179.10
AW-10c-E- 15-36-k-02 22	Supply, installation, connecting, testing and commissioning of Surface mounting LED tube light with 1x2000 lumens output and fixture, complete in all respects	No.	7.00	1,975.69	13,829.83

ELECTRICAL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

AW-10c-E- 23	15-36-i-6	Supply, installation, testing and commissioning of IP-44 rated, 2x3 Watt up/down light LED Light, complete in all respects.	Each	6.00	5,454.93	32,729.58
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WIRING ACCESSORIES

AW-10c-E- 24	15-127-a	Supply at site, installation, testing and commissioning of the One gang light control switches 10 Amps, 250 Volts one way, including appropriate size concealed MS, powder coated back box, complete in all respects.	No.	5.00	418.42	2,092.10
AW-10c-E- 25	15-127-b	Supply at site, installation, testing and commissioning of Two gang light control switches 10 Amps, 250Volts one way, including appropriate size concealed MS, powder coated back box, complete in all respects.	No.	3.00	688.99	2,066.97
AW-10c-E- 26	15-127-c	Supply at site, installation, testing and commissioning of Three gang light control switches 10 Amps, 250Volts one way, including appropriate size concealed MS, powder coated back box, complete in all respects.	No.	1.00	918.40	918.40
AW-10c-E- 27	15-127-d	Supply at site, installation, testing and commissioning of Four gang light control switches 10 Amps, 250 Volts one way, including appropriate size concealed MS, powder coated back box, complete in all respects.	No.	2.00	1,120.31	2,240.62
AW-10c-E- 28	15-156	Supply, Installation, Connecting, testing and commissioning of 400 watt Fan dimmer, polycarbonate flame retardant with fancy gang plate fixed on die fabricated powder coated metal board recessed in wall or column , Complete in all respects	No.	3.00	1,258.42	3,775.26
AW-10c-E- 29	15-155-c	Supply, installation, connecting, testing & commissioning of flush type 13 Amps 3-pin simplex outlet with 3 pin switch and socket combine unit with neon bulb fixed on plastic or fiber top covered, including 14 SWG metal board with earth	No.	10.00	1,056.49	10,564.90
AW-10c-E- 30	15-127-j	Supply at site, installation, testing and commissioning of 3 pin switched socket unit 13/15 Amps, 250Volts, round pin including appropriate size MS, powder coated back box, complete in all respects.	Each	2.00	1,039.55	2,079.10

ELECTRICAL WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

STRUCTURED CABLING SYSTEM (TELEPHONE & NETWORKING)

AW-10c-E-31	15-138-e-01	Supply, Installation, testing and commissioning of Single Port Data outlet of 1 x RJ-45 I/Os for Cat-6 cable and with 16 SWG back box, complete in all respects	Each	6.00	696.52	4,179.12
AW-10c-E-32	15-138-g	Supply and Erection of 3M Cat-6 Cable in 3/4", 1" pvc conduit, complete in all respect	Rft	600.00	225.63	135,378.00
AW-10c-E-33	15-141-a	Supply, installation, testing and commissioning of Cable Manager / Organizer Black, 1pc, Black.	Each	1.00	6,045.85	6,045.85
AW-10c-E-34	15-145	Supply, installation, testing and commissioning of the ODF; 12 Port Loaded with 6x Pigtails Multimode Tray & Other Accessories, Rack Mount 1U Form Factor, complete in all respects.	No.	1.00	138,751.27	138,751.27
AW-10c-E-35	24-18-c-03	Providing, laying, cutting, jointing, testing and disinfecting UPVC pressure pipeline in trenches (conforming to BS 3505 manufactured) jointed with socket, elbow, tee, bend and plug bend etc. manufactured by the respective manufacturer complete as per specifications. uPVC Pressure Pipes Class D (12 Bar) 2" Nominal Pipe Size (NPS)	Rft.	2,000.00	236.52	473,040.00

EARTHING SYSTEM

AW-10c-E-36	15-106	Supply, installation, testing & commissioning of Lightning Protection System	Each	2.00	38,998.57	77,997.14
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LT CABLES

AW-10c-E-37	15-122-c	Supply at site, installation, testing and commissioning of PVC insulated un-armoured copper conductor cable 600 / 1000 Volt grade (or otherwise mentioned in cable description) in prelaid conduits / trenches to be installed as per routes shown on drawings including cost of all necessary materials, connections, identification tags, cables lugs properly crimped at both ends for the following sizes complete in all respects (16 sqmm, 4 core)	Rft	20.00	1,157.44	23,148.80
AW-10c-E-38	15-122-b	Supply at site, installation, testing and commissioning of PVC insulated un-armoured copper conductor cable 600 / 1000 Volt grade (or otherwise mentioned in cable description) in prelaid conduits / trenches to be installed as per routes shown on drawings including cost of all necessary materials, connections, identification tags, cables lugs properly crimped at both ends for the following sizes complete in all respects (10 sqmm, 4 core)	Rft	500.00	845.53	422,765.00

ELECTRICAL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

AW-10c-E- 39	15-126-a	Supply at site, installation, testing and commissioning of PVC insulated un-armoured copper conductor cable 600 / 1000 Volt grade (or otherwise mentioned in cable description) in prelaidd conduits / trenches to be installed as per routes shown on drawings including cost of all necessary materials, connections, identification tags, cables lugs properly crimped at both ends for the following sizes complete in all respects (10sqmm, 1 core) .	Mtr	520.00	304.81	158,501.20
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CONDUITS & PIPES

AW-10c-E- 40	15-02-b-05	Supply and Erection PVC pipe for wiring purpose complete Recessed in walls including chase etc : 1.5" i/d	Rft.	100.00	231.51	23,151.00
AW-10c-E- 41	15-02-b-03	Supply and Erection PVC pipe for wiring purpose complete Recessed in walls including chase etc : 1" i/d	Rft.	200.00	144.57	28,914.00
AW-10c-E- 42	15-02-b-02	Supply and Erection PVC pipe for wiring purpose complete Recessed in walls including chase etc : 3/4" i/d	Rft.	100.00	141.01	14,101.00
AW-10c-E- 43	24-18-c-03	Providing, laying, cutting, jointing, testing and disinfecting UPVC pressure pipeline in trenches (conforming to BS 3505 manufactured) jointed with socket, elbow, tee, bend and plug bend etc.manufactured by the respective manufacturer complete as per specifications.uPVC Pressure Pipes Class D (12 Bar) 2"Nominal Pipe Size (NPS)	Rft.	500.00	236.52	118,260.00

Cost of Scheduled Items (Rs.)						2,942,477
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ELECTRICAL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

NON-SCHEDULED ITEMS

LT DISTRIBUTION BOARD

(Ref. Specification Section-8001, 8133)

AW-10c-E- 44 AW-10c-E- NS-01 LT 220V AC DBs shall be made from 16 SWG sheet steel. This shall be designed, fabricated and manufactured as a wall mounted. The sheet metal work shall be cleaned down to bare shining metal degreased, derusted and painted with TWO base coats of antirust RED paint. The sheet metal work shall be finished in TWO coats of powder paint. The color and shade shall be as approved by the Engineer. The distribution Board shall be complete with all internal wirings, tags, identification labels, copper busbars, accessories etc. The bus-bars shall be insulated. The insulation shall be heat shrinkable type or as directed by the Engineer.

- a) **(FOR DB-GATE1,2)**
 1 No. 32 Amps TP MCB RC=10KA
 03 Nos. Cu Bus Bars complete with
 Nut & bolts, washers/ insulation.
 01 Nos. Earth Bus Bar
 01 Nos. Neutral Bus Bar

OUTGOINGS

6 Nos. 20 Amps SP MCB RC-6kA.
 1 Nos. 20 Amps TP MCB RC-6kA.

Job 2.00 85,610.00 171,220.00

LIGHT FIXTURES

(Ref. Specification Section-8001, 8150, 8290)

Following light fixtures installed on surface or wall or floor or false ceiling or columns or masts complete with all accessories such as lamps, lamp holders, ballasts, starters, ignitors, capacitors, LED drivers as applicable, etc. including all relevant installation material as required and approved by the Engineer. (Note: The contractor shall be responsible for compatibility of recessed mounted light fixtures with gypsum / aluminium / dampa etc., false ceiling types in coordination with architectural design.)

AW-10c-E- 45 AW-10c-E- NS-02 Flood Lighting (150W) LED Light, Aluminum Body with cooling Fins, Aluminum Frame and support brackets. Paint should be resistant to corrosion. The protection class of Light should be IP-66.

No. 2.00 57,030.00 114,060.00

ELECTRICAL WORKS

ITEM NO.	KPK MRS-2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

AW-10c-E-46	AW-10c-E-NS-03	70Watt LED Architectural flood light IP 65 rated, with electrical connectors etc. complete	No.	8.00	28,240.00	225,920.00
AW-10c-E-47	AW-10c-E-NS-04	18W Surface Downlight with 1500 lumens minimum and IP 54 rated minimum	No.	25.00	8,480.00	212,000.00
AW-10c-E-48	AW-10c-E-NS-05	18W Recessed type Inground Floodlight minimum IP 67 rated	No.	3.00	46,245.00	138,735.00

SECURITY SYSTEM

Boom Barrier, Handheld Metal Detector & Under Vehicle Mirror

AW-10c-E-49	AW-10c-E-NS-06	Supply & Installation of Locally Fabricated Manually Operated Boom Barrier on Main Gate. Length = 16-ft. Clear Opening Total Length with Counter weight = 20-21 ft. approximately. Technical Specifications: 14-SWG. Main Pipes, 3"-dia, 16-SWG. Bracing Pipes, I-Beam of Counter Weight and Rest Support,	Job.	2.00	520,945.00	1,041,890.00
AW-10c-E-50	AW-10c-E-NS-07	Supplying of High Sensitivity Hand Held Metal Detector. 8 inch scan surface ISO certified handheld metal detector along with the battery approved by the Engineer Incharge as required as per list of approved manufacturers	Job.	1.00	67,645.00	67,645.00
AW-10c-E-51	AW-10c-E-NS-08	Under Vehicle mirror with flash light & rubber wheel complete in all respects.	Job.	1.00	25,385.00	25,385.00

CCTV SYSTEM

(Ref. Specification Section-8001, 8335, 8290)

AW-10c-E-52	AW-10c-E-NS-09	Supply, installation, testing and commissioning of PTZ Dome Professional Series Camera having following specifications, 5 MP IR Speed Dome Camera, WDR 120dB, 30X optical zoom, 1/2.8" 5MP, PoE+, 24VAC, IK10,IP67 including mounting bracket & all fixing and mounting accessories.	Job.	1.00	765,990.00	765,990.00
AW-10c-E-53	AW-10c-E-NS-10	Supply, installation, testing and commissioning of PTZ keyboard controller for PTZ Camera	Job.	1.00	424,985.00	424,985.00
AW-10c-E-54	AW-10c-E-NS-11	Supply at site, installation, testing & commissioning of Bullet Camera, IP – Bullet, 4 Mega Pixel/5 MP professional Series, minimum 80 meter IR, Codec H-265+/MPEG-4/JPEG, H-264 Multi Stream:2, JPEG Multi Stream : 6, Advance VBR : AVBR (1.80), Max resolution 16:9 = 1280 x 720 & 4:3 = 1280 x 960 with 30 fps, day night (ICR), ABF, Optical Zoom 30x, min IP-54 including mounting bracket & all fixing and mounting accessories.	Job.	3.00	106,280.00	318,840.00
AW-10c-E-55	AW-10c-E-NS-12	Supply, Installation & Connecting up of UTP- Cat-6, steel Frame Patch Panel with 8 port modular UTP - Cat-6, Loaded with BLUE CAT I/O UTP , Keystone Jacks Toolless, Support 1.0 Gigabit Network including rear cable management.	No.	1.00	36,690.00	36,690.00

ELECTRICAL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

AW-10c-E- 56 AW-10c-E- NS-13 Supply, Installation of UTP - Cat-6, Patch Cords Support 1.0 Giga Network at 250 Mhz machine made. Installed between patch panel & Network switch and face plate

i)	1.0 m Length	No.	8.00	2,400.00	19,200.00
ii)	3.0 m Length	No.	8.00	2,895.00	23,160.00

AW-10c-E- 57 AW-10c-E- NS-14 Supply, Laying, Installation of 12 Core 9um / 125um single mode OS2 Unitube Fiber Optic Cable From Data Center to blocks complete in all respect, as per drawing and specifications in already installed Class "D" uPVC Conduit

Rft	1,500.00	285.00	427,500.00
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Cost of Non-Scheduled Items (Rs.)					4,013,220
Total Cost of Scheduled Items & Non-Scheduled Items (Rs.)					6,955,697

UNIVERSITY OF BUNER, DISTRICT BUNER
UOB SWARI CAMPUS (PROJECT-1)
ANCILLARY WORKS
MISCELLANEOUS WORKS IN ADMINISTRATION BLOCK
ENGINEER'S ESTIMATE

CIVIL WORKS

ITEM NO.	KPK MRS-2025 (1st Bi Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

GENERAL NOTE

Supply, installation, testing and commissioning of the following items of work, including all labour, tools, plant, accessories, etc. required for completion of each item as per specifications and as approved by the Engineer.

SCHEDULED ITEMS

DISMANTLING [DEMOLITION]

AW-10d-C-01	04-19-c	Dismantling: Plain Cement Concrete 1:2:4.	100 Cft	0.50	15,167.35	7,583.68
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BRICK MASONARY

AW-10d-C-02	07-05-a-04	1st class brick work in ground floor Cement, sand mortar 1:5	100 Cft.	0.30	54,523.03	16,356.91
AW-10d-C-03	07-05-a-04 + 07-06-a	1st class brick work in first floor in Cement, sand mortar 1:5	100 Cft.	2.40	56,579.58	135,790.99
AW-10d-C-04	07-05-a-04 + 07-06-b	1st class brick work in 2nd floor in Cement, sand mortar 1:5	100 Cft.	0.20	59,199.39	11,839.88
AW-10d-C-05	07-13	Extra for face work (half brick thick) using special bricks instead of first class bricks.	100 Sft.	3.30	2,619.82	8,645.41

SURFACE RENDERING

AW-10d-C-06	11-09-b	Cement plaster 1:4 upto 20' height 1/2" thick	100 Sft.	2.10	5,262.49	11,051.23
AW-10d-C-07	11-09-b + 11-26	Cement plaster 1:4 from 20' to 30' height 1/2" thick	100 Sft.	0.20	5,905.03	1,181.01
AW-10d-C-08	11-18-a	Cement pointing struck joints, on walls, upto 20' height: Ratio 1:2	100 Sft.	3.10	5,686.49	17,628.12
AW-10d-C-09	11-18-a + 11-26	Cement pointing struck joints, on walls, upto 20' to 30' height: Ratio 1:2	100 Sft.	0.20	6,329.03	1,265.81
AW-10d-C-10	11-29	Extra cost of labour & material for red oxide pigment in cement pointing to match bricks	100 Sft.	3.30	1048.48	3,459.98

CIVIL WORKS

ITEM NO.	KPK MRS- 2025 (1st Bi Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

WOOD WORK, WOODEN/ALUMINIUM JOINERY

AW-10d-C-11	12-53-a	Providing and Fixing of 4 Way Structural Glazing in Aluminum Section of Thickness 2mm, Brackets, Anchor Bolts, Hardware, Silicon, Gasket. 6mm Clear Low E Glass Tempered + 12mm Air Gap + 5mm Clear Glass Tempered. As per U-Value: 1.8 SC: 0.62 LT: 65%	Sft	640.00	1,363.38	872,563.20
AW-10d-C-12	12-64-a-06	Supply and Fixing aluminium door/window, Fixed Glazing Premium model (2.00 mm gauge) 4" section	Sft	60.00	1,635.36	98,121.60
AW-10d-C-13	12-64-c-05	Supply and Fixing aluminium door/window, Fly Screen Shutter Premium model (2.00 mm gauge) 2" section	Sft	105.00	431.65	45,323.25
AW-10d-C-14	12-65-a-06	Supply and Fixing aluminium door/window, Sliding Window Premium model (2.00 mm gauge) 4" section	Sft	600.00	1,658.25	994,950.00
AW-10d-C-15	12-65-e-12	Supply and Fixing aluminium door/window, Swing Door Double Action Premium model (2.00 mm gauge) 4" section	Sft	40.00	1,608.44	64,337.60
AW-10d-C-16	12-65-f-05	Supply and Fixing aluminium door/window, Other items Hydraulic Door Closer Double Action	Each	1.00	3,623.91	3,623.91

PAINTING AND VARNISHING

AW-10d-C-17	13-22-a	Preparing surface and painting with emulsion paint: First coat.	100 Sft.	2.10	2,063.68	4,333.73
AW-10d-C-18	13-22-b	Preparing surface and painting with emulsion paint: 2nd & each subsequent coat. (two coats)	100 Sft.	4.20	1,350.03	5,670.13
AW-10d-C-19	13-22-a +13-24	Preparing surface and painting with emulsion paint 20' to 30': First coat.	100 Sft.	0.20	2,240.17	448.03
AW-10d-C-20	13-22-b +13-24	Preparing surface and painting with emulsion paint, from 20' to 30' height: 2nd & each subsequent coat. (two coats)	100 Sft.	0.40	1,526.52	610.61

Cost of Scheduled Items (Rs.)						2,304,785
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CIVIL WORKS

ITEM NO.	KPK MRS- 2025 (1st Bi Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

NON-SCHEDULED ITEMS

DISMANTLING (DEMOLITION)

AW-10d-C- AW-10d-C- Removal of existing aluminium door carefully and
 21 NS-01 handing over the same to University, complete in
 all respect. Job 1.00 765.00 765.00

AW-10d-C- AW-10d-C- Removal of existing stainless steel railings
 22 NS-02 carefully and handing over the same to
 University, complete in all respect. Rft. 85.00 40.00 3,400.00

IRON WORK

AW-10d-C- AW-10d-C- Supply & fixing of MS frame behind the curtain
 23 NS-03 wall (as support to aluminium frame), comprising
 MS tube (300mmx75mmx4mm-th.) sections,
 welded together and fixed with bottom and side
 RCC/masonry members using MS plates, as per
 details given in the engineering drawings (with
 fabrication details as per approved shop
 drawings) and as directed by the Engineer. The
 job includes all works such as cutting, grinding,
 welding, painting etc., complete in all respect and
 as directed by the Engineer. Sft 640.00 1,135.00 726,400.00

AW-10d-C- AW-10d-C- Provide & fix MS Grill in windows comprising of
 24 NS-04 1"x2"x18SWG MS Tube outer frame,
 1"x1"x18SWG MS Tube vertical inner Frame and
 ½"x1"x20SWG MS Tube horizontal inner Frame
 as per approved design fixed on walls or on area
 as required and specified on drawings with steel
 nails including 3 coats of painting complete in all
 respects. Sft 600.00 310.00 186,000.00

Cost of Non-Scheduled Items (Rs.)						916,565
Total Cost of Scheduled Items & Non-Scheduled Items (Rs.)						3,221,350

**UNIVERSITY OF BUNER, DISTRICT BUNER
 UOB SWARI CAMPUS (PROJECT-1)**

ANCILLARY WORKS

STEEL GRILL

ENGINEER'S ESTIMATE

CIVIL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

GENERAL NOTE

Supply, installation, testing and commissioning of the following items of work, including all labour, tools, plant, accessories, etc. required for completion of each item as per specifications and as approved by the Engineer.

SCHEDULED ITEMS

CARRIAGE

AW-10e-C-01	01-01-d	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: 250 -1000 Meter	800 Rft	0.30	83.11	24.93
AW-10e-C-02	01-01-e	Carriage of 100 cft / 5 tonne of all materials, by truck or other means: 2nd Km or corresponding	0.6 Mile	0.30	266.13	79.84

EARTHWORK (EXCAVATION AND EMBANKMENT)

AW-10e-C-03	03-25-b	Excavation in foundation of building, bridges etc complete : in ordinary soil.	1000 Cft	0.06	11,123.68	667.42
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DISMANTLING [DEMOLITION]

AW-10e-C-04	04-19-a	Dismantling: Plain Cement Concrete 1:4:8.	100 Cft	0.10	7,583.68	758.37
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CONCRETE

AW-10e-C-05	06-05-f	Plain Cement Concrete including placing, compacting, finishing and curing (Ratio 1:2:4)	100 Cft	0.69	52,579.94	36,280.16
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Cost of Scheduled items (Rs.)						37,811
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CIVIL WORKS

ITEM NO.	KPK MRS- 2025 (1st BI Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

NON-SCHEDULED ITEMS

DISMANTLING [DEMOLITION]

AW-10e- C- 06	AW-10e- C- NS-01	Disjointing the existing Interlocking Tiles (Pavers) and sand carefully and refixing / laying of the same as per original design, complete in all respect and extra material stacking on safe place (within 100 meter) for handing over to the Employer.	Sft	35.00	15.00	525.00
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AW-10e- C- 07	AW-10e- C- NS-02	Removal of stone ballast / sub base carefully and laying of the same as per original design, complete in all respect and extra material stacking on safe place (within 100 meter) for handing over to the Employer.	Cft	15.00	15.00	225.00
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CONCRETE

AW-10e- C- 08	AW-10e- C- NS-03	Additional cost for using Sulphate Resistant Cement (SRC) in Sub-Structure instead of Ordinary Portland Cement (OPC) (considering 50 kg of bag).	Bags	15.00	122.00	1,830.00
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IRON WORK

AW-10e- C- 09	AW-10e- C- NS-04	Providing & fixing Structural Steel Grill comprising 4"x4"x14-SWG. MS Tube Main Columns, 2"x2"x16-SWG. MS Tube Horizontal Members, 1"x1"x16-SWG. MS Tube Secondary Vertical Members and Doors (comprising frame of 2"x2"x16-SWG. MS Tube and 1"x1"x16-SWG. MS Tube Vertical Members). Main Columns are grouted into concrete foundations. Horizontal Members shall be fixed with existing masonry walls through welded side-plates and fixed using expansion anchors. All members shall be weld connected and finished including cutting, grinding and painting, complete in all respect, as per drawings and specifications and as directed by the Engineer.	Rft.	100.00	4,915.00	491,500.00
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Cost of Non-Scheduled Items (Rs.)						494,080
Total Cost of Scheduled Items & Non-Scheduled Items (Rs.)						531,891

**UNIVERSITY OF BUNER, DISTRICT BUNER
 UOB SWARI CAMPUS (PROJECT-1)**

ANCILLARY WORKS

HEIGHT EXTENSION AND REHABILITATION OF EXISTING BOUNDARY WALL

ENGINEER'S ESTIMATE

CIVIL WORKS

ITEM NO.	KPK MRS- 2025 (1st Bi Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

GENERAL NOTE

Supply, installation, testing and commissioning of the following items of work, including all labour, tools, plant, accessories, etc. required for completion of each item as per specifications and as approved by the Engineer.

SCHEDULED ITEMS

DISMANTLING [DEMOLITION]

AW-10f-C-01	04-45-a	Scraping: White wash or colour wash	100 Sft.	40.00	344.71	13,788.40
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BRICK MASONARY

AW-10f-C-02	07-05-a-04	1st class brick work in ground floor Cement, sand mortar 1:5	100 Cft.	12.35	54,523.03	673,359.42
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SURFACE RENDERING

AW-10f-C-03	11-09-b	Cement plaster 1:4 upto 20' height 1/2" thick	100 Sft.	136.75	5,262.49	719,645.51
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PAINTING AND VARNISHING

AW-10f-C-04	13-25-a	Preparing surface & painting with snowcem / weathershield paint: First coat (upto 20' height).	100 Sft/ coat	136.75	3,485.43	476,632.55
AW-10f-C-05	13-25-b	Preparing surface & painting with snowcem / weathershield paint: 2nd & subsequent coats (upto 20' height).	100 Sft/ coat	273.50	1,921.08	525,415.38

IRON WORK

AW-10f-C-06	25-53	Providing, making and fixing of steel grill of MS pipe (2"x1") ornamental design i/c cost of painting complete.	Sft.	500.00	1,159.92	579,960.00
AW-10f-C-07	25-60-d	Supply and fixing razor wire (1'-6" dia) consisting of 1-1/2"x1-1/2"x3/16" angle iron Y post 2'-6" long 6' to 8' center to center fixed with bolt anchorage, at top of boundary wall including painting posts etc. Complete in all respects.	Rft.	500.00	501.97	250,985.00

Cost of Scheduled items (Rs.)						3,239,786
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CIVIL WORKS

ITEM NO.	KPK MRS- 2025 (1st Bi Annual) REF. NO. / NS	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)

NON-SCHEDULED ITEMS

DISMANTLING [DEMOLITION]

AW-10f-C- 08	AW-10f- C- NS-01	Removal and disposal of plaster on existing masonry boundary wall and making the surface suitable for re-plastering as directed by the Engineer.	Sft	7,290.00	4.00	29,160.00
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IRON WORK

AW-10f-C- 09	AW-10f- C- NS-02	Providing & fixing MS Grill on top of Boundary Wall. Grill Frame comprises of 2"x3"x16-SWG. MS Tube horizontal and vertical frame members with 20-SWG. MS Sheet louvers (bent to shape) welded in between the vertical members. Grill Frame is fixed on wall using MS Angle (2"x2"x3/16"-th. and 3"-long) and Concrete Expansion Bolt. All members shall be weld connected and finished including cutting, grinding and painting complete in all respect as per drawings and technical specifications.	Sft	1,500.00	1,300.00	1,950,000.00
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Cost of Non-Scheduled Items (Rs.)						1,979,160
Total Cost of Scheduled and Non-Scheduled items (Rs.)						5,218,946

INTEGRITY PACT

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 times 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]