Standard Bidding Document

CIVIL WORKS COMPONENT OF THE PSDP PROJECT ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD (on GtoG basis)

(Works)

National

Single Stage-Two Envelope

September 14, 2026

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REQUEST FOR BIDS

PROCUREMENT OF CIVIL WORKS

1. The **National Institute of Intelligence and Security Studies (NIISS) (National Institute of Intelligence and Security Studies (NIISS))** has reserved Funds for the procurement planned for FY **2026-27**. The **National Institute of Intelligence and Security Studies (NIISS) (National Institute of Intelligence and Security Studies (NIISS))** intends to apply part of the proceeds of this Fund to cover eligible payments under the contract for the "**CIVIL WORKS COMPONENT OF THE PSDP PROJECT ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD (on GtoG basis)**" with the reference of "**P116962**".

2. The **National Institute of Intelligence and Security Studies (NIISS) (National Institute of Intelligence and Security Studies (NIISS))** invites sealed Bids from eligible Bidders for procurement of Works **(CIVIL WORKS COMPONENT OF THE PSDP PROJECT ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD (on GtoG basis))** described in the bidding documents on **EPADS v2.0**.

3. **Single Stage-Two Envelope** will be used by adopting **Least Cost Based Selection (LCBS)** Technique for the subject procurement, in line with the Public Procurement Rules, 2004 and any Regulations, Regulatory Guides, Procurement Guidelines or Instructions issued by the Authority from time to time.

4. All Bids must be accompanied by a Bid Security amount described in Bid Security Section in Bidding Document in the form of . Or all bids must be accompanied by bid securing declaration in the format specified in the Bidding documents

5. E-Bidding documents, containing detailed terms & conditions, specifications and requirements etc. are available on **e-Pak Acquisition and Disposal System (EPADS)** at

https://epads.gov.pk/opportunities/federal/procurements/116962 for all the interested bidders registered on **EPADS v2.0**. Bidders are required to get themselves registered on **EPADS v2.0** to participate in Bidding process.

6. The e-bids, prepared in accordance with the instructions in the e-Bidding documents, must be submitted through **EPADS v2.0** on or before **Monday, October 5, 2026 01:30 PM**. E-bids will be opened by using **EPADS v2.0** on the same day at **Monday, October 5, 2026 02:00 PM**. Manual submission of Bids shall not be entertained. Those vendor who have not yet registered on the new version of **EPADS v2.0**, may register themselves on **https://vendors.epads.gov.pk/**. A tutorial to explain the registeration process is available at **https://www.youtube.com/watch?v=MNW6T38v7tc.**

In terms of Rules 48 of Public Procurement Rules, 2004 Grievance Redressal Committee (GRC) is notified for the subject procurement and notification copy is available on the procuring agency's website and on Authority's website at (**www.ppra.org.pk**).

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Instructions 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 Clause 2 of 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. Verifiable copy of the agreement that forms a joint venture, consortium or association shall be required to be submitted as part of the Bid.

Any bid submitted by the joint venture, consortium or association shall indicate the part of proposed contract to be performed by each party and each party shall be evaluated (or 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 and in line with any instructions issued by the Authority.

(The limit on the number of members of JV or Consortium may be prescribed

in BDS, in accordance with the guidelines issued by the PPRA).

3.2. The 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. Procuring agencies shall specify the registration/licensing requirements for the foreign bidder keeping in view the requirement of that business.

3.3. 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:

3.3.1. 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

3.3.2. have controlling shareholders in common; or

3.3.3. receive or have received any direct or indirect subsidy from any of them; or

3.3.4. have the same legal representative for purposes of this Bid; or

3.3.5. 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

3.3.6. Submit more than one bid in this bidding process.

3.4. A Bidder may be ineligible if –

3.4.1. he is declared bankrupt or, in the case of company or firm, insolvent;

3.4.2. 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;

3.4.3. the bidder is convicted, by a final judgment of a Court of Law or relevant Professional Statuary Body, of any offence involving professional conduct;

3.4.4. 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.

3.5. As and when required, 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.

3.6. 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”.

B. BIDDING DOCUMENTS

5. **Contents of Bidding Documents**

5.1. 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 7.1 include:

Section I -Invitation for Bids

Section II Instructions to Bidders (ITBs)

Section III Bid Data Sheet (BDS)

Section IV Eligible Countries

Section V Evaluation and Qualification Criteria

Section VI Works Requirements Technical Specifications & Schedule of Requirements

Section VII Standard Bidding Forms

Section VIII General Conditions of Contract (GCC)

Section IX Particular Conditions of Contract (PCC)

Section X Contract Forms

5.2. 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.

6. **Clarification of Bidding Document, Pre-bid Meeting**

6.1. A prospective bidder requiring any clarification of the bidding document may notify the Procuring agency/Employer through EPADS.

6.2. The Procuring agency/Employer shall respond to the request for clarification in accordance with Rule 31 of the Public Procurement Rules 2004.

6.3. Should the Procuring Agency deem it necessary to amend the BIDDING document as a result of a clarification, it shall do so following the procedure under ITB 7.

6.4. 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.

6.5. 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 uploaded on EPADS. 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 7. Non-attendance at the pre-bid meeting will not be a cause for disqualification of a bidder.

6.6. 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.

6.7. 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.

7. **Amendment of Bidding Documents**

7.1. The procuring agency may issue notification of any change, addition, modification or deletion in accordance with Rule 23 of the Public Procurement Rules 2004 i.e. Bidding Documents.

7.2. To give prospective bidders reasonable time in which to take an addendum/corrigendum into account in preparing their bids, the Procuring agency/Employer may, at its discretion, extend the deadline for the submission of bids:

Provided that the Procuring agency/Employer shall extend the deadline for submission of bid in pursuance of Rule 27 of the Public Procurement Rules 2004, i.e. Extension of time for submission of bids, if such an addendum is

issued within last three (03) days of the bid submission deadline.

C. PREPARATION OF BIDS

8. **Language of Bid**

8.1. 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.

9. **Documents Constituting the Bids**

9.1. The Bids prepared by the Bidder shall constitute of all the documents required in the BDS.

10. **Documents Establishing Eligibility of Material, Equipment and Works, their Conformity to Bidding Documents**

10.1. The bid prepared by the bidder shall constitute the following components: -

10.1.1. Documentary evidence established in accordance with ITB 10 that the material and equipment to be utilized by the Bidder for the executions of works are eligible material and equipment and conform to the Bidding Documents;

10.1.2. Documentary evidence established in accordance with ITB 11 that the bidder has been authorized to carry out the Construction works;

10.1.3. Documentary evidence established in accordance with ITB 11 that the bidder is eligible and/or qualified for the subject bidding process;

10.1.4. Form of Bid and Bid Prices completed in accordance with ITB 12 and 13;

10.1.5. Completed schedules as required, including priced Bill of Quantities in accordance with ITB 13.

10.1.6. Technical Proposal completed in all aspects in accordance with ITB-15.

10.1.7. Bid security or Bid Securing Declaration furnished in accordance with ITB 17;

10.1.8. Any other document required in the BDS.

10.2. 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.

10.3. 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.

10.4. 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:

10.4.1. a detailed description of the work methodology, approach, schedule and resources to be mobilized at site;

10.4.2. 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;

10.4.3. any other procurement specific documentation requirement as stated in the BDS.

10.5. 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.

11. **Documents Establishing Eligibility and Qualification of the Bidder**

11.1. 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.

11.2. 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".

11.3. 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:

11.3.1. 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.

11.3.2. 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.

11.3.3. That the bidder meets the qualification criteria listed in Section-V, Evaluation and Qualification Criteria and BDS.

12. **Forms of Bid**

12.1. The Bidder shall fill the Form of Bids furnished in the bidding documents. The Bids Form must be completed without any alterations to its format and no substitute shall be accepted.

13. **Bid Prices**

13.1. 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.

13.2. 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.

13.3. 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:

13.3.1. where there is only one (substantially) responsive bidder, or

13.3.2. 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.

13.4. The Bid price to be quoted in the Form of Bid in accordance with ITB 12 shall be the total price of the bid.

13.5. 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.

13.6. If so specified in ITB 1.1, bids may be invited for individual lots (contracts) or for any combination of lots (packages).

13.7. 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 27, unless otherwise price adjustment is permissible under Conditions of the Contract.

13.8. 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.

14. **Currencies of Bid and Payment**

14.1. Prices shall be quoted in Pakistani Rupees unless otherwise specified in the BDS. Comparison of bids and tie of bid shall be treated in accordance with the Rule 30(2) of Public Procurement Rules, 2004.

15. **Documents Comprising the Technical Proposal**

15.1. The bidder shall furnish a Technical Proposal including a statement of work methods, equipment, personnel, schedule and any other information as stipulated in Section VII – Standard Bid Forms, in sufficient detail to demonstrate the adequacy of the bidder's proposal to meet the work requirements and the completion time.

16. **Bid Validity Period**

16.1. 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.

16.2. Under exceptional circumstances, prior to the expiration of the initial Bids/Bid validity period, the Procuring Agency may request the Bidders' consent to an extension of the period of validity of their Bids/Bid. Such request for extension of the period of bid validity shall be carried out in accordance with Rule 26 of the Public Procurement Rules, 2004.

17. **Bid Security or Bid Securing Declaration**

17.1. Pursuant to ITB 11.1 unless otherwise specified in the BDS, the bidder shall furnish as part of its bid, a Bid Security in accordance with Rule 25 of the Public Procurement Rules, 2004 in the amount and currency specified in the BDS or Bid Securing Declaration as specified in the BDS in the format provided in Section VII (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.

Until the development of functionality of auto verification of financial instrument in EPADS, the scanned copy of bid security or bid securing declaration, as the case may be, shall be uploaded on E-PADS whereas the original instrument to be submitted to the procuring agency before closing of bid submission deadline,

17.2. 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:

17.2.1. 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;

17.2.2. A cashier's or certified cheque; or

17.2.3. Another security as indicated in the **BDS**.

17.3. 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 VII (Standard Bidding Forms) or another form approved by the Procuring agency/Employer prior to the bid submission.

17.4. The Bid Security shall be payable promptly upon written demand by the Procuring agency/Employer in case any of the conditions listed in ITB 17.9 are invoked.

17.5. Any bid not accompanied by a Bid Security or Bid Securing Declaration in accordance with ITB 17.1 or 17.3 shall be rejected by the Procuring agency/Employer and shall be declared as non-responsive bid, pursuant to ITB 27.

17.6. 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 16. 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:

17.6.1. The expiry of the Bid Security;

17.6.2. The entry into force of a procurement contract and the provision of a performance security (or guarantee), for the performance of the contract if such a security (or guarantee), is required by the Biding documents;

17.6.3. The rejection by the Procuring agency/Employer of all Bids;

17.6.4. The withdrawal of the bid prior to the deadline for the submission of bids, unless the biding documents stipulate that no such withdrawal is permitted.

17.7. The successful bidder's Bid Security will be discharged upon the bidder signing the contract pursuant to ITB 40, or furnishing the performance security (or guarantee), pursuant to ITB 41.

17.8. The Bid Security may be forfeited or the Bid Securing Declaration executed:

17.8.1. if a Bidder:

17.8.1.1. 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 16.2; or

17.8.2. In the case of a successful bidder, if the bidder fails:

17.8.2.1. to sign the contract in accordance with ITB 40; or

17.8.2.2. to furnish performance security (or guarantee) in accordance with ITB 41.

17.9. 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. In case the JV is not legally constituted at the time of bid submission, the bid security or bid securing declaration shall be in the names of all future members as named in the letter of bid.

18. **Withdrawal of Bids**

18.1. 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.

19. **Format and Signing of Bid**

19.1. The Bidder shall prepare and submit Bids through EPADS with due diligence after carefully reading all the terms and condition before bid submission deadline.

D. SUBMISSION OF BIDS

20. **Submission of Bids through EPADS v2.0**

20.1. All bids shall be submitted through EPADS v2.0.

21. **Deadline for Submission of Bids**

21.1. All bids shall be received through **EPADS v2.0** not later than bid submission deadline as specified in the **BDS**.

21.2. The Procuring agency/Employer may, under exceptional circumstances and at its discretion, extend the deadline for the submission of bids, pursuant to Rule 27 of the Public Procurement Rules, 2004. Extension of Time for submission of bid, by amending the Bidding Documents in accordance with ITB 7, 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.

22. **Substitution and Modification of bids**

22.1. 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.

22.2. Revised bid may be submitted after the substitution or modification made in the original bid in accordance with the provisions referred in **ITB 18** .

E. OPENING AND EVALUATION OF BIDS

23. **Opening of Bids**

23.1. The Procuring Agency will open bids in accordance with Rule 28 of the Public Procurement Rules, 2004 and as specified in the BDS.

24. **Confidentiality**

24.1. 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.

25. **Clarification of Bids**

25.1. Clarification of Bidding Documents shall be carried out in accordance with Rule 31 of the Public Procurement Rules, 2004.

25.2. 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:

25.2.1. evaluation & qualification criteria;

25.2.2. required scope of work;

25.2.3. contract price;

25.2.4. all securities requirements;

25.2.5. tax requirements;

25.2.6. terms and conditions of bidding documents.

25.2.7. change in the ranking of the bidder

26. **Preliminary Examination of Bids**

26.1. Prior to the detailed evaluation of bids, the Procuring agency/Employer will determine whether each bid:

26.1.1. meets the eligibility criteria defined in **ITB 3** and **ITB 4**;

26.1.2. has been prepared as per the format and contents defined by the Procuring agency/Employer in the bidding documents;

26.1.3. has been properly signed;

26.1.4. is accompanied by the required securities; and

26.1.5. 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.

26.2. 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: -

26.2.1. affects in any substantial way the scope, quality, or performance of the Works;

26.2.2. limits in any substantial way, inconsistent with the bidding documents, the Procuring agency/Employer's rights or the bidders' obligations under the Contract; or

26.2.3. if rectified, would affect unfairly the competitive position of other bidders presenting substantially responsive bids.

26.3. The Procuring agency/Employer will confirm that the documents and information specified under ITB 9, 10 and 11 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.

26.4. The Procuring agency/Employer may waive-off any minor informality, nonconformity, or irregularity in a bid which does not constitute a material deviation, provided such waiver does not prejudice or affect the relative ranking of any Bidder.

Explanation: A minor informality, non-conformity or irregularity is one that is merely a matter of form and not of substance. It also pertains to some immaterial defect in a Bid or variation of a bid from the exact requirements of the invitation that can be corrected or waived without being prejudicial to other bidders. The defect or variation is immaterial when the effect on quantity, quality, or delivery is negligible when contrasted with the total cost or scope of the works. The Procuring agency/Employer either shall give the bidder an opportunity to cure any deficiency resulting from a minor

informality or irregularity in a bid or waive the deficiency, whichever is advantageous to the Procuring agency/Employer. Examples of minor informalities or irregularities include failure of a bidder to –

26.4.1. *Submit the number of copies of signed bids required by the invitation;*

26.4.2. *Furnish required information concerning the number of its employees;*

26.4.3. *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.*

26.5. 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.

26.6. 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.

26.7. 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.

27. **Examination of Terms and Conditions; Technical Evaluation**

27.1. The Procuring agency/Employer shall examine the bid to confirm that all terms and conditions specified in the **GCC** and the **PCC** 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.

27.2. The Procuring agency/Employer shall evaluate the technical aspects of the bid submitted in accordance with ITB 30, to confirm that all requirements specified in Section VI – Works Requirement, Technical Specifications of the Bidding Documents have been met without material deviation or reservation.

27.3. 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 27, it shall reject the bid.

28. **Correction of Arithmetic Errors**

28.1. Bids determined to be substantially responsive will be checked for any arithmetic errors. Errors will be corrected as follows: -

28.1.1. 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;

28.1.2. 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

28.1.3. where there is a discrepancy between the amounts in figures and in words, the amount in words will govern.

28.1.4. 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.

28.2. 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 41.3**.

29. **Conversion to Single Currency**

29.1. 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. Comparison of bids quoted in different currencies and conversion of bids into a single currency shall be carried out in accordance with Rule 30(2) of the Public Procurement Rules, 2004**.**

30. **Evaluation of Bids**

30.1. The Procuring agency/Employer shall evaluate and compare only the bids determined to be substantially responsive, pursuant to **ITB 27**.

30.2. 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.

30.3. The Procuring agency/Employer's evaluation of a bid will take into account:

30.3.1. 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;

30.3.2. converting the amount resulting from applying above, if relevant, to a single currency in accordance with ITB 29;

30.4. 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.

30.5. 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**.

30.6. If the bid, which results in the Evaluated Bid Price (Successful Bid), is seriously unbalanced or front loaded in the opinion of the Employer, the Employer may require the Bidder to produce detailed price analyses for any or all items of the Bill of Quantities, to demonstrate the internal consistency of those prices with the construction methods and schedule proposed. After evaluation of the price analyses, taking into consideration the schedule of estimated Contract payments, the Employer may require that the amount of the performance security be increased at the expense of the Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract.

Explanation:

"Unbalanced" or "front-loaded" bids consist of deliberately submitting bids with artificially high prices or unit rates for the early stages of a construction project, offset by artificially low prices or unit rates for the later stages of the project, to improve the contractor's cash flow.

31. **Domestic Preference**

31.1. 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.

32. **Determination of Successful Bid**

32.1. The Procuring agency/Employer shall compare the evaluated bids in accordance with the predefined bidding procedure, of all substantially responsive bids to determine the Successful bidder.

33. **Qualification of Bidder**

33.1. The Procuring agency/Employer shall determine to its satisfaction whether the bidder is substantially responsive and whose bid is declared as Successful bid either continues to meet (if prequalification applies) or meets (if post-qualification applies) the qualifying criteria specified in Evaluation and Qualification Criteria.
Note: In case of international bidding, the parameters for incorporation or licensing within Pakistan may be fulfilled as part of post qualification.

33.2. The determination shall be based upon an examination of the documentary evidence of the bidder’s qualifications submitted by the bidder, pursuant to **ITB 11**.

33.3. 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.

34. **Sub-Contractors**

34.1. 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.

34.2. Bidders may propose sub-contracting up to the percentage of total value of contracts or the volume of works as specified in the **BDS**.

35. **Abnormally Low Financial Bid**

35.1. A procuring Agency may reject abnormally low bids. 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. Moreover, the Procuring agency/Employer shall not incur any liability solely by rejecting abnormally bid

Guidance for Procuring agency/Employer:

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. In order to identify the Abnormally Low Bid (ALB) following approaches can be considered to minimize the scope of subjectivity:

35.1.1. Comparing the bid price with the cost estimate;

35.1.2. Comparing the bid price with the bids offered by other bidders submitting substantially responsive bids; and

35.1.3. Comparing the bid price with prices paid in similar contracts in the recent past either government- or development partner-funded.

35.2. The Procuring agency/Employer will determine to its satisfaction whether the bidder that is selected as having submitted the successful bid is qualified to perform the contract satisfactorily, in accordance with the criteria listed in **ITB 11**

35.3. 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 11**, 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.

35.4. Procuring agency/Employer may seek “Certificate for Independent Price Determination” from the bidder and the results of reference checks may be used in determining award of contract.

Explanation: The Certificate shall be furnished by the bidder. The bidder shall certify that the price is determined keeping in view of all the essential aspects such as raw material, its processing, value addition, optimization of resources due to economy of scale, transportation, insurance and margin of profit etc.

35.5. 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

36. **Criteria of Award**

36.1. 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 Successful Bidder, provided that such bidder has been determined to be:

36.1.1. eligible in accordance with the provisions of **ITB 3**;

36.1.2. is determined to be qualified to perform the Contract satisfactorily; and

36.1.3. Successful negotiations have been concluded, if any.

37. **Negotiations**

37.1. The Committee of the Procuring agency/Employer may negotiate with the Most Advantageous Bidder relating to the following areas:

37.1.1. a minor alteration to the technical (drawings, design technical specifications) details of the statement of works;

37.1.2. Methodology, work plan, staffing in view to streamline the work;

37.1.3. a minor amendment to the Particular conditions of Contract;

37.1.4. finalizing payment arrangements;

37.1.5. clarifying details that were not apparent or could not be finalized at the time of Bidding;

37.2. 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.

38. **Procuring agency's Right to reject All Bids**

38.1. The procuring agency has the right to reject all bids in accordance with Rule 33 of the Public Procurement Rules, 2004. However, the Authority (i.e. **PPRA**) may call from the Procuring agency/Employer the justification of those grounds.

39. **Notification of Award**

39.1. The procuring agency shall announce and publish the evaluation result in accordance with Rule 35 of the Public Procurement Rules, 2004.

39.2. 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 through EPADS. However, the Procuring agency/Employer shall not award any procurement contract at least for five (05) days after the announcement of final evaluation report. 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).

39.3. 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 41** and signing of the contract in accordance with **ITB 40**.

39.4. Upon the successful bidder's furnishing of the performance security (or guarantee) pursuant to **ITB 41**, 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 17**.

40. **Signing of Contract**

40.1. 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.

40.2. 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.

40.3. Where no formal signing of a contract is required, work order issued to the bidder shall be construed to be the contract.

41. **Performance Security (or Guarantee)**

41.1. 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 PCC, denominated in the type and proportions of currencies in the Letter of Acceptance and in accordance with the Conditions of Contract.

41.2. 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:

41.2.1. certified cheque, cashier's or manager's cheque, or bank draft;

41.2.2. 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;

41.2.3. bank guarantee confirmed by a reputable local bank or, in the case of a successful foreign bidder, bonded by a foreign bank; or

41.2.4. surety bond callable upon demand issued by any reputable surety or insurance company.
Any Performance Guarantee submitted shall be enforceable in Pakistan.

41.3. Failure of the Most Advantageous Bidder to comply with the requirement of **ITB 40** 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).

42. **Advance Payment**

42.1. 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.

42.2. 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 **PCC**.

43. **General Performance of the Bidders**

43.1. 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.

44. **Corrupt & Fraudulent Practices**

44.1. 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

45. **Grievance Redressal**

45.1. Grievance Redressal shall be carried out in accordance with Rule 48 of the Public Procurement Rules, 2004 i.e. Redressal of grievances by the procuring agency and “Redressal of Grievances Regulations 2021”.

H. MECHANISM OF BLACKLISTING

46. **Mechanism of Blacklisting**

46.1. The Procuring agency/Employer shall proceed Blacklisting of Bidders/Contractors in accordance with Rule 19 of the Public Procurement Rules, 2004 i.e. Blacklisting and “Blacklisting and Debarment of Bidders or Contractors Regulations 2024.

Bid Data Sheet

Bids Data Sheet (BDS)

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

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:**National Institute of Intelligence and Security Studies (NIISS) (National Institute of Intelligence and Security Studies (NIISS))** The subject of procurement is:**CIVIL WORKS COMPONENT OF THE PSDP PROJECT ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD (on GtoG basis)** Expected commencement date: **Monday, November 2, 2026**
2.	2.1	Financial year for the operations of the Procuring Agency:**2026-27** Name and identification number of the Contract: **P116962**
3.	3.1	JV/Consortium or AssociationAllowed: **No** Number of JV/Consortium Members: **Nil**

B. Bidding Documents

4.	**6.2 & 6.4**	The Bidders may seek clarifications through **EPADS v2.0**: Clarification Date: Monday, September 28, 2026 Pre-Bid Meeting: Thursday, September 24, 2026 11:00 AM Venue: 2nd Floor, Services Block, NIISS Building, Quaid-i-Azam University, Islamabad.
5.	**7.2**	Any addendum, in case issued, shall be published on **National Institute of Intelligence and Security Studies (NIISS) (National Institute of Intelligence and Security Studies (NIISS))** website and on **EPADS v2.0**.

C. Preparation of Bids

6.	**8.1**	List of documents required along with the bid: 1. Certificate of State Owned Entity Public Limited.
7.	**9.1**	The qualification criteria to establish the supply / production capability of the bidder. *see Eligibility Criteria*
8.	**11.2**	**Works and Their relateddocuments:** *See section Required Scope of Work*

9.	**11.1**	Price schedule will be provided according to the format defined and acquired. *see section price schedule.*
10.	**11.4**	**Specifications:** *see section of specifications.*
11.	**11.5 & 13.5**	The price shall be **Fixed**. The bid price shall be adjusted in accordance with Appendix provided – Formula for Price Adjustment.
12.	**14.1**	Currency of the Bids shall be : **PKR**
13.	**16.1**	The Bids/Bid Validity period shall be: **120 Days**
14.	**17.1**	The amount of Bid Security shall be as defined in Bid Security Section for items and lots given in **BDS 6**
15.	**17.2**	The Bid Security shall be in the form of:
16.	**15.1**	Alternative Bids to the requirements of the bidding documents willnot be permitted.

D. Submission of Bids

17.	**18.1 & 21.1**	Bid shall be submitted online on EPADS v2.0 whereas hard copy of the bid security should be submitted to the following; **NIISS, Quaid-i-Azam University, Islamabad Capital Territory** Bids that are not submitted on EPADS v2.0 shall be disqualified. The deadline for Bids submission is: **Monday, October 5, 2026 01:30 PM**
E. Opening and Evaluation of Bids		
18.	**24.1**	The Bids opening shall take place on **EPADS v2.0**. Day *: **Monday*** Date:***October 05, 2026*** Time *: **02:00 PM***
19.	**30.2**	Selection technique adopted will be: **Least Cost Based Selection (LCBS)** *see Evaluation Criteria*
F. Award of Contract		
20.	**41.1 & 41.2**	The Performance guarantee shall: **10.00%**. The Performance Guarantee shall be acceptable in the form of:**Pay Order, Banker's Cheque, Call at Deposit, Bank Guarantee, Demand Draft**

21.	**45.1**	Arbitrator shall be appointed by mutual consent of the both parties.
G. Review of Procurement Decisions		
22.	**37**	Grievance against this procurement shall be submitted online on EPADS v2.0.

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Eligibility Criteria

Bidder's Type	Required Registration
Any	NADRA CITIZENSHIP (CNIC/NICOP) FBR (NTN) FBR (GSTN) PEC

Eligibility Criteria	Document
An affidavit to the effect of not being debarred / blacklisted by any organisation / department, prepared within the current month of submission of Bids	Yes
Information on any litigation or arbitration resulting from contracts completed or under execution by the Bidder. In case, the firm has never been involved in litigation, an affidavit to such effect should be provided.	Yes
On Active Tax Payer’s List at the time of submission of Bid.	Yes

Evaluation Criteria

Least Cost Based Selection (LCBS)

Weightage

Technical Evaluation %
100

Technical Marks	100
Passing Marks	**50**
Experience as constructor in execution of Building Works Projects completed during last ten (10) years.	
a. 12 marks will be awarded for each completed project having project cost ≥ Rs. 1000M up to maximum of 24 marks. b. 08 marks will be awarded for each completed project having project cost from Rs. 800M to Rs. 999.99M up to maximum of 24 marks. c. 06 marks will be awarded for each completed project having project cost from Rs. 600M to 799.99M up to maximum of 24 marks. d. No marks will be awarded for project having project cost < Rs. 600M. (Qualitative)(Doc Required)	24
Experience as constructor for ongoing/in-hand Building Works Projects.	
a. 08 marks will be awarded for each in-hand project having project cost ≥ Rs. 1000M up to maximum of 16 marks. b. 06 marks will be awarded for each in-hand project having project cost from Rs. 800M to Rs. 999.99M up to maximum of 16 marks. c. 04 marks will be awarded for each in-hand project having project cost from Rs. 600M to Rs. 799.99M up to maximum of 16 marks. d. No marks will be awarded for project having project cost < Rs. 600M. (Qualitative)(Doc Required)	16

Personnel Capabilities:	
Project Manager / Construction Manager (B.Sc. Civil Engineer registered with Pakistan Engineering Council) (Qualitative)(Doc Required)	5
Site Engineer (B.Sc. Civil Engineer registered with Pakistan Engineering Council) (Qualitative)(Doc Required)	3
Associate Engineer B-Tech / DAE Civil (Qualitative)(Doc Required)	2
Associate Engineer B-Tech / DAE (E/M) (Qualitative)(Doc Required)	2
Quantity Surveyor B-Tech / DAE Civil (Qualitative)(Doc Required)	2
Surveyor Survey Certificate (Qualitative)(Doc Required)	1
Equipment Capabilities	
Batching Plant Minimum Required : 1 No. (Qualitative)(Doc Required)	3
Concrete Pump Minimum Required: 1 No. (Qualitative)(Doc Required)	1
Transit Mixer Minimum Required : 3 No. (Qualitative)(Doc Required)	2
Tower Crane Minimum Required 1 No. (Qualitative)(Doc Required)	2
Concrete Mixer Machine Minimum Required : 2 Nos. (Qualitative)(Doc Required)	1
Excavator Minimum Required : 2 No. (Qualitative)(Doc Required)	1
Dewatering Pump (3HP) Minimum Required : 1 No. (Qualitative)(Doc Required)	1
Scaffolding Minimum Required : 50,000 Rft (Qualitative)(Doc Required)	1
Shuttering Minimum Required : 30,000 Sft (Qualitative)(Doc Required)	1
Tractor Trolley Minimum Required : 3 Nos. Steel Cutting / Bending Machine Minimum Required : 2 Nos. (Qualitative)(Doc Required)	1

Generator Set (100 KVA) Minimum Required : 2 Nos. Total Station Minimum Required : 1 Nos. (Qualitative)(Doc Required)	1
Financial Capabilities	
Annual Turn Over (Qualitative)(Doc Required) Above Rs. 1000 million **(15)** Rs. 800 million to Rs. 1000 million **(8)**	15
Liquid Assets / Bank Line of Credit (Qualitative)(Doc Required) Above Rs. 150 million **(15)** Rs. 100 million to Rs. 150 million **(8)**	15

Jobs/Lots

Lot Title : Civil Works Components of PSDP Project NIISS

Bid Security : 12000000 PKR

Job	Delivery Schedule	Quantity
Academic Block of NIISS	**Address:** NIISS, Quaid-i-Azam University, Islamabad Capital Territory **Schedule:** 27 Days **Quantity:** 1/sqft	1/sqft
External Developments works	**Address:** NIISS, Quaid-i-Azam University, Islamabad Capital Territory **Schedule:** 910 Days **Quantity:** 1/Qty	1/Qty

Related Services :

Yes

Civil Works Components of PSDP Project NIISS

Job	Related Services
Academic Block of NIISS	The Bidder will pay all the utility bills of the services.
External Developments works	The Bidder will pay all the utility bills of the services.

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Work Specifications and Market Rates

Lot Title: Civil Works Components of PSDP Project NIISS

Specifications / Requirements:

Sr. No	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1		GENERAL NOTE.					
2		SCOPE : (Applicable to all sections)					
3		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.					
4		Reference Schedule= Pak PWD Schedule 2022					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
5	A)	ACADEMIC BLOCK (ST)					
6	A-1)	CIVIL WORKS					
7		PART-I (SCHEDULE ITEMS)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
8	(103-1)	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	54514.00	1624.63		885650.80
9	(103-28)	5'-00" to 8'-00" Depth	%Cft	2726.00	1862.13		50761.66

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
10	(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	54514.00	1862.13		1015121.55
11	(103-28)	5'-00" to 8'-00" Depth	%Cft	2726.00	2099.63		57235.91

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
12	(103-41)	Structure excavation in Cornman Material by mechanical means and dispose of surplus excavated material upto 10 mile leed complete as ll per direction of Engineer incharge.	100Cft	254100	1078.09		2739426.69
13	(104-1)	Filling excavated earth available at site in foundation, plinth or under floor, etc. including breaking clods, dressing, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction complete within a lead of one chain (30.5 R.m) and lift of 5 feet (1.52m).	100Cft	5500.00	735.19		40435.45

PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
14	(104-9)	Supplying stacking and filling sand of approved quality from outside sources in foundation, trenches, plinth or under floor, etc. including dressing, watering and consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction and lift upto 5 feet (1 .52 m).	100Cft	2500.00	4869.94		121748.50
15	(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	100Cft	5204.00	24504.59		1275218.86

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
16	(108-12)	Providing one coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	100Sft	131368.00	1010.75		1327802.06
17	(109-113) + (109-120)	Providing and laying 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge in steps including cost of form work and its removal etc. complete in ground floor.	100Cft	340.00	29075.48		98856.63

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
18	(112-02)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:6 in straight or curved walls of 9" to 13-1/2" thick including scaffolding , racking out joints and curing etc.complete in foundation ,basements and plinth (foundation and basement masonry upto 5 feet or 1.52 M. depth and plinth upto 4 feet or 1.2 M.height from ground level)	%Cft	1538	38582.85		593404.23

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
19	(112-03) + (112-79)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:4 in straight or curved wall 4-1/2 inches (114 mm) or less thickness including scaffolding, raking out joints and curing etc, complete in foundation, basement and plinth (foundation and basement masonry upto 5 (1.52 Ru.m.) feet depth and plinth upto 4 feet (1.2 Ru.m.) height from ground level) .	%Cft	350	43334.68		151671.38

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
20	(112-25) + (112-76)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:5 in straight or curved walls 9 to 13-1/2 inches (229 mm to 343 mm) thick including scaffolding, raking, out joints and curing etc. complete in ground floor superstructure .	%Cft	18,745	41,824.42		7839987.53
21	(112-25) + (112-70) + (112-76)	First Floor	%Cft	17,020	44,165.51		7516969.80
22	(112-25) + (112-70) + (112-71) + (112-76)	Second Floor	%Cft	471	46,019.01		216749.54

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
23	(112-26) + (112-79)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:4 in straight or curved walls 4-1/2 inches and less thickness including scaffolding , racking out joints and curing etc.complete in ground floors super-structure .	%Cft	1,095	45,506.55		498296.72
24	(112-26) + (112-70) + (112-79)	First Floor	%Cft	906	47,847.64		433499.62
25	(112-144)	Providing and laying wall ties of mild steel flats of approved section and design placed at horizontal and vertical spacing in cavity wall of any description in any floor at any height..	Kg	850	424.07		360459.50

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
26	(114-1) + (114-134) + (114-137) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in column footing of required shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	%Cft	3,984	42,168.16		1679979.49

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
27	(114-2) + (114-134) + (114-137) + (114-146)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	%Cft	35,030	42,168.16		14771506.45

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
28	(114-4) + (114-134) + (114-137) + (114-161) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in columns of square or rectangular shape of regular section including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth.	%Cft	4,124	51,173.41		2110391.43

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
29	(114-8) + (114-134) + (114-137) + (114-163) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 Ibs per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in plinth beams of required shape and design including M.S Plates form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	%Cft	6,433	61,457.75		3953577.06

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
30	(114-24) + (114-134) + (114-137) + (114-161) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in columns of square or rectangular shape of regular section including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. but excluding the cost of reinforcement, in ground floor.	%Cft	6,652	61,951.46		4121011.12

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
31	(114-24) + (114-134) + (114-137) + (114-92) + (114-161) + (114-146)	First Floor	%Cft	6,613	64,762.92		4282771.90
32	(114-24) + (114-134) + (114-137) + (114-92) + (114-93) + (114-161) + (114-146)	Second Floor	%Cft	538	66,973.51		360317.48

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
33	(114-32) + (114-134) + (114-137) + (114-92) + (114-162) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight walls vertical fins etc. 3 inches (70 mm) and less than 5 inches (127 mm) thick including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in First Floor	%Cft	80	89,192.95		71354.36

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
34	(114-32) + (114-134) + (114-137) + (114-92) + (114-93) + (114-162) + (114-146)	Second Floor	%Cft	1,690	91,403.54		1544719.83

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
35	(114-32) + (114-134) + (114-137) + (114-92) + (114-93) + (114-162) + (114-146)	Third Floor	%Cft	72	93,614.13		67402.17

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
36	(114-30) + (114-134) + (114-137) + (114-92) + (114-93) + (114-162) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight walls vertical fins more than 6 inches (152 mm)) thick including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in G. Floor	%Cft	350	62,403.55		218412.43

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
37	(114-30) + (114-134) + (114-137) + (114-92) + (114-93) + (114-162) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight walls vertical fins more than 6 inches (152 mm)) thick including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in First Floor	%Cft	285	65,215.01		185862.78

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
38	(114-30) + (114-134) + (114-137) + (114-92) + (114-93) + (114-162) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight walls vertical fins more than 6 inches (152 mm)) thick including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in First Floor	%Cft	1,403	67,425.60		945981.17

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
39	(114-38) + (114-134) + (114-137) + (114-163) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight beams, lintels cantilever beams of required shape or section including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement and ground floor.	%Cft	4,460	68,415.37		3051325.50

PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
40	(114-38) + (114-134) + (114-137) + (114-92) + (114-163) + (114-146)	First Floor	%Cft	4,738	71,226.83		3374727.21
41	(114-38) + (114-134) + (114-137) + (114-92) + (114-93) + (114-163) + (114-146)	Second Floor	%Cft	386	73,437.42		283468.44

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
42	(114-50) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight stairs and landing of required section including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor.	100Cft	681.00	61558.17		419211.14
43	(114-50) + (114-134) + (114-137) + (114-92)	First Floor	100Cft	1464.00	64369.63		942371.38

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
44	(114-56) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in ordinary slab 5 inches to 6 inches (152 mm) thick including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor.	100Cft	14242.00	49314.91		7023429.48
45	(114-56) + (114-134) + (114-137) + (114-92)	First Floor	100Cft	15200.00	52126.37		7923208.24

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
46	(114-56) + (114-134) + (114-137) + (114-93)	Second Floor	100Cft	275.00	54336.96		149426.64

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
47	(114-55)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 2250 lbs. per sq inch (15.52 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 3 inches (76 mm) to less than 5" (127 mm) thick including form work and its removal compacting and curing etc, complete but excluding the cost of reinforcement, in basement plinth and ground floor.	100Cft	150.00	50801.07		76201.61
48	(114-55) + (114-92)	First Floor	100Cft	150.00	53612.53		80418.80

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
49	(114-57) + (114-134) + (114-137) + (114-92) + (114-93) + (114-164) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in ordinary slab more than 6 inches (152 mm) thick including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in Second floor.	%Cft	834	68,046.29		567506.06

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
50	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	210700.00	282.45		59512215.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
51	(114-166) + (114-174)	First Floor	Kg	75893.00	286.89		21772942.77
52	(114-166) + (114-174) + (114-175)	Second Floor	Kg	11202.00	291.33		3263478.66
53	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	62900.00	266.70		16775430.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
54	(114-167) + (114-174)	First Floor	Kg	51082.00	271.14		13850373.48
55	(114-167) + (114-174) + (114-175)	Second Floor	Kg	6607.00	275.58		1820757.06

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
56	(116-37) + (116-55)	Providing and laying 1st class burnt clay tiles of 9" X 4-1/2" X 1-1/2" size grouted with 1:3 cement mortar over 4" thick (avg) puddled earth compacted and smooth finished to slope mixed with bhoosa at the rate of one seer of bhoosa for one cft. of puddled earth in first floor including flush pointing on tiles works with 1:3 cement mortar and curing complete.	%Sft	31,228	15,500.25		4840418.07
57	(116-37) + 2x(116-55)	Second Floor	%Sft	473	15,622.75		73895.61

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
58	(117-2)	Providing and laying 1:4:8 cement concrete bed under floor using graded stone ballast 1"(25mm) and down gauge with leveling and ramming, ramming, watering and curing etc. complete in ground floor.	100Cft	10371.00	22036.75		2285431.34
59	(117-13) + (117-18) + (114-136) + (114-145)	Providing and laying terrazzo floor 1-3/4 inches (44 mm) thick consisting of 3/4 inch (19 mm) thick topping 1:2 (1 white cement 2 approved marble chips No. 0 to 6) in ground floor over a base of 1:2:4 (one cement, two sand and four graded crushed) cement concrete 1 inch (25 mm) thick laid in panels or pattern including form work, curing, cutting, rubbing and polishing etc, complete...	%Sft	420	15918.02		66855.68

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
60	(117-13) + (117-18) + (114-136) + (114-145) + (117-25)	First Floor	%Sft.	420	16159.98		67871.92

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
61	(117-39) + (117-76)	Providing and laying floor of 3/4 inch (19 mm) thick marble tiles more than 3 Sq.ft. upto 5 Sq.ft- (more than 0.28 Sq.m upto 0.46 Sq.m) size fine dressed on the surface, without winding in ground floor over 1 inch (25 mm) cement mortar 1:4 (one cement, four sand) setting the marble tiles with grey cement slurry over lime mortar, jointing and washing the tiles with white cement slurry including curing, rubbing and polishing etc. complete including the cost of mortar.	100Sft.	12142.00	48884.00		5935495.28
62	(117-39) + (117-76) + (117-79)	First Floor	100Sft.	7467.00	49477.75		3694503.59

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
63	(117-58) + (117-77)	Providing and laying stairs / steps (in treads, rises and mid stair landing) floor of 1 inch (25 mm) thick white marble tiles more than 3 Sq.ft. upto 5 Sq.ft- (more than 0.28 Sq.m upto 0.46 Sq.m) size fine dressed on the surface, without winding in ground floor over 1 inch (25 mm) cement mortar 1:4 setting the marble tiles with grey cement slurry over lime mortar, jointing and washing the tiles with white cement slurry including curing, rubbing and polishing etc. complete including the cost of mortar.	100Sft.	1311.00	81539.13		1068977.99
64	(117-75)	Extra for making nosing of treads as per design and instructions of the Engineer-in-Charge ..	Rft	566.00	131.25		74287.50

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
65	(117-117)	Proving and laying floor 1 inch (25 mm) thick of cement tiles 12" X 12" X 1" (1/2 inch toping 1/2 inch base) or 305 mm X 305 mm X 25 mm (13 mm topping 12 mm base) in grey cement with pigment of dark shade in ground floor over 1 inch (25 mm) lime mortar 1:2 (one lime two sand) including setting the tiles with grey cement slurry over lime mortar, jointing and washing the tiles with grey cement slurry including grinding, rubbing, polishing and curing etc. complete including the cost of mortar .	100Sft.	3252.00	19654.80		639174.10

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
66	(117-166)	Providing and fixing with iron screws best quality imported teak wood 2 inches (51 mm) thick planeding of required width for flooring rebated or tongued and grooved on wooden frame in any floor including necessary Jointing etc. complete but excluding the cost of frame .	Sft	2,590	3,764.75		9750702.50

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
67	(117-180)	Providing & laying light colour, glazed/ non skid vitrified porcelain tiles (polished) exceeding 1600 Sqcm and upto 3600 Sqcm each, (Pak made) on walls & floors, in any floor, laid with dry bond (stile bond) over a base of 1" thick cement mortar (1:3) including jointing to tiles with joint filler of approved quality as per direction of the Engineer incharge.	%Sft.	18,773	40,610.74		7623854.22

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
68	(117-181)	Providing & laying light colour, glazed/ non skid vitrified porcelain tiles (polished) exceeding 3600 Sqcm each, (Pak made) on walls & floors, in any floor, laid with dry bond (stile bond) over a base of 1" thick cement mortar (1:3) including jointing to tiles with joint filler of approved quality as per direction of the Engineer incharge.	%Sft.	29,617	49,798.24		14748744.74

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
69	(118-15) + (118-21)	Providing and fixing 1/2 inch (13 mm) thick white marble tiles above 36 Sq. inches upto 144 Sq. inches (232 Sq.cm upto 928 Sq.cm) size fine dressed on the surface without windings in dado and skirting and facing etc. in ground floor over 1/2 inch (13 mm) thick base of cement mortar 1:3 setting of tiles in slurry of grey cement over mortar base including filling the joints and washing the tiles with white cement slurry curing, finishing, cleaning and polishing etc. in internal work complete..	100Sft.	471.00	33112.00		155957.52
70	(118-15) + (118-21) + (118-28)	First Floor	100Sft.	375.00	34002.63		127509.86

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
71	(119-5)	Providing and fixing single leaf steel doors made to crittal or equivalent standard and of approved sections fully panelled with M. S. Sheet of 16 gauge painted with two coats of red oxide paint including using approved brass section oxidized fitting iron lugs, cutting holes and making good damages to walls etc. complete as required in any floor.	Sft.	118.00	933.84		110193.12

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
72	(119-32)	Providing and fixing iron grills with required section of angle iron and MS square bar as per approved design including welding all sides of the section at the junction, and fixing with sunk iron screws, painting two coats of red oxide paint etc. complete as required in any floor in masonry or concrete work.	Kg.	4374.00	290.89		1272352.86

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
73	(119-45)	Providing and fixing M.S. moulded steel door frames of 5.73" x 2-1/2" (146 mm x 63 mm) manufactured from mild steel sheet of 18 gauge (1.41 mm) conforming to B.S.S. 1245 having a double rebate size i1/2" x 1/2" (38 mm x 12 mm) provision of .3. Nos. M.S. plate, section 1-1 /2" x 114" (38 mm x 6 mm) (2 Nos. 6 inch long welded with frame at not less than 1 O points and 1 Nos. 12 inch long welded with frame at not less than 20 points), with holes and threads for fixing steel hings, fitted with one locking box of same sheet (point welded inside the frame), 6 Nos. 6 inches long flat iron fixing lugs of 1-1 /4" x 3/16" section, treated with special red oxide primer coat all around including cutting holes and filling the cavity	Rft	1141	469.80		536041.80

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
74	(119-45)	Providing and fixing M.S. moulded steel door frames of 10" x 2-1/2" manufactured from mild steel sheet of 18 gauge conforming to B.S.S. 1245 having a single/double rebate size 1-1/2" x 1/2" (38 mm x 12 mm) provision of 3 Nos. M.S. plate, section 1-1/2" x 1/4" (38 mm x 6 mm) (2 Nos. 6 inch long welded with frame at not less than 10 points and 1 Nos. 12 inch long welded with frame at not less than 20 points), with holes and threads for fixing steel hinges, fitted with one locking box of same sheet (point welded inside the frame), 6 Nos. 6 inches long flat iron fixing lugs of 1-1/4" x 3/16" section, treated with special red oxide primer coat all around including cutting holes and filling the cavity with cement concrete 1 :2:4	Rft	1443	693.86		1001239.98

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
75	(119-61)	Providing and fixing fully glazed Bronze anodized or Powder Coated aluminum fixed windows partition as per British standard manufactured by Lucky, Prime, Chawla, Krudson and Pakistan Cables. (fixing through their approved fabricators), Deluxe model box section 101.76mm x 44.5mm and 2mm thick including the cost of aluminum fitting, with all accessories cutting hole etc. and making good damages to walls etc. complete as required in any floor as per direction of engineer-in-charge, but excluding the cost of glass pans.	Sft	110	847.22		93194.20

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
76	(119-91)	Providing and fixing fully glazed Bronze anodized or powder coated aluminium Swing door with frame as per British standard manufactured by Lucky, Prime, Chawla, Krudson, and Pakistan cable. (fixing through their approved fabricators) deluxe model section, 101.6mm x 44.5mm and 2mm thick including the aluminium fittings, with all accessories cutting hole etc. and making good damages to walls etc. complete as required in any floor as per direction of engineer-in-charge, but excluding the cost of glass pans.	Sft	1451	2078.13		3015366.63

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
77	(119-97)	Providing and fixing fully glazed Bronze anodized or Powder Coated aluminum Sliding windows as per British standard manufactured by Lucky, Prime, Chawla, Krudson and Pakistan Cables. (fixing through their approved fabricators), prime model box section 101mm x 30mm and 2mm thick including the cost of aluminum netting ,fitting, with all accessories cutting hole etc. and making good damages to walls etc. complete as required in any floor as per direction of engineer-in-charge, but excluding the cost of glass pans.	Sft	3,970	1,367.19		5427744.30

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
78	(119-121)	Providing and fixing Tinted glass panes 5mm thick to M.S. Box pipe / Aluminium doors, windows and ventilators etc including the cost of labour but excluding the cost of M.S. square pipe beading, rubber packing and screw in any floor at any height.	Sft	5,531	371.82		2056536.42
79	(120-2)	Providing and fixing best quality deodar frames for doors. windows, ventilators, clerestory windows, shelves, partitions, trellis work, etc., as required .	Cft	30.00	12731.98		381959.40

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
80	(120-21)	Providing and fixing 1-3/4 inch (44 mm) thick best quality deodar wood shutters fully panelled with same wood, approved iron hinges and tower bolts, etc., as required...	Sft	2.00	1759.61		3519.22

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
81	(120-64)	Providing and fixing 1-1/2 inches (38 mm) thick solid core deodar wood flushed veneered door shutters, with and including the cost of commercial plywood facing 3 mm. thick (3 ply) on both faces, fixed over best quality deodar wood frame 2 inches wide alround 6 inches wide lock rail and 2nd class deodar wood solid core, i/c., 1/4 inch thick best quality deodar wood lipping on al! sides as per approved drawing, manufactured under power driven hydraulic press, including the cost of approved iron fittings but excluding the cost of handles and locking arrangement.	Sft	3400.00	1448.56		4925104.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
82	(120-236)	Providing and fixing on frames etc., with sunken iron screws best quality deodar wood moulding beading, architrave etc., of approved design up-to one square inch (6.45 Sqm) in cross section as required .	Rft	2584.00	193.35		499616.40
83	(121-70)	Providing and fixing with brass screws or specially supplied screws hydraulic door closer Rayobi or approved design No. 72, Japan make, cutting wood etc., to required shape and size as per direction of engineer-in-charge .	Each	14.00	9331.25		130637.50

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
84	(121-84)	Providing and fixing with brass screws door Alpha lock with handle of approved design (Taiwian make), cutting wood etc., to required shape and size with two operating keys as per direction of the Engineer-in-Charge.	Each	65.00	3149.38		204709.70
85	(122-2)	1/4" thick cement plaster 1:4 on soffits of ceiling cantilever slabs sides and soffits of beams etc. in basement mezzanine and ground floor including making edges corners and curing etc. complete.	100Sft	25313.00	3852.59		975206.11
86	(122-2) + (122-87)	First Floor	100Sft	29501.00	4160.09		1227268.15

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
87	(122-2) + (122-87) + (122-90)	Second Floor	100Sft	400.00	4396.34		17585.36
88	(122-4)	1/2" (13 mm) thick cement plaster 1:4 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete .	100Sft	64149.00	4381.84		2810906.54
89	(122-4) + (122-87)	First Floor	100Sft	44005.00	4689.34		2063544.07
90	(122-4) + (122-87) + (122-90)	Second Floor	100Sft	11931.00	4925.59		587672.14

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
91	(122-77) + (122-83)	Colour-creting 1/4" (6.4 mm) thick 1:1:2 (1 white cement mixed with pigment, 1 marble powder and 2 marble chips zero No.) in required shade including dragging the surface with wire brushes complete with curing etc. over a base of 3/4" (19 mm) thick cement plaster 1:3 in plinth, mezzanine and ground floor including the cost of base course as directed complete, (including horizontal or vertical joints or grooves 3/8" x 1/4" (9.5 mm x 6.4 mm) size of approved design)	%Sft	13,778	18,087.50		2492095.75
92	(122-77) + (122-83) + (122-88)	First Floor	%Sft	12,424	18,497.50		2298129.40

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
93	(122-77) + (122-83) + (122-88) + (122-91)	Second Floor	%Sft	7,031	18,812.50		1322706.88
94	(122-156)	Painting wood work with super glass enamel paint of approved make and shade two coats over and including the cost of one coat of priming complete at any height in any floor .	100Sft	4050.00	5624.86		227806.83
95	(122-162)	Painting with (ICI) Dulux Plastic emulsion paint VIP of approved shade two coats over and including the cost of one priming coat complete over plastered surface at any height in any floor.	100Sft	136940.00	6737.38		9226168.17

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
96	(122-172)	Painting three coats with weather shield paint deluxe (ICI) make of approved shade on plaster surface (External) and including the cost of cleaning the surface, sand papering etc. complete at any height in any floor.	100Sft	5471.00	4408.75		241202.71
97	(122-157)	Painting plastered surface with super glass synthetic enamel paint of approved make and shade two coats over and including the cost of one coat of priming complete at any height in any floor	100Sft	800.00	5686.75		45494.00
98	(122-189a)	Lacquer polishing including sealer (ICI) on wood work at any height in any floor .	%Sft	8,751	19,760.85		1729271.98

PUBLIC PROCUREMENT REGULATORY AUTHORITY PPRA EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
99	(124-97)	Providing and fixing PVC ribbed water stops 9" (229 mm) wide in vertical or horizontal expansion joints including cutting or jointing etc., complete in all floors.	Rft	190	448.81		85273.90
100	(124-183)	Providing and fixing dampa ceiling aluminium, Denmark I Germany make 2' x 2' tiles/ strip ceiling including all accessories i.e, plump, rod etc complete as required in any floor.	Sft	4,403	1,426.17		6279426.51
101	(124-186)	Providing and fixing Gypsum board 2' x 2'x 12mm tiles ceiling including Aluminum T & L angle 1" x 1" i.c hanger clips jointing clips and G.I Wire etc complete as required in any floor.	Sft.	2558.00	172.73		441843.34

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
102	(124-192)	P/F kitchen cabinet wall mounted of 3/4" thick laminated board with best quality deodar wood frame and beading 1/8" thick hard board backing required section in approved pattern etc fixed on wall with rawal pugs,screws i/c the cost of gule , nails,screws, piano hinges, handles and painting or polishing etc as drawing complete all as respects.	Sft.	84	1363.25		114513.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
103	(124-193)	P/F kitchen cabinet floor mounted of 3/4" thick laminated board with best quality deodar wood frame and beading required section in approved pattern etc fixed on floor with rawal pugs,screws i/c the cost of gule , nails,screws, piano hinges, handles and painting or polishing etc as drawing complete all as respects.	Sft.	105	1178.19		123709.95

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
104	(124-205)	Providing and fixing of aluminum conventional system curtain wall using aluminum profile 64mm x 128mm x 2.5mm thick in anodized I powder coated RAL (as per approved) color with double glazed tempered glass unit (5mm tinted + 12mm AGU +5mm clear local (Ghanirrariq) include 100 Micronanu Shutter safety film (Rhino Solar Windows film made in Taiwan) with M.S Angle/ Bracket, Anchor Bolt, cross bolt with other SS fitting screw with PVC rubber & weather sealants & imported accessories, complete in all respect.	Sft.	1827	3986.25		7282878.75

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
105	(124-199)	Providing and carrying out Termite proofing in foundations, under floors and wood work surface with a solution using of control TC with water and spraying the solution of the area to be treated as completed as per direction of Engineer Incharge.	Sft.	36160.00	13.13		474780.80

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
106	(124-202)	Providing & fixing 2" dia stainless steel pipe (18 gauge) railing along with 4 Nos 3/4 dia paralled pipe having S/S pipe vertical post 2" dia at 3 ft C/C average spacing and 4" dia vertical post at start turing and end point including cost of labour, welding charges fitting & fixing in marble floor and wall etc complete the as per direction of the Engineer Incharge.	Rft.	333.00	2234.38		744048.54

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
107	(127-32)	Supplying and laying hand broken 1-1/2" to 1/2" (38 mm to 13 mm) stone ballast of approved grade and quality in sub-base or base courses in required grade and camber and compacting to the required density by approved mechanical means (Vibratory Roller, Road Packer and Smooth Wheel Roller etc.) including watering with all lead and lift complete (actual compacted depth shall be considered for payment)	100Cft	10371.00	8341.52		865099.04
108		Sub Total of Schedule Items =					
109		Add premium @25% on Schedule Items =					78227901.00
110		TOTAL PART-I (SCHEDULE ITEMS) =					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
111		PART-II (NON- SCHEDULE ITEMS)					
112		Ref. Spec. No. 3000					
113	N.S - 1	Providing and fixing in position 22 gauge expanded metal lath on areas as specified in joints etc. under plaster	Sft.	7690.00	105.00		807450.00
114		Ref. Spec. No. 6600					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
115	N.S - 2	1" thick (minimum) chemically pre-polished marble slabs on vanity counter tops of premimum quality available in the market and as approved by the Engineer (of approved colour/shade/texture), with rounded edges, jointed and pointed in 1:2 cement sand mortar (white cement with imported colour pigments) and grouted with 1:3 cement sand grout and base, including cutting, etc, complete.	Sft.	294.00	1350.00		396900.00
116		WATER PROOFING/EXPANSION JOINT FILLING					
117		Ref. Spec. No. 6411					
118	NS-03	Water proofing treatment on roof slabs comprising:					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
119		2mm thick self adhesive bituminous membrane over primer coated surface as per manufacturers specifications.	Sft.	31701.00	81.00		2567781.00
120		Sub Total of Non-Schedule Items =					
122		TOTAL A-1) PART- I + II =					
123	A-2)	PLUMBING WORKS					
124		GENERAL NOTE					
125		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 drawings, specifications and as approved by the Engineer.					
126		SCHEDULED ITEMS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
127		SANITARY FIXTURES AND FITTINGS					
128	301-26	Providing and fixing best quality white glazed earthenware Two piece toilet (commode) coupled with flushing tank (Porta or equivalent) complete with and including the cost of plastic seat and buffers, with integral fittings complete.	Each	30	25,375.00		761250.00

PROCUREMENT REGULATORY AUTHORITY PUBLIC (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
129	301-28	Providing and fixing best quality squatting type earthenware W.C.Pan (porta or equivalent) complete with and including cost of 13.6 liter best quality low level plastic flushing cistern with integral fittings complete, P.V.C. flushing pipe suitable for squating type with extra bends and length with fittings, PVC trap 04 inches (100mm)dia making requisite number of holes in walls, plinth & floor for pipe connections and making good in cement concrete 1:2:4..	Each	15	19,665.00		294975.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
130	301-29 + (4205)	Providing and fixing approved quality earthen ware glazed vanity basin (Porta or equivalent) standard size (White/light colour) and including the cost of Chromium plated mixer 1/2" = 12 mm dia, 1-1/4” dia brass waste 1-1/4” rubber plug and chrome plated brass chain PVC waste pipe 1-1/4” dia of approved pattern etc. complete.	Each	46	18,620.63		856548.98

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
131	301-8 + 301-10	Providing and fixing 25inches x 18inches (635mm x457mm) lavatory basin in white glazed earthenware with pedestal (Pakistani) complete with and including the cost of Brass oxidized bolts kit built into wall 1/2 inch (15mm) dia. Chrome plated mixer 1-1/4 inches(32 mm) rubber plug and chrome plated brass chain,1-1/4 inches(32mm) dia. brass waste of approved pattern, 1-1/4 inches (32mm) dia Malleable iron or C.P. brass traps malleable iron or brass unions and making requisite number of holes in walls, plinth and floor for pipe connections and making good in cement concrete 1:2:4.	Each	9	18,181.25		163631.25

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
132	301-17	Providing 1/2 inch (15 mm) dia plastic connection complete with a 1/2 inch (15 mm) dia brass stop cock two brass nuts and lining jointed to plastic pipe.	Each	155	824.50		127797.50

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
133	301-23	Providing and fixing approved quality stainless steel sink 33” x 18” Pak made (Atlas) complete with brass oxidized bolt kit/angle iron brackets built into walls ½” dia CP sink mixer 1-1/4” rubber plug and CP brass chain 1-1/4” CP brass waste 1-1/4” dia malleable iron or CP brass bottle trap with malleable iron or brass unions and making requisite number of holes in walls, plinth and floor for pipe connections and making good in cement concrete 1:2:4	Each	4	16,495.00		65980.00
134	302-3	Providing and fixing approved quality C.P. brass toilet paper holder.	Each	30	1,970.91		59127.30

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
135	307-2	Providing and fixing 1/2 inches dia. (15 mm) CP bib cocks.	Each.	8	1,130.40		9043.20
136	302-2	Providing and fixing 24"x3/4"(610 mm x 20 mm) dia approved quality of chrome plated brass towel rail complete with brackets fixed with 1"(25 mm) long C.P brass screws and rawal plug.	Each	15	2,475.50		37132.50
137	302-5	Providing and fixing 24inches x 18 inches (610mm x457mm) looking mirror of imported glass 5mm thick fixing with CP clamps and screws.	Each	9	2,173.98		19565.82
138	302-7	Providing and fixing glass shelf 25 inches x 5 inches (610mm x 127mm) brackets and guard rail complete.	Each	9	758.24		6824.16

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
139	302-13	Providing and fixing chromium plated Muslim bib cosk with Muslim shower of approved quality.	Each	45	3,381.75		152178.75
140	301-30	Providing and fixing uPVC multi floor trap of sizes with grating including cutting and making the requisite number of holes in walls, plinth and floors and making good in 1:2:4 C.C.	Each	36	1,459.43		52539.48
141	315-27	Providing & fixing C.I Cover & Frame 24" dia (610 mm) weight 2 cwt 2 Qtr (127.00 Kg.)	Each	2	36,631.25		73262.50
142		(on Overhead Water Tank)			,		
143		WATER SUPPLY PIPES AND FITTINGS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
144		Providing G.I. pipes, specials and clamps etc., including fixing, cutting and fitting, complete with and including the cost of breaking through walls and roof, making good etc., painting 2 coats after cleaning the pipe etc. with white zinc paint with pigment to match the colour of the building and testing with water to a pressure head of 200 feet (61 m) and cartage within 10 miles. (16.09km). (ILLM). of following pipe sizes:					
145	305-2	3/4 inch (20mm) dia pipe	Rft	55	257.38		14155.90
146	305-3	1 inch (25mm) dia pipe	Rft	200	366.46		73292.00
147	305-4	1-1/4 inch (32mm) dia pipe	Rft	350	473.30		165655.00
148	305-5	1-1/2 inch (40mm) dia pipe	Rft	55	534.17		29379.35
149	305-6	2 inch (50mm) dia pipe	Rft	315	718.54		226340.10

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
150		Providing and fixing full way gun metal valves with wheels threaded or flanged ends with rubber washers, (standard pattern) of following diameters:					
151	307-8	3/4 inch (20mm) dia	Each	100	2,017.90		201790.00
152	307-9	1 inch (25mm) dia	Each	24	4,012.90		96309.60
153	307-10	1-1/4 inch (32mm) dia	Each	8	6,366.65		50933.20
154	307-11	1-1/2 inch (40mm) dia	Each	4	8,169.15		32676.60
155	307-12	2 inch (50mm) dia	Each	4	8,699.40		34797.60
156		Providing and fixing gun-metal non-return valves with male and female ends as required of following diameters:					
157	307-30	1 inch (25mm) dia	Each	8	4,271.60		34172.80

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
158		Providing and fixing PPR pipe PN-20 with specials and clamps etc, including cutting and fitting complete with and including the cost of breaking through walls and roof and making goodetc, after cleaning the pipe and cartage with in 10 miles of following diameter:					
159	306-30	25mm dia.	Rft	2,600	215.32		559832.00
160	306-31	32mm dia.	Rft	1,100	320.26		352286.00
161	306-32	40mm dia.	Rft	970	433.66		420650.20
162	306-33	50mm dia.	Rft	210	747.61		156998.10
163	306-34	63mm dia.	Rft	105	1,147.61		120499.05
164	306-35	75mm dia.	Rft	105	2,018.74		211967.70
165		VALVE CHAMBER					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
166	308-4	Providing chambers 15 inches x 9 inches or 380 mm x 230 mm (inside dimensions) x 24 inches (610 mm) deep for valves, with 4-1/2 inches (115 mm) thick, burnt brick masonry walls in 1:6 C.M, 6 inches (150 mm) C.C. 1:4:8 in foundation, 1/2 inch (13 mm) thick cement plaster in 1:3 C.M. to all inside wall surfaces and to top, 1 inch (25 mm) thick C.C. 1:2:4 flooring complete with cast iron hinged cover and frame 15 inches x 9 inches or 380 mm x 230 mm (inside) clear opening (wt = 1 Qtr. or 12.7 kg.) fixed in cement concrete 1:2:4 including curing, excavation back filling and disposal of surplus earth etc., complete..	Each	4	7,367.50		29470.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
167		TOTAL (SCHEDULE ITEMS) =					
168		Add PREMIUM @ 25 % above on Schedule items					1372765.00
169		TOTAL WITH PREMIUM (SCHEDULED ITEMS) =					
170		NON-SCHEDULED ITEMS					
171		SANITARY FIXTURES AND FITTINGS					
172		(Ref. Specs 5100)					
173	NS-01	05mm thick Glass mirror Belgium make or approved equivalent including hard board behind it, approved beeding around it and all other fittings for complete installation	Sft	570	890		507300.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
174	NS-02	CP Soap Dish of any shape, pattern and size, of approved make, complete with plugs, screws etc., fixed to concrete, brick, stone or wood work, complete in all respects .	Each	55	2,610		143550.00
175	NS-03	CP Soap Dispenser of 01liter capacity of any shape, pattern, of approved make, complete with plugs, screws etc., fixed to concrete, brick, stone or wood work, complete in all respects .	Each	8	11,445		91560.00
176	NS-04	Grab bar/Hand rail set (02 pc's) for handicap toilet commode with fixing plugs and screws etc. fixed to concrete, brick, stone or wood work, complete in all respects.	Each	8	50,330		402640.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
177	NS-05	Dual Type (Gas + Electric) water heater heavy guage of 50 Gallons capacity, including automatic temperature/pressure relief valve on outlet and all other accessories for complete installation.	Each.	4	80,445		321780.00
178	NS-06	Electric water heater heavy duty of 50 Liters capacity, including tee stop cocks, metal flexible pipes, automatic temperature/ pressure relief valve on outlet and all other accessories for complete installation.	Each.	5	61,655		308275.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
179	NS-07	Electric water coolers of 20gallons/hr capacity, minimum two taps, including Tee stop cock on inlet, and all other accessories for complete installation.	Each	4	128,220		512880.00
180	NS-08	Water filters of following type, including all accessories for complete installation.					
181	(a)	Triple type filter	Each.	4	38,115		152460.00
182	NS-09	Providing and fixing CP ablution mixer of approved make including all fittings for complete installation.	Each	1	8,120		8120.00
183	NS-10	Electric Hand Dryer (automatic) with easy to mount kit of approved make & model and all required accessories complete.	Each.	12	30,425		365100.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
184		WATER SUPPLY PIPES AND FITTINGS					
185		(Ref. Specs 5100, 5220, 5280)					
186	NS-11	01" thick Glass wool thermal insulation for cold and hot water GI pipes (in exposed conditions) including aluminium vapour barrier and GI (28swg) cladding and all other required accessories complete for following pipe diameters					
187	(a)	3/4 inch (20mm) dia pipe	Rft	20	415		8300.00
188	(b)	1 inch (25mm) dia pipe	Rft	200	465		93000.00
189	(c)	1-1/4 inch (32mm) dia pipe	Rft	350	505		176750.00
190	(d)	1-1/2 inch (40mm) dia pipe	Rft	20	555		11100.00
191	(e)	2 inch (50mm) dia pipe	Rft	210	630		132300.00
192		VALVES					
193		(Ref. Specs 5100, 5220)					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
194	NS-12	Air relief valves, of approved manufacturers, including jointing arrangement of pipes on both ends of valves; nuts, bolts etc. complete in all respects.					
195	(a)	3/4 inches	Each	14	3,465		48510.00
196	NS-13	Providing and Fixing brass ball float valve including jointing arrangement with pipe; etc. complete in all respects.					
197	(a)	02 inches	Each	2	10,675		21350.00
198		SOIL, WASTE AND VENT PIPES & FITTINGS					
199		(Ref. Specs 5100)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
200	NS-14	uPVC Soil, Waste and vent pipes conforming to ISO:3633 type "B" or BS-4514/5255 class "A" of the following diameters, including imported rubber ring/solvent cement fittings, hangers & supports, jointing, cutting, breaking concrete/masonry and then making it good, core cutting & filling with non shrink grout of approved manufacturer wherever required and applying painting, cleaning and testing etc. complete in all respects.					
201	(a)	1-1/2 inches	Rft	280	350		98000.00
202	(b)	2 inches	Rft	650	480		312000.00
203	(c)	3 inches	Rft	1,970	925		1822250.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
204	(d)	4 inches	Rft	1,530	1,225		1874250.00
205	(e)	6 inches	Rft	20	1,715		34300.00
206	NS-15	3"dia uPVC Floor Trap with SS Top Tile strainer; supports; making required number of connections; breaking concrete or masonry work & then making it good; etc.	Each	40	6,380		255200.00
207	NS-16	uPVC Floor Cleanout of the following diameter, including Stainless Steel-304 top tile access plug, transition pipe, breaking concrete or masonry work & then making it good, etc. complete in all respects.					
208	(a)	3 inches	Each	12	9,150		109800.00
209	(b)	4 inches	Each	12	10,135		121620.00
210	NS-17	Cawal on vent pipes of the following diameter.					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
211	(a)	3 inches	Each	10	375		3750.00
212	NS-18	Construction of Gully Trap Chamber (12" x12" clear) including supply & fixing of 4" deep seal C.I. gully trap, construction of 4-1/2" thick brick masonry in 1:4 c/s mortar, 3" thick 1:4:8 P.C.C at bottom, 1:3:6 P.C.C around trap, (12" x 12") CI cover with frame (7 Kg), 1/2" thick 1:3 c/s plaster on inner face, etc complete in all respects as shown in drawings or as directed.	Each	14	20,720		290080.00
213		RAIN WATER AND STORM DRAINAGE PIPES & FITTINGS					
214		(Ref. Specs 5100, 5230)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
215	NS-19	uPVC Rain water pipes conforming to ISO:3633 type "B" or BS-4514/5255 class "A" of the following diameters, 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.					
216	(a)	03 inches	Rft	35	710		24850.00
217	(b)	04 inches	Rft	550	955		525250.00
218	(c)	06 inches	Rft	30	1,480		44400.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
219	NS-20	CI roof drain of approved make of following diameters, including Brass strainer, flushing material, and all accessories for complete installation, as per specifications.					
220	(a)	03 inches	Each	2	11,865		23730.00
221	(b)	04 inches	Each	13	11,865		154245.00
222	(c)	06 inches	Each	1	15,615		15615.00
223		FIRE FIGHTING					
224		(Ref. Specs 5150, 5220)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
225	NS-21	MS pipes with specials and clamps etc, conforming to ASTM A53 Sch. 40, Grade-B including fixing, cutting, welding, fixing & support systems; and other fittings complete with and including the cost of breaking, through walls and slabs, making walls & slabs good thereafter, etc, painting with two coats of approved enamel paint after cleaning the pipe.					
226	(a)	1.5 inches	Rft	65	850		55250.00
227	(b)	2 inches	Rft	30	1,130		33900.00
228	(c)	3 inches	Rft	20	2,210		44200.00
229	(d)	4 inches	Rft	265	3,100		821500.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
230	NS-22	Supply and installation of steel fire hose cabinet,double compartment, including fire hose reel (25mm x 30m) swinging type with pressure guage and pressure reducing valve brass valved nozzle at one end, 01"dia. Hydrant valve in upper compartment, and fire extinguishers in lower compartment & all accessories for complete installation.	Each	6	316,425		1898550.00
231	NS-23	Fire Extinguisher (BS EN-3) of following types.					
232	(a)	Dry Chemical Powder Fire Extinguisher 6Kg Capacity.	Each	10	17,705		177050.00
233	(b)	Foam Type fire extinhuisher capacity 10litres.	Each	10	22,050		220500.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
234		MISCELLANEOUS					
235		(Ref. Specs 5100,5230)					
236	NS-24	3/4" diameter Galvanised MS ladder rungs for underground and overhead water tanks; each rung of 18" width, 6" projected outside the wall and 6" embeded in RCC on both ends; including all necessary works for complete installation.	Each	10	1,755		17550.00
237	NS-25	Dia 2" u-turned G.I. vent pipes, pudddle plate, with insect proof mesh at open end etc., complete in all respects.	Job	2	5,090		10180.00
238		TOTAL (NON-SCHEDULED) =					
239		TOTAL A-2) SCHEDULED + NON-SCHEDULED ITEMS =					
240	A-3)	ELECTRICAL WORKS					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
241		SCHEDULED ITEMS					
242	2-3	Point wiring in recessed PVC conduit					
243	2-3-01	Wiring for light or fan point with (3/.029") pvc insulated wire in 20 mm² (3/4") dia upvc conduit recessed in the wall , column , roof including 1 mm² single core pvc insulated wire as ECC as Required.	Point	1,000	2,836		2836000.00
244	2-7	Extension /Additional Point wiring					

PROCUREMENT REGULATORY AUTHORITY PUBLIC (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
245	2-7-03	Extension /additional wiring for light fan call bell or light plug point controlled with same switch with (3/.029") pvc insulated wire in 20 mm (3/4") dia PVC conduit recessed in the wall , column or roof including 1mm² single core pvc insulated wire as ECC as required	P/Point	600	1,179		707400.00
246	2-26	Single pvc insulated wire and pvc ,pvc cable in existing conduits/ducts					
247	2-26-05	Supply & drawing of 10 mm², single core, PVC insulated wire in all kinds of existing or given conduit/cable duct as required.	Rft	4,600	139		639400.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
248	2-26-20	Supply & drawing of 16 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	520	219		113880.00
249	2-26-21	Supply & drawing of 25 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	20	327		6540.00
250	2-26-22	Supply & drawing of 35 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	100	438		43800.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
251	2-26-23	Supply & drawing of 50 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	100	590		59000.00
252	2-26-24	Supply & drawing of 70 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	500	843		421500.00
253	2-26-25	Supply & drawing of 95 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	1,800	1,158		2084400.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
254	2-26-26	Supply & drawing of 120 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	20	1,452		29040.00
255	2-26-27	Supply & drawing of 150 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	20	1,825		36500.00
256	2-26-28	Supply & drawing of 185 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	2,100	2,217		4655700.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
257	2-26-29	Supply & drawing of 240 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	20	2,908		58160.00
258	2-35	2 Wire with ECC wire in PVC REC ESSED conduits					
259	2-35-02	Wiring for sub-main with 2x2.5 mm², PVC insulated wire 300/500 volts grade, single core, stranded copper conductor wire in 20 mm (3/4") dia PVC conduit recessed in the wall, column and roof etc including 1.5 mm² PVC insulated wire single core wire as ECC as required. (from DB to Switch, Switch to Switch)	Rft	15,000	137		2055000.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
260	2-35-03	Wiring for sub-main with 2x4 mm², PVC insulated wire 300/500 volts grade, single core, stranded copper conductor wire in 20 mm (3/4") dia PVC conduit recessed in the wall, column and roof etc including 1.5 mm² PVC insulated wire single core wire as ECC as required.(Db to first Socket 13A/15A , Socket to Socket)	Rft	20,000	195		3900000.00
261	2-35-04	Wiring for sub-main with 2x6 mm², PVC insulated wire 300/500 volts grade, single core, stranded copper conductor wire in 20 mm (3/4") dia PVC conduit recessed in the wall, column and roof etc including 1.5 mm² PVC insulated wire single core wire as ECC as required	Rft	4,500	245		1102500.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
262	2-61	UPVC CONDUIT & DUCT					
263	2-61-05	Supply and fixing 50mm (2") dia Upvc conduit with all especial such as bends, sockets, junction etc Fitted on surface as required	P/Rft	1,500	231		346500.00
264	2-61-06	Supply and fixing 20mm (3/4") dia Upvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required	P/Rft	500	49		24500.00
265	2-61-07	Supply and fixing 25mm (1") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required	P/Rft	17,000	55		935000.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
266	2-61-08	Supply and fixing 30mm (1-1/4") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required	P/Rft	100	78		7800.00
267	306-23	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 2 inches (50 mm) dia pipe	P/Rft	3,220	435		1399798.40

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
268	306-24	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 3 inches (80 mm) dia pipe	P/Rft	200	503		100694.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
269	306-25	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 4 inches (100mm) dia pipe..	P/Rft	4,080	600		2448040.80
270	2-66	SCHNEIDER /PHILIPS ACCESSORIES ON RECESSED METAL BOARD					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
271	2-66-01	Providing & fixing 10 Amps Polycarbonate flame retardant, S.P Switch with fancy required gang plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required. (Schneider/ Philips)	Each.	150	471		70650.00
272	2-66-02	Providing & fixing 10 Amps Polycarbonate flame retardant, Two way Switch with fancy required gang plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required.	Each.	6	531		3186.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
273	2-66-06	Providing & fixing 15 Amps Polycarbonate flame retardant 3-Pin switch socket unit with fancy gang plate fixed on die fabricated, powder coated metal board recessed in wall or column including connection as required. (Clipsal make)	Each	23	1,290		29670.00
274	2-78	(Philips,signify)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
275	2-77-02(i)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having warm/ netural white / cool white colour 100-110lm/ watt effeciency .9 or above power factor, 40000-50000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (30-34) Watts	Each	1	16,300		16300.00
276	2-78	(Sunlight , Pierlite , Future Technology)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
277	2-78-01(a)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having warm/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (7-10) Watts	Each	370	1,824		674880.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
278	2-78-01(b)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having warm/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (12) Watts	Each	90	2,198		197820.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
279	2-78-01(c)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (18-20) Watts	Each	34	2,886		98124.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
280	2-78-01(d)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (22-24) Watts	Each	1	4,222		4222.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
281	2-78-02(c)	Supply installation testing & commisioning of recessed / surface mounted LED panel light including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (48) Watts 2x2ft	Each	25	12,525		313125.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
282	2-78-02(d)	Supply installation testing & commisioning of recessed / surface mounted LED panel light including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (48) Watts 1x4ft	Each	340	12,525		4258500.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
283	2-78-03(a)	Supply installation testing & commisioning of LED Tube / Batten Lights including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 10000-15000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (18-20) Watts 2 Feet	Each	45	1,957		88065.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
284	2-78-03(b)	Supply installation testing & commisioning of LED Tube / Batten Lights including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 10000-15000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (18-20) Watts 4 Feet	Each	15	2,336		35040.00
285	2-78-09	Providing, Installation, Testing & Commissioning of Emergency Lights, including connection, complete in all respect as approved by the Engineer Incharge(2w + 2x4 Watts Emergency Exit Light)	Each	10	7,402		74020.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
286	2-78-09	Providing, Installation, Testing & Commissioning of Emergency Lights, including connection, complete in all respect as approved by the Engineer Incharge(3-4 Watts Emergency Light)	Each	5	6,137		30685.00
287	2-78-09	Providing, Installation, Testing & Commissioning of Emergency Lights, including connection, complete in all respect as approved by the Engineer Incharge(5-7 Watts Emergency Light)	Each	5	7,402		37010.00
288	2-80	CEILING FANS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
289	2·80·03	Providing & installing 140 Cm (56") sweep ceiling fan with blades, canopy, standard length of down, rod including connection with 14.0076" flexible wire complete as required. (without regulator) Pak, Rovat FC,Younas, Millat	Each	260	9,349		2430740.00
290	2-87	FAN CLAMPS, DOWN ROD & MAKING HOLE.					
291	2-87-01	Providing & installing of Ceiling fan down rod 3/4" dia heavy gauge GI pipe of require length, one end arrangement for fan insulator and other end duly threaded and hole for split pin etc to be hold all sweep ceiling fan as required.	P/Rft.	260	70		18200.00
292	2-81	WALL BRACKET FANS					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
293	2-81-01	Providing & installing 35 Cm (18") sweep wall bracket fan complete with blades, regulator and pulling cord switch, fitted on wall or column with GI clip including connection as required. Pak, Royal, GFC, Younas, Millat.	Each	10	4,100		41000.00
294	2-83	Metallic Body Exhaust Fans					
295	2-83-02	Providing & installing 30 Cm (12") sweep, metallic body Exhaust fan ·complete with blades, motor, etc fitted in existing hole inc!uding connection with 14/.0076'' flexible wire complete as required Pak, Royal, GFC,Younas,Millat.	Each	15	4,400		66000.00
296	2-85	Plastic BodyExhaust Fans					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
297	2-85-02	Providing & installing 25 Cm (10") sweep Double action Plastic body exhaust fan complete with blades, motor & regulator & pulling cord switch etc. fixed in existing hole including connection with 14 /.0076" flexible wire complete as required . Millat / Pak / Asia / Younas / Climax / Royal.	Each	12	4,249		50988.00
298	3-04	4 CORE LT UN ARMOURED CABLE IN EXISTING CONDUIT OR CABLE DUCT					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
299	3-4-01(a)	Providing & laying 4 core, 16 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	3200	804		2572800.00
300	3-4-01(b)	Providing & laying 4 core, 25 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	500	1,223		611500.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
301	3-4-01(c)	Providing & laying 4 core, 35 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	20	1,668		33360.00
302	3-4-01(d)	Providing & laying 4 core, 50 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	20	2,258		45160.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
303	3-4-01(e)	Providing & laying 4 core, 70 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	100	3,209		320900.00
304	3-4-01(g)	Providing & laying 4 core, 120 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	500	5,593		2796500.00
305	3-08	EARTHING AND LIGHTNING ARRESTOR					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
306	3-8-04	Providing and fixing 1'' diameter 3ft long lighting copper rod with five spikes and balls on its head as required.	Job	2	26,301		52602.00
307	3-8-05	Providing and fixing 1-1/2'' x 1/8'' Thick copper strip with suitable saddle at 12'' intervals complete as required.	P/Rft	1,500	268		402000.00
308	7-1	ADDRESSABLE FIRE ALARM SYSTEM					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
309	7-1-02	Providing, fixing, testing and commissioning of microprocessor based 02 loop addressable fire control panel extendable to 4 loop with the use of Network Card, surface /recessed mounting type with full switching programming capabilities ,system suitable for operation at 230 volts 50hz with full functionality as per specification, drawing, etc complete in all respect as approved by the Engineer lncharge	Job	1	466,923		466923.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
310	'7-1-06	Providing and fixing , testing and commissioning of addressable optical smoke detector with addressable base with full functionality switching programing capabilites system as per specification & recomendation of drawings / manufacturer with allied components complete in all respect as approved by the Engineer incharge.	Job	110	7,919		871090.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
311	'7-1-07	Providing and fixing , testing and commissioning of addressable optical heat detector with addressable base with full functionality switching programing capabilites system as per specification & recomendation of drawings / manufacturer with allied components complete in all respect as approved by the Engineer incharge.	Job	5	7,919		39595.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
312	'7-1-09	Providing and fixing , testing and commissioning of addressable manual call point with addressable base with full functionality switching programing capabilites system as per specification & recomendation of drawings / manufacturer with allied components complete in all respect as approved by the Engineer incharge.	Job	5	12,522		62610.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
313	'7-1-11	Providing and fixing, testing and commissioning of addressable Wall sounder with flasher with full functionality switching programing capabilites system as per specification & recomendation of drawings / manufacturer with allied components complete in all respect as approved by the Engineer incharge.	Job	5	23,334		116670.00
314	7-3	FIRE RESISTANT CABLE					
315	'7-3-01	Providing, fixing, Two core, 1.5mm, Fire resistant cable, minimum fire rating of 2 hour, laid with conduit (25mm dia}, complete in all respect, as approved by the Engineer in-charge.	P/Rft	3,500	137		477926.38
316	8-4	IP CCTV SYSTEM					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
317	8-4-04	Supply, installation, testing and commissioning of Bullet. IP camera having following specifications:- Image device: At least 1/3 inch, Resolution & frames/sec: At least 4 MP/25fps, Video Compression: H.265,H.264, MJPEG, Focal length: fixed of 2.8mm,4mm or 8mm. Min illumination: 0 lux(B/W), 0.15 lux (Colour), Infrared viewable length: Al least 30 m. Weather proof standard: IP 66 at least, Vandal proof standard: At least IK10, complete in all respect as approved by the Engineer Incharge	Job.	15	59,367		890505.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
318	8-4-02	Supply, installation, testing and commissioning of mini Dome IP camera having following specifications:- Image device: At least 1/3 inch, Resolution & frames/sec: At least 4 MP/25fps, Video·compression; H.265,H.264, MJPEG, Focal length: fixed of 2.8mm,4mm or 8mm. Min illumination: o lux(B/W), 0, 15 lux (Colour), Infrared viewable length: Al least 30 m, Weather proof standard: IP 66 at least, Vandal proof standard: Al least 1K10, complete in all respect as approved by the Engineer lncharge	Job.	2	60,577		121154.00
319	8-5	CAT-6 CABLE					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
320	8-5-01	Wiring of CCTV Camera with UTP Cat-6 in existing PVC Conduits/duct i/c conectors complete in all respect.	P/ Rft	2,000	74		148132.80
321	8-11	FIBER OPTIC/MEDIA CONVERTER/ODF					
322	8-11-03	Providing, Supplying,installation, fitting, fixing and commissioning of 12 Core single mode Fiber Optics Cable in given existing PVC Conduit, Box Conduit,complete in all respect as approved by the Engineer Incharge.	P/ Rft	600	522		313090.55

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
323	8-11-01	Providing, Supplying,installation, fitting, fixing and commissioning of 4 Core single mode Fiber Optics Cable in given existing PVC Conduit, Box Conduit,complete in all respect as approved by the Engineer Incharge.	P/ Rft	600	535		320771.51
324		CIVIL WORKS					
325	3-9	EXCAVATION					
326	3-09-01	Excavation in soft soil including lift upto 5ft and filling excavated earth including breaking clods dressing, watering, consolidation and ramming in layers to full compaction i/c disposal of surplus excavated stuff as directed as required.	P/CFT	1,000	11		11270.09

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
327	3-09-03	Excavation in Hard soil including lift up to 5ft and filling excavated earth including ,breaking clods, dressing ,watering, consolidation and ramming: in layers to full compaction l/c disposal of surplus us excavated stuff as directed.	P/CFT	1,000	15.00		15000.00
328		CABLE PULLING PIT (5 No. 2'X2'X3')					
329		EARTH WORK					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
330		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:					
331	103-1	Lift upto 5 feet	100CFT	137	1624.63		2220.29

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
332		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:					
333	103-2	Lift upto 5 feet	100cft	55	1862.13		1017.95

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
334		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
335	103-5	Lift upto 5 feet	100cft	27	5547.38		1516.25
336		Excavation for foundation trenches and drains in soft or disintegrated rock by hammering, chiselling and Jumper work including, stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
337	103-7	Lift upto 5 feet	100cft	27	2328.63		636.48
338		Excavation for foundation trenches and drains in hard rock by hammering chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
339	103-8	Lift upto 5 feet	100cft	27	4434.88		1212.18
340		RCC CHAMBER					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
341	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	100cft	16	32221.55		5180.62

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
342	114-2 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100cft	24	33562.40		7929.12

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
343	114-10 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight walls 5" (127 mm) to 6" (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	100cft	79	55457.69		43672.93

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
344	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100cft	24	45945.52		10854.63

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
345	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	286	266.70		76200.00
346		CARRIAGE					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
347	134-2	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:					
348	i)	1/2 mile (0.80km) lead of part thereof.	100cft	85	332.98		284.14
349	ii)	1 mile (1.6 km) lead.	100cft	43	383.79		163.75
350	iii)	2 miles (3.2 km) lead.	100cft	85	483.37		412.47
351		Total PART-I =					
352		Add 25% Premium on Schedule items					10847560.00
353		TOTAL PART-I (SCHEDULE ITEMS) WITH PREMIUM @ 25%=					
354		NON SCHEDULED ITEMS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
355		Supply, installation, testing and commissioning of the following items of work (unless specifically stated otherwise) including all material, labour, tools, plant, accessories, related civil works, etc., required for proper completion of each item as per specifications (Section-8001 "General Specifications for Electrical Works" shall be applicable to all BOQ items).					
356		MAIN SWITCHBOARDS /SUB MAIN DISTRIBUTION BOARDS					
357		(Ref. Spec. Nos. 8001 , 8133)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
358	NS-E-01	Following L.T. Switchboard and Submain Distribution Boards, (as per single line diagram shown on the drawing), including all control wiring, foundation, related civil works and all accessories, complete in all respects.					
359	a)	LT PANEL	Job	1	1,976,329		1976329.00
360	b)	EMDB	Job	1	858,515		858515.00
361	c)	PFIP	Job	1	757,838		757838.00
362	d)	LDB-GF1, FF1	Job	2	178,973		357946.00
363	e)	LDB-GF2, FF2	Job	2	170,900		341800.00
364	f)	PDB-GF1,GF2	Job	2	167,200		334400.00
365	g)	PDB-FF1, FF2	Job	2	160,743		321486.00
366	h)	DB-ACGF1,DB-ACGF2	Job	2	209,247		418494.00
367	i)	DB-ACFF1	Job	1	143,756		143756.00
368	j)	DB-ACFF2	Job	1	103,391		103391.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
369	k)	DB-CL	Job	1	146,681		146681.00
370	l)	DB-LIFT	Job	1	117,182		117182.00
371		LT CABLES					
372		(Ref. Specification Section-8001, 8212)					
373	NS-E-02	10 sqmm, 4 core CU/PVC/PVC stranded copper conductor cable, 600/1000 V grade in already installed conduit/on cable tray .	Rft.	1400	1023		1432200.00
374	NS-E-03	6 sqmm, 2-Core CU/PVC stranded copper conductor cable, 600/1000 V grade in all kinds of existing or given conduit / cable duct as required.	Rft	100	398		39800.00
375		LED LIGHT FIXTURE					
376		(Ref. Spec. Nos. 8001, 8150)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
377		Supply, installation, testing & commissioning of the following types of light fixtures including LED Light with driver, internal wiring complete with all mounting accessories as per architectural arrangements/ requirements, dust & moisture protected and corrosion proof and suitable for this area as acceptably supplied and installed and as approved by the Engineer.					
378	NS-E-04	Decorative type Wall Bracket Light with 2x10W LED Bulb	Each	25	6,740		168500.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
379	NS-E-05	Surface mounted LED industrial type light fixture, min 3800 lumens IP65 (1200mm) with PC Cover and hanging arrangement.(for service areas)	Each	5	11,700		58500.00
380	NS-E-06	Strip light with connectors & drivers	Rft	50	2,525		126250.00
381	NS-E-07	Weather Proof Planter Spot light fixture with 9 Watt LED.	Each	6	11,019		66114.00
382	NS-E-08	Weather Proof recessed type LED step light	Each	6	19,665		117990.00
383	NS-E-09	12 W Weather Proof Bulkhead die cast aluminum body WALL mounted OUTDOOR LIGHT IP 55 or better	Each	50	12,989		649450.00
384	NS-E-10	Hanging system for lights with frame	Each	340	12,989		4416260.00
385		WIRING ACCESSORIES					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
386		(Ref. Specification Section-8001, 8220)					
387	NS-E-11	Simplex Universal Switch socket outlet with switch 13 A, 230V. Mounting Height as per site including appropriate size powder coated metallic back box.	No.	330	2,487		820710.00
388		EARTHING					
389		(Ref. Spec. Nos. 8001, 8240)					
390	NS-E-12	Earth Electrode for earthing shall comprise of 75 mm x 4877 mm x 6 mm thick copper plate with 4 Nos. 6 mm dia brass nuts, bolts and washers 70 sqmm HDHC Copper wire as earthing leads.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
391		A 100 mm dia Medium Duty GI pipe shall be used with 10 mm dia holes @500 mm c-c. The total length of this GI pipe should be 45 ft.					
392		A 150 mm dia 80 ft long hole should be drilled in ground by percussion method and above mentioned 100 mm dia medium duty GI pipe should be fixed in this hole simultaneously up to the depth of 60 ft from NSL.					
393		When the drilling up to 80 ft depth is complete, The above mentioned earth electrode shall be drop down to the bottom of the hole with the help of 2 Nos 70 sqmm earth leads.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
394		Once the plate is in place fill in the hole with moisture retaining bentonite slurry with tremie method up to the top. When the bentonite settle down cast a (1:4:8) concrete manhole 700 mm x 700 mm & 500 mm deep as shown in the drawing. Place a medium duty CI cover as shown in the drawing.	Job	4	238,848.00		955392.00
395	NS-E-13	305 mm long, 50 mm wide and 6mm thick copper busbar as ECP (Earth Connecting Point) complete with insulators, washers, nuts, bolts mounting installation and operational accessories as per site requirements.	Each	4	6,960		27840.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
396	NS-E-14	Earth electrode for lightning protection system comprise 1/2" dia, 10' long Copper deposited steel rod, including appropriate clamp for clamping of the down conductor. The copper deposited steel rod shall be hammered into the ground to the depth of twelve inches below the ground surface. The earth electrode includes excavation, backfilling, etc.	Job.	20	23,466.00		469320.00
397		MISELLANEOUS ITEMS					
398		(Ref. Spec. Nos. 8001, 8290)					
399		Following rating SP&N/TP&N load break switches AC-3 duty in weather proof enclosure of the following rating:					
400	NS-E-15	32 Amp, SP&N (for geyser)	Each	5	7,151		35755.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
401	NS-E-16	20 Amp, SP&N (for AC)	Each	40	6,371		254840.00
402	NS-E-17	16 Amps, 400 Volts 5 Pole Industrial Socket	No.	10	6,441		64410.00
403		Following sizes of perforated G.I. sheet cable trays with cover including joints, bend, mounting brackets hanger complete with all accessories.					
404	NS-E-18	4" x 2"	Rft.	100	1,300		130000.00
405	NS-E-19	6" x 4"	Rft.	500	2,170		1085000.00
406	NS-E-20	12" x 3"	Rft.	100	2,090		209000.00
407	NS-E-21	24" x3"	Rft.	500	3,623		1811500.00
408	NS-E-22	24 inch wall bracket fan	No.	1	15,484		15484.00
409		IP CCTV SYSTEM					
410		(Ref. Spec. Nos. 8001, 8335)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
411	NS-E-23	Simplex Face plate with RJ-45 I/0 CAT-6 UTP telecommunication outlet including sheet steel back box shall make of 16 SWG shall be finished in powder coated paint. including all mounting accessories.	No.	18	2,649		47682.00
412	NS-E-24	19" Rack mounted Front Cable Management with all installation accessories.	Job.	1	7,103		7103.00
413	NS-E-25	Supply, Installation of UTP - Cat-6, Patch Cords Support 1.0G Giga Network at 250 Mhz machine made. Installed between patch panel & Network switch and face plate					
414	i)	1.0 m Length	No.	18	1,814		32652.00
415	ii)	3.0 m Length	No.	18	2,434		43812.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
416	NS-E-26	Supply, Installation & Connecting up of UTP- Cat-6,steel Frame Patch Panel with 24 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	45,181		45181.00
417	NS-E-27	Supply, Installation of wall mounted 12U (600 x 550mm) data cabinet imported, double section, including fans with lockable front glass door two side opening, 06 Way power distribution unit rack mounted IP 20.	No.	1	65,013		65013.00
418	NS-E-28	Installation, Testing ,Commisioning of CCTV system.	Job	1	100,000		200000.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
419		STRUCTURED CABLING NETWORK (TELEPHONE & NETWORKING)					
420		(Ref. Spec. Nos. 8001, 8312)					
421	NS-E-29	Wiring from RJ45 outlet point to relevant Building / floor distributor with CAT-6 UTP cable in already laid concealed conduit / already installed cable tray or cable trunking including all accessories complete in all respect.	No.	200	16,416		3283200.00
422	NS-E-30	Simplex Face plate with RJ-45 I/0 CAT-6 UTP telecommunication outlet including sheet steel back box shall make of 16 SWG shall be finished in powder coated paint. including all mounting accessories.	No.	200	2,649		529800.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
423	NS-E-31	19" Rack mounted Front Cable Management with all installation accessories.	No.	10	7,103		71030.00
424	NS-E-32	Supply, Installation of UTP - Cat-6, Patch Cords Support 1.0G Giga Network at 250 Mhz machine made. Installed between patch panel & Network switch and face plate					
425	i)	1.0 m Length	No.	200	1,814		362800.00
426	ii)	3.0 m Length	No.	200	2,434		486800.00
427	NS-E-33	Supply, Installation & Connecting up of UTP- Cat-6,steel Frame Patch Panel with 24 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.	12	45,181		542172.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
428	NS-E-34	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	27,481		27481.00
429	NS-E-35	Supply, Installation of wall mounted 12U (600 x 550mm) data cabinet imported, double section, including fans with lockable front glass door two side opening, 06 Way power distribution unit rack mounted IP 20.	No.	5	65,013		325065.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
430	NS-E-35	Supply ,Installation of 42U 800X1000mm Imported,Perforated Cabinet with two vertically mounted PDU 32A,220V in Rear and 2 Vertical Cable Managers in Front ,Including Fan Units IP-20 Rated , Cold Rolled Steel Cabinet (MAIN SERVER ROOM)	Each.	2	393,189		786378.00
431	NS-E-37	Floor Box for 4 numbers Power sockets and 2 numbers Data sockets as approved by the Engineer.	No.	5	22,000		110000.00
432	NS-E-38	Installation, Testing, Commisioning of Telephone & Networking system.	Job	1	200000		200000.00
433		CONDUITS & PIPES					
434		(Ref. Spec. Sec. 8001 8230)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
435	NS-E-39	Supply and Installation of 4" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	20	1,296		25920.00
436	NS-E-40	Supply and Installation of 3" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	20	799		15980.00
437	NS-E-41	Supply and Installation of 2" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	20	370		7400.00
438		PUBLIC ADDRESS SYSTEM FOR LEC THEATRE					
439		(Ref. Specification Section-8001, 8341)					
440	NS-E-42	50 watt wall mount speaker	No.	4	140,628		562512.00
441	NS-E-43	15 watt wall mount speaker	No.	1	75,285		75285.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
442	NS-E-44	Power amplifier 480 watt 8 CHANNEL	No.	1	1,335,083		1335083.00
443	NS-E-45	Supply and installation of HANDHELD MICROPHONE	No.	1	75,843		75843.00
444	NS-E-46	Supply and installation of MICROPHONE with floor stand & adjustable boom.	No.	1	148,003		148003.00
445	NS-E-47	Supply, installation, testing & commissioning of Goose Neck Microphone	No.	1.00	184,878		184878.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
446	NS-E-48	Supply, installation, testing and commissioning of 2 core 2.5 Sqmm stranded copper conductor tin coated with drain PVC insulated wires 600/1000 V. grade, fire resistant, low smoke, zero halogen Cu conductor to be pulled in already installed 25mm dia. heavy duty PVC conduit recessed in wall, columns, slab, floor or above false ceiling with all necessary fixing accessories	RFT	500	797		398500.00
447	NS-E-49	WALL MOUNT RACK & PDU	No.	1	74,253		74253.00
448	NS-E-50	Installation, Testing, Commisioning of Telephone & Networking system.	Job	1	100,000		100000.00
449		CABLE PULLING PIT (5 No. 2'X2'X3')					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
450	NS-E-51	RCC manhole cover 24" dia, 2.5" MS angle, RCC 1:2:4 etc, complete with frame; as shown in drawing.	Each	5	19,300		96500.00
451		NON-SCHEDULE ITEMS =					
452		TOTAL A-3) SCHEDULE ITEMS + NON-SCHEDULE ITEMS =					
453	A-3-1)	BUILDING AIR CONDITIONS					
454		SCHEDULE ITEMS					
455	6-1	SPLIT TYPE AIR-CONDITIONER					
456		Local_Make					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
457	6-1-06	Providing, installation, testing and commissioning of Split Type Wall Mounted Air Conditioner, DC Inverter, in the specified place. The job includes connection of copper piping of out door unit fitted on roof or angle iron frame, making inter connection of the unit with suitable sizes of wire also piping for condensed water etc as required approved make (Local Make)					
458	b	1.5 Ton (18000 BTU)	Job	7	159,465		1116255.00
459	c	2 Ton (24000 BTU)	Job	11	211,368		2325048.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
460	6-3-04	Providing, installation, testing and commissioning of Floor Standing Air Conditioner, DC Inverter, in the specified place. The job includes connection of copper piping of out door unit fitted on roof or angle iron frame, making inter connection of the unit with suitable sizes of wire also piping for condensed water etc as required approved make (Local Make)					
461	b	4 Ton (48000 BTU)	Job	2	585,775		1171550.00
462	6-4	Copper Pipe					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
463	6-4-01	Providing, installation, testing and commissioning of Refrigerant Copper Pipe, 22 gauge with all type of fittings like, elbow, clamping, aero flex insulation, wrapping tape, etc complete in all respect as approved by the Engineer Incharge.					
464	a	1/4"	Rft	900	463		416700.00
465	b	1/2"	Rft	500	764		382000.00
466		TOTAL (SCHEDULE ITEMS) =					
467		Add 25% Premium on Schedule items					1352888.00
468		TOTAL A-3-1 (SCHEDULE ITEMS) WITH PREMIUM @ 25%=					
469		TOTAL - A (A-1 + A-2 + A-3 + A-3-1) Rs.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
470	B)	EXTERNAL DEVELOPMENT WORKS					
471	B-1)	ROADS, WALKWAYS, PAVED AREAS & CAR PARKING					
472		GENERAL NOTE					
473		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.					
474		SCHEDULED ITEMS					
475		A. Dismentaling					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
476	123-3	Dismantling stone masonry in lime or cement mortar in foundation, plinth and ground floor including stacking salvaged material (serviceable) and disposing surplus stuff as directed within three chains (91.5 m)	%Cft	14,658	4,787.50		701770.90
477	123-9	Dismantling burnt brick masonry in lime or cement mortar foundation, basement, plinth and ground floor including stacking salvaged material (serviceable) and disposing of surplus material as directed within three chains (91.5 m)..	%Cft	1,500	3,006.25		45093.75

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
478	123-11	Dismantling cement concrete block masonry work in lime or cement mortar in foundation, basement, plinth and ground floor including stacking salvaged material (serviceable) and disposing of surplus material as directed with in three chains (91.5 m).	%Cft	10,994	3,006.25		330501.11
479	123-12	Dismantling hollow cement concrete block masonry in lime or cement mortar in foundation, basement, plinth and ground floor including stacking salvaged material (serviceable) and disposing..of surplus material as directed within three chains (91.5 m) .	%Cft	10,994	3,303.13		363139.51

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
480	123-15	Dismantling R.C.C. including separating reinforcement from concrete in foundation, basement, plinth and ground floor including stacking at site and disposing of unserviceable material within three chains (91.5 m)	%Cft	938	8,456.25		79277.34
481							0.00
482	123-16	Dismantling C.C. work cast in situ in foundation, basement, plinth and ground floor including disposing of the material as directed within three chains (91.5 m).	%Cft	2,997	6,587.50		197427.38
483	123-58	Dismantling rolled steel sections in frames and trusses in ground floor and stacking as directed within three chains (91.5 m)	Cwt	25	2,426.88		60672.00
484		B. Earthwork					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
485	102-1	Clearing jungle (ordinary) by cutting, removing all shrubs, trees, upto 6 inches (152 mm) girth, etc. and taking out their entire roots and filling the hollows with earth complete with dressing, consolidating and watering the filling including stacking the serviceable materials and disposal of useless material as directed, lead to 10 chains (305 Rm), cost of earth included.	%Sft	261,752	25.23		66040.03

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
486	102-3	Felling trees of any height, girth exceeding 6 inches to one foot (152 mm to 305 mm), cutting into portable pieces, taking out their entire roots and filling hollows with earth complete with dressing, consolidating and watering the filling including stacking the serviceable materials and disposal of useless materials as directed, lead upto 10 chains (305 Rm), cost of earth included.	Each	100	623.75		62375.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
487	102-4	Felling trees of any height, girth exceeding one foot (305 Rm), cutting into portable pieces, taking out their entire roots and filling the hollows with earth complete with dressing, consolidating and watering the filling including stacking the serviceable materials as directed, lead upto 10 chains (305 Rm), cost of earth included.	Foot Girth	175	853.85		149423.75

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
488	103-1	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:					
489		Lift upto 5 feet	%Cft	27,001.80	1,624.63		438679.34

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
490	103-5	Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulder by hammering ,chiselling and jumper work including stacking of serviceable and unserviceable material sparatly, lead upto one chain (30.5 R.m) and lift as follows:					0.00
491		Lift upto 5 feet	%Cft	7,714.80	5,547.38		427969.27
492	103-7	Excavation for foundation trenches and drains in soft or disintegrated rock, by hammering ,chiselling and jumper work including stacking of serviceable and unserviceable material sparatly, lead upto one chain (30.5 R.m) and lift as follows:					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
493		Lift upto 5 feet	%Cft	3,857.40	2,328.63		89824.57
494	127-165	Excavation or cutting un suitable common material by mechanical means and dispose of surplus excavated material up to 10 miles lead complete as per direction of Engineer incharge.	%Cft	48,094	1,073.32		516202.52
495	127-169	Excavation or cutting surplus common material by mechanical means and dispose of surplus excavated material up to 10 miles lead complete as per direction of Engineer incharge.	%Cft	1,449,553	960.21		13918755.00
496	127-170	Excavation or cutting surplus hard rock material by mechanical means and dispose of surplus excavated material up to 10 miles lead complete as per direction of Engineer incharge.	%Cft	207,079	3,228.08		6684677.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
497	127-171	Excavation or cutting surplus medium rock material by mechanical means and dispose of surplus excavated material up to 10 miles lead complete as per direction of Engineer incharge.	%Cft	207,079	2,400.82		4971595.00
498	127-172	Excavation or cutting surplus soft rock material by mechanical means and dispose of surplus excavated material up to 10 miles lead complete as per direction of Engineer incharge.	%Cft	207,079	1,989.21		4119237.00
499	127-173	Compaction of natural ground i/c levelling,dressing and watering complete as per direction of Engineer incharge.	%Sft	109,300	263.16		287633.88

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
500	127-174	Granular back fill including watering and compacting complete as per Engineer incharge,	%Cft	5,000	5,667.89		283394.50
501	127-175	Common back fill including watering and compacting complete as per Engineer incharge.	%Cft	2,982	889.09		26512.66
502	127-176	Formation of Embankment from road way excavation in Common material ,including watering and compacting complete as per Engineer incharge.	%Cft	303,617	1,158.89		3518591.00
503	127-177	Formation of Embankment from road way excavation in hard rock material ,including watering and compacting complete as per Engineer incharge.	%Cft	21,687	2,945.07		638696.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
504	127-178	Formation of Embankment from road way excavation in medium rock material ,including watering and compacting complete as per Engineer incharge.	%Cft	21,687	3,020.60		655076.00
505	127-179	Formation of Embankment from road way excavation in soft rock material ,including watering and compacting complete as per Engineer incharge.	%Cft	1,000	2,721.62		27216.20
506	127-180	Formation of Embankment from Borrow excavation in common material ,including watering and compacting complete as per Engineer incharge.	%Cft	5,000	2,028.59		101429.50

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
507	127-181	Formation of Embankment from structural excavation in common material ,including watering and compacting complete as per Engineer incharge.	%Cft	5,000	659.49		32974.50
508	127-182	Formation of Embankment from structural excavation in any type of material ,including watering and compacting complete as per Engineer incharge.	%Cft	1,000	1,432.85		14328.50
509	127-183	Subgrade prepration in earth cut ,including watering and compacting complete as per Engineer incharge.	%Sft	79,707	736.33		586906.55
510	127-185	Improved subgrade (CBR>20),including watering and compacting complete as per Engineer incharge.	%Cft	500	2,739.23		13696.15

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
511	127-191	Traffic road signs categary-3 (a) , including fixing in cement concrete 1:2:4 complete as per Engineer incharge.	Each	8	35,638.48		285107.84
512	127-192	Traffic road signs categary-3 (b) , including fixing in cement concrete 1:2:4 complete as per Engineer incharge.	Each	7	64,163.97		449147.79
513	127-193	Traffic road signs categary-3 (c) , including fixing in cement concrete 1:2:4 complete as per Engineer incharge.	Sft	144	2,588.38		372726.72
514	127-203	Pavement marking in reflective TP Paint for line of 15cm width,with road marking machine complete as per Engineer incharge.	Rft	10,489	52.82		554028.98

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
515	127-213	Refelectorised plastic pavement studs (raised profile type- single) fixed with epoxy adhesive complete as per direction of the Engineer incharge	Each	98	362.67		35480.00
516	127-215	Refelectorised plastic pavement studs (raised profile type- double) fixed with epoxy adhesive complete as per direction of the Engineer incharge	Each	748	450.17		336940.00
517		C. ROAD PAVEMENTS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
518	127-29	Supplying and laying machine crushed 2-1/2" to 3/4" (64 mm to 19 mm) stone ballast of approved grade and quality in sub-base or base courses in required grade and camber and compacting to the required density by approved mechanical means (Vibratory Roller, Road Packer and Smooth Wheel Roller etc.) including watering with all lead and lift complete (actual compacted depth shall be considered for payment).	%Cft	88,407	8,261.52		7303761.99

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
519	127-31	Supplying and laying machine crushed 2" to 1/2" (51 mm to 13 mm) stone ballast of approved grade and quality in sub-base or base courses in required grade and camber and compacting to the required density by approved mechanical means (Vibratory Roller, Road Packer and Smooth Wheel Roller etc.) including watering with all lead and lift complete (actual compacted depth shall be considered for payment)	%Cft	52,765	8,529.02		4500337.40

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
520	127-55	Supplying, stacking and spreading murum of approved quality over stone metalling or brick ballast including watering, consolidation with power roller including all lead and lift.	%Cft	56,469	8,169.30		4613105.68
521	127-77	Providing and laying hot-mix bituminous concrete pavement laid with mechanical paver and mixed in central mixing plant in required thickness and density, rolled hot with different types of rollers complete as per specifications and job-mix formula and design: in single layer upto 1-1/2" (38 mm) thickness inculding priming coat @20 Lbs per %Sft complete.	Ton	1,164	12,858.73		14967561.72

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
522	127-79 + 127-81	Providing and laying 4" (102 mm) thick not leaner than 1:2:4 cement concrete (minimum works cube crushing strength of 3000 Lbs. PSI (211 Kg. per Sq.cm. at 28 days) in road, paths, crete-ways etc. using graded screened bajri in panels of approved size laid to required gradient and camber over any sub-grade including cost of necessary form work and its removal, compacting with vibrators (immersion or screen or both) belting the surface with canvas belt, roughening the surface after laying concrete with brush and curing etc. complete..	%Sft	200	12,887.82		25775.64

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
523	127-94	Providing and laying 1:4:8 cement concrete in any thickness using 2" (51 mm) and down gauge stone ballast of approved grade and quality over prepared sub-grade or sand cushion in roads, paths, creteways laid to required gradient and camber including cost of necessary form work and its removal compacting with vibrators including curing etc. complete .	%Cft	100	27,877.27		27877.27
524		D. ANCILLARY / MISCELLANEOUS WORKS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
525	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregate) cement concrete using using 50 % crushed graded boulders 3/4 inch (19 mm) and down gauge and 50 % graded screened bajri 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet depth (1.52 m) and plinth up to 4 feet (1.2 m) height from ground level .	%Cft	3,935	39,230.33		1543713.49

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
526	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	%Cft	14,886	32,221.55		4796499.93
527	113-8	Providing and laying dry uncoursed rubble Pitching 6'' to 12'' (152mm to 305 mm) thick Complete.	%Cft	200	15,906.25		31812.50
528							0.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
529	113-10 + 113-50	Providing and laying stone masonry random rubble second sort in cement mortar 1:4 in foundation, plinth and basement including scaffolding, curing etc. complete.	%Cft	77,744	35,138.36		27317966.60
530							0.00
531	117-177	Providing and laying in floor C.C. 1:2:4: tuff paver 2-1/2" thick of approved design and colour pattren laid on sand cushion filling of joint with sand and warring etc. complete as per direction of Engineer Incharge. (the cost of sand cushion is included)					
532		a) Average strength 7000 psi	Sft	38,307	135.13		5176424.91

PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
533	122-112	Raised or cut pointing on stone work with cement mortot 1:3 (one cement and three sand) in plinth and ground floor including ranking, out joints ,cutting,etc, complete.	%Sft	13,796	3,105.39		428419.60
534	126-6	Supplying and stacking approved garden soil (sweet earth) free from salts, pebbles and grass roots etc. including all leads and lifts.	%Cft	74,518	3,456.25		2575528.38
535	126-7	Spreading approved garden soil (sweet earth) in uniform thickness including mixing and breaking clods and dressing fine for grassing including disposal of rubbish within 3 chains (92 m) complete .	%Cft	74,518	296.88		221229.04

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
536	126-11	Supplying live (Dacca) grass in slabs with earth intact including all lead and lifts.	Sft	99,357	34.38		3415893.66
537	127-115	Providing and laying road kerb of precast cement concrete 1:2:4 (24" long 6" wide and 12" deep (610 mm long 152 mm wide and 305 mm deep) using screened graded bajri, from work and its removal compacting and curing laid in cement mortar 1:4 and cement plaster 1:4 neatly finished including cost of excavation and back filling of excavated stuff and its disposal within one chain lead as desired.	%Rft	11,359	33,910.87		3851935.72

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
538	127-156	Supplying and stacking with all lead and lift: coarse sand or fine aggregate of approved quality and grading..	%Cft	10,000	4,002.00		400200.00
539	127-160 + 127-162	Supplying, stacking and filling with all lead and lift, pit sand (local) in trenches, with or without blinding with coarse sand or fine aggregate in different layers as per design and direction of the Engineer-in-Charge including watering, ramming etc., complete.	%Cft	9,804	5,768.13		2774124.00
540	127-216	Extra for additional lead from 11 miles to 200 miles on item No.21 to 23,26 to 35 and 55.	P.Mile	8,300,914	35.10		2913620.67

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
541	134-2	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:					
542	i)	1/2 mile (0.80km) lead of part thereof.	%Cft	938	332.98		3123.35
543	ii)	1 mile (1.6 km) lead.	%Cft	938	383.79		3602.00
544	iii)	2 miles (3.2 km) lead.	%Cft	938	483.37		4536.00
545	iv)	3 miles (4.8 km) lead.	%Cft	15,954	576.78		92017.00
546	v)	Extra per mile (1.6 km) above 3 miles to 6 miles (4.8 km to 9.6 km) of lead.	%Cft	47,861	84.72		40547.84
547		SUB TOTAL SCHEDULED ITEMS =					
548		Premium @ 25% =					32118041.00
549		TOTAL SCHEDULED ITEMS =					
550		NON-SCHEDULED ITEMS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
551	NS-01	Applying two coat of paint on kerb stones as per specifications and quality as directed and approved by the engineer.	Sft	9,935	113.96		1132192.60
552		TOTAL NON-SCHEDULED ITEMS =					
553		TOTAL B-1 (SCHEDULED+ NON SCHEDULE) Rs.					
554	B-2)	BOUNDARY WALL & R.C.C RETAINING WALL					
555	i)	BOUNDARY WALL					
556		GENERAL NOTE.					
557		SCOPE : (Applicable to all sections)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
558		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.					
559	i)	(A) BOUNDARY WALL					
560		CIVIL WORKS					
561		PART-I (SCHEDULE ITEMS)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
562	(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	94945	1862.13		1767999.33

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
563	(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	%Cft	4536	24504.59		1111528.20
564	(108-12)	Providing 4 coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	%Sft	207188	1010.75		2094152.71

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
565	(112-25)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:6 in straight or curved walls 9 to 13-1/2 inches (229 mm to 343 mm) thick including scaffolding, raking, out joints and curing etc. complete in ground floor superstructure .	100Cft	16461.00	41260.97		6791968.27

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
566	(114-1) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3000 lbs. per sq inch at 28 days with a mix not leaner than 1:2:4 in column footing of required shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100Cft	6185	38067.52		2354476.11

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
567	(114-4) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch at 28 days with a mix not leaner than 1:2:4 in columns of square or rectangular shape of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth .	100Cft	2229	41889.37		933714.06

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
568	(114-8) + (114-137)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3000 lbs. at 28 days with a mix not leaner than 1:2:4 in plinth beams of required shape and design including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, tn foundation basement and plinth	100Cft	3402	40334.02		1372163.36

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
569	(114-24) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3000 lbs. per sq inch at 28 days with a mix not leaner than 1:2:4 in columns of square or rectangular shape of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in the ground floor.	100Cft	3686	52667.42		1941321.10

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
570	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	33781	282.45		9541443.45

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
571	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	12681	266.70		3382022.70
572	(119-32)	Providing and fixing iron grills with required section of angle iron and MS square bar as per approved design including welding all sides of the section at the junction, and fixing with sunk iron screws, painting two coats of red oxide paint etc. complete as required in any floor in masonry or concrete work.	Kg.	59830	290.89		17403948.70

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
573	(122-4)	1/2" (13 mm) thick cement plaster 1:4 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete .	%Sft	50545	4381.84		2214801.03
574	(122-159)	Painting iron work with synthetic enamel paint of approved make and shade two coats over and including the cost of one priming coat complete at any height in any floor .	%Sft	18771	6071.25		1139634.34
575	(122-172)	Painting three coats with weather shield paint deluxe (ICI) make of approved shade on plaster surface (External) and including the cost of cleaning the surface, sand papering etc. complete at any height in any floor.	100Sft	50545	4408.75		2228402.69

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
576		Sub Total (A) Scheduled Items =					
577		Premium @ 25% (Rs.) =					13569394.00
578		TOTAL COST OF BOUNDARY WALL (Rs.) =					
579	ii)	(B) R.C.C RETAINING WALL					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
580	(114-2) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3000 lbs. per sq inch at 28 days with a mix not leaner than 1:2:4 in raft or strip foundation with columns and pillars of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100Cft	8580	38067.52		3266193.22

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
581	(114-9) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch at 28 days with a mix not leaner than 1:2:4 in straight walls more than 6 inches (152mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth .	100Cft	17294	45525.19		7873126.36

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
582	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	58726	282.45		16587158.70

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
583	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	19585	266.70		5223319.50
584		Sub-Total (B) Scheduled Items =					
585		Premium @ 25% (Rs.) =					8237449.00
586		TOTAL COST OF B-2 (II) Rs.					
587		TOTAL COST OF B-2 (i+II) Rs.					
588	B-3)	MAIN GATE, GUARD ROOM & ELECTRIC METERING ROOM					
589	i)	CIVIL WORKS					
590		GENERAL NOTE.					

PROCUREMENT REGULATORY AUTHORITY PPRA EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
591		SCOPE : (Applicable to all sections)					
592		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.					
593		CIVIL WORKS					
594		PART-I (SCHEDULE ITEMS)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
595	(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100Cft	3438	1862.13		64020.03

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
596	(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	100Cft	165	24504.59		40432.57
597	(108-12)	Providing one coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	100Sft	4736	1010.75		47869.12

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
598	(109-113) + (109-120)	Providing and laying 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge in steps including cost of form work and its removal etc. complete in ground floor.	100Cft	30	29075.48		8722.64
599	(112-25)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:6 in straight or curved walls 9 to 13-1/2 inches (229 mm to 343 mm) thick including scaffolding, raking, out joints and curing etc. complete in ground floor superstructure .	%Cft	731	41260.97		301617.69

PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
600	(114-2) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3000 lbs. per sq inch at 28 days with a mix not leaner than 1:1:5:3 in Raft or Strip foundation with columns and pillars of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100Cft	810	36931.79		299147.50

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
601	(114-4) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in columns of square or rectangular shape of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth .	100Cft	195	45648.76		89015.08

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
602	(114-8) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3750 lbs. at 28 days with a mix not leaner than 1:1-1/2:3 in plinth beams of required shape and design including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, tn foundation basement and plinth	100Cft	237	44093.41		104501.38

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
603	(114-24) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in columns of square or rectangular shape of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in the ground floor.	100Cft	281	56426.81		158559.34
604	(114-24) + (114-134) + (114-137) + (114-93)	First Floor	100Cft	191	58637.40		111997.43

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
605	(114-32) + (114-134) + (114-137) + (114-92)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight walls 3" (102mm) thick and less than 5 inches (127 mm) thick including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in Ist floor.	100Cft	52.00	78,000.32		40560.17

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
606	(114-38) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight beams, lintels cantilever beams of required shape or section including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement and ground floor.	100Cft	200	51051.03		102102.06
607	(114-38) + (114-134) + (114-137) + (114-93)	First Floor	100Cft	152	53261.62		80957.66

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
608	(114-56) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in ordinary slab 5 inches to 6 inches (152 mm) thick including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor.	100Cft	265	49314.91		130684.51
609	(114-56) + (114-134) + (114-137) + (114-93)	First Floor	100Cft	165	51525.50		85017.08

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
610	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	6000	282.45		1694700.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
611	(114-166) + (114-174)	First Floor	Kg	1800.00	286.89		516402.00
612	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	2200	266.70		586740.00
613	(114-167) + (114-174)	First Floor	Kg	1000.00	271.14		271140.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
614	(117-2)	Providing and laying 1:4:8 cement concrete bed under floor using graded stone ballast 1" and down gauge with leveling and ramming, ramming, watering and curing etc. complete in ground floor.	100Cft	175	22036.75		38564.31
615	(117-6)	Providing and laying floors of 2 inches (51 mm) thick 1:2:4 cement concrete using graded screened bajri 3/4 inch (19 mm) and down gauge in ground floor laid in panels including form work, consolidation, finishing, and curing etc. complete.	100Sft.	330.00	48884.00		161317.20

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
616	(117-13) + (117-18) + (114-136) + (114-145)	Providing and laying terrazzo floor 1-3/4 inches (44 mm) thick consisting of 3/4 inch (19 mm) thick topping 1:2 (1 white cement 2 approved marble chips No. 0 to 6) in ground floor over a base of 1:2:4 (one cement, two sand and four graded crushed) cement concrete 1 inch (25 mm) thick laid in panels or pattern including form work, curing, cutting, rubbing and polishing etc, complete...	%Sft	230	15918.02		36611.45

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
617	(117-117)	Proving and laying floor 1 inch (25 mm) thick of cement tiles 12" X 12" X 1" (1/2 inch toping 1/2 inch base) or 305 mm X 305 mm X 25 mm (13 mm topping 12 mm base) in grey cement with pigment of dark shade in ground floor over 1 inch (25 mm) lime mortar 1:2 (one lime two sand) including setting the tiles with grey cement slurry over lime mortar, jointing and washing the tiles with grey cement slurry including grinding, rubbing, polishing and curing etc. complete including the cost of mortar .	100Sft.	300.00	19654.80		58964.40

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
618	(118-90)	Providing & laying wall finish coat of any colour graffiate wall coating 2.5 mm to 3 mm thick straight and swirt for exterior surface at any hight and any floor.	%Sft.	1,695	6,085.94		103156.68
619	(119-32)	Providing and fixing iron grills with required section of angle iron and MS square bar as per approved design including welding all sides of the section at the junction, and fixing with sunk iron screws, painting two coats of red oxide paint etc. complete as required in any floor in masonry or concrete work.	Kg.	54	290.89		15708.06

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
620	(119-5)	Providing and fixing single leaf steel doors made to crittal or equivalent standard and of approved sections fully panelled with M. S. Sheet of 16 gauge painted with two coats of red oxide paint including using approved brass section oxidized fitting iron lugs, cutting holes and making good damages to walls etc. complete as required in any floor.	Sft.	22.00	933.84		20544.48

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
621	(119-6)	Providing and fixing double leaf steel doors made to crittal or equivalent standard and of approved sections ftilly panelled with M. S, Sheet of 16 gauge painted with coats of red oxide paint including using approved brass section oxidized fittings, iron lugs, including cutting. holes and making good damages to walls etc. complete as required in any floor.	Sft.	37.00	988.98		36592.26

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
622	(119-96)	Providing and fixing fully glazed Silver anodized or powder coated aluminium Sliding windows as per British standard manufactured by Lucky, Prime, Chawla, Krudson and Pakistan Cables. (fixing through their approved fabricators), Prime model box section 101 mm x 96 30mm and 2mm thick including the cost of aluminium netting ,fittings, with all accessories cutting hole etc. and making good damages to walls etc. complete · as required in any floor as per direction of engineer-in-charge, but excluding the cost of glass pans	Sft	67	1279.69		85739.23

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
623	(119-121)	Providing and fixing Tinted glass panes 5mm thick to M.S. Box pipe / Aluminium doors, windows and ventilators etc including the cost of labour but excluding the cost of M.S. square pipe beading, rubber packing and screw in any floor at any height.	Sft	67	371.82		24911.94
624	(122-2)	1/4" thick cement plaster 1:4 on soffits of ceiling cantilever slabs sides and soffits of beams etc. in basement mezzanine and ground floor including making edges corners and curing etc. complete.	100Sft	230	3852.59		8860.96
625	(122-2) + (122-87)	First Floor	100Sft	331.00	307.50		1017.83

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
626	(122-4)	1/2" (13 mm) thick cement plaster 1:4 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete .	100Sft	2530	4381.84		110860.55
627	(122-4) + (122-87)	First Floor	100Sft	1015	4689.34		47596.80
628	(122-162)	Painting with (ICI) Dulux Plastic emulsion paint VIP of approved shade two coats over and including the cost of one priming coat complete over plastered surface at any height in any floor.	100Sft	1115	6737.38		75121.79

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
629	(122-172)	Painting three coats with weather shield paint deluxe (ICI) make of approved shade on plaster surface (External) and including the cost of cleaning the surface, sand papering etc. complete at any height in any floor.	100Sft	566	4408.75		24953.53
630	(124-199)	Providing and carrying out Termite proofing in foundations, under floors and wood work surface with a solution using of control TC with water and spraying the solution of the area to be treated as completed as per direction of Engineer Incharge.	Sft.	627	13.13		8232.51

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
631	(127-32)	Supplying and laying hand broken 1-1/2" to 1/2" (38 mm to 13 mm) stone ballast of approved grade and quality in sub-base or base courses in required grade and camber and compacting to the required density by approved mechanical means (Vibratory Roller, Road Packer and Smooth Wheel Roller etc.) including watering with all lead and lift complete (actual compacted depth shall be considered for payment)	100Cft	175	8341.52		14597.66
632		Sub Total of Schedule Items (Rs.) =					
633		Add premium on Schedule Items @ 25% (Rs.) =					1401884.00
634		Total of Schedule Items (Rs.) =					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
635		PART-II (NON- SCHEDULE ITEMS)					
636		Ref. Spec. No. 3000					
637	N.S - 1	Providing and fixing in position 22 gauge expanded metal lath on areas as specified in joints etc. under plaster	Sft.	265	105.00		27825.00
638	N.S - 2	Providing & fixing in position M.S pipe Gate as per drawings including cutting, welding, locking arrangement, rolling wheel, rail, red oxide primer paint to all exposed steel members and three coat of matt enamel paint complete in all respects.	Sft.	324	2550.00		826200.00
639		Total of Non-Schedule Items (Rs.) =					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
640		Total B-3-i) SCHEDULE AND NON-SCHEDULE ITEMS (Rs.) =					
641	ii)	ELECTRICAL WORKS					
642		SCHEDULED ITEMS					
643	2-78	(Sunlight , Pierlite , Future Technology)					
644	2-78-01 (b)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having warm/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (12) Watts.	Each	2	2,198.00		4396.00

PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
645	2-78-05 (c)	Providing, Installation, Testing &. Commissioning of 80 -110Watts Flood Lights (IP66) including driver, having neutral white / cool white colour, 110 -120 lm/Watt efficiency, 0.9 or above power factor, 20000-25000 hours life. cycle, inciuding connection, complete in all respect as approved by the Engineer Incharge.	Each	1	23,724.00		23724.00
646	2-3	Point wiring in recessed PVC conduit					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
647	2-3-01	Wiring for light or fan point with (3/.029") pvc insulated wire in 20 mm² (3/4") dia upvc conduit recessed in the wall, column , roof including 1 mm² single core pvc insulated wire as ECC as Required.	Point	3	2,836.00		8508.00
648	2-7	Extension /Additional Point wiring					
649	2-7-03	Extension /additional wiring for light fan call bell or light plug point controlled with same switch with (3/.029") pvc insulated wire in 20 mm (3/4") dia PVC conduit recessed in the wall , column or roof including 1mm² single core pvc insulated wire as ECC as required.	P/Point	6	1,179.00		7074.00
650	2-27	2 Wire with ECC wire in existing conduits/cable duct					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
651	2-27-02	Supply & drawing of 2 x 2.5 mm² single core pvc insulated wire including 1 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	400	99.00		39600.00
652	2-27-03	Supply & drawing of 2 x 4 mm² single core pvc insulated wire including 1.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	250	145.00		36250.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
653	2-27-04	Supply & drawing of 2 x6 mm² single core pvc insulated wire including 2.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	100	209.00		20900.00
654	2-26	Single pvc insulated wire and pvc ,pvc cable in existing conduits/ducts					
655	2-26-05	Supply & drawing of 10 mm², single core, PVC insulated wire in all kinds of existing or given conduit/cable duct as required.	Rft	50	139		6950.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
656	2-26-20	Supply & drawing of 16 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	50	219		10950.00
657	2-56	2 CORE CABLE WITH ECC WIRE IN EXISTING PIPE OR CABLE DUCT					
658	2-56-05	Providing & laying, 2 core, 10 mm², stranded copper conductor, PVC insulated & PVC sheathed cable 1/c 2.5 mm2 single core PVC insulated wire as ECG in all kinds of existinQ or Qiven conduit/cable duct as required.	Rft	50	328.00		16400.00
659	2-61	uPVC conduit & DUCT					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
660	2-61-06	Supply and fixing 20mm (3/4") dia Upvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	400	49.00		19600.00
661	2-61-07	Supply and fixing 25mm (1") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	250	55.00		13750.00
662	2-61-10	Supply and fixing 50mm (2") dia uPVC conduit with all especial such as bends, sockets, junction etc recessed in the wall or floor as required.	P/Rft	50	177.00		8850.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
663	306-23	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 2 inches (50 mm) dia pipe	P/Rft	50	435		21736.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
664	306-24	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 3 inches (80 mm) dia pipe	P/Rft	50	503		25173.50

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
665	306-25	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 4 inches (100mm) dia pipe..	P/Rft	50	600		30000.50
666		NOTE: The wiring shall be done as following.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
667	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 3/4 " PVC conduits including PVC conduit, conduit accessories (junction box, pull box, metal fan box etc) complete in all respects.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
668	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.					
669	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.					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
670	d	Wiring of circuit from Distribution Board to 13A , 230 Volts, 3 pin switched socket outlet with Two nos. single core 4 sqmm and One no. 2.5 sqmm PVC insulated 300/500 Volts grade stranded copper conductor cables in 3/4" dia concealed PVC conduit laid underfloor including PVC conduit, conduit accessories, etc. complete in all respects.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
671	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 3/4" PVC conduit laid underfloor including PVC conduit, conduit accessories, etc.complete in all respects.					
672	2-66	SCHNEIDER /PHILIPS ACCESSORIES ON RECESSED METAL BOARD					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
673	2-66-01	Providing & fixing 10 Amps Polycarbonate flame retardant, S.P Switch with fancy required gang plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required. (Schneider/ Philips)	Each.	10	471.00		4710.00
674	2-66-06	Providing & fixing 15 Amps Polycarbonate flame retardant 3-Pin switch socket unit with fancy gang plate fixed on die fabricated, powder coated metal board recessed in wall or column including connection as required. (Clipsal make)	Each	4	1,290.00		5160.00
675	2-80	CEILING FANS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
676	2-80-02	Providing & installing 120 Cm (48") sweep ceiling fan with blades, canopy, standard length of down rod including connection with 14.0076" flexible wire Complete as required. (without regulator) Pak, Royal, GFC,Younas, Millat.	Each	2	8,369.00		16738.00
677	2-87	FAN CLAMPS, DOWN ROD & MAKING HOLE.					
678	2-87-01	Providing & installing of Ceiling fan down rod 3/4" dia heavy gauge GI pipe of require length, one end arrangement for fan insulator and other end duly threaded and hole for split pin etc to be hold all sweep ceiling fan as required.	P/Rft.	6	70.00		420.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
679	3-04	4 CORE LT UN ARMOURED CABLE IN EXISTING CONDUIT OR CABLE DUCT					
680	3-4-01 (b)	Providing & laying 4 core, 25 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	100	1,223		122300.00
681		SECURITY SYSTEM					
682	8-10	Walk Through Gate & Handheld Metal Detector, Road Blocker and Barrier					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
683	8-10-01	Supply, installation, testing and commissioning of 33 zone Walk through Gate with pin point detection (TSA approved), , Power supply 100 to 240V AV, 50 Hz, along with the battery backup or approved by the Engineer lncharge as required as per list of approved manufacturers	P/Job	1	1,147,006.00		1147006.00
684	8-10-02	Supplying of 8 inch scan surface ISO certified handheld metal detector along with the battery approved by the Engineer lncharge as required as per list of approved manufacturers	P/Job	1	36,484.00		36484.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
685	8-10-03	Supply, installation, testing and commissioning of hydraulic barrier (road blocker), 10-12 feet span with Siemens motor (7.5 HP or above), having following specifications: limit switch (humidity proof) solenoid valve for reliability & safety in operation, maximum running pressure 25 bar (approx), must interface with access control system, load bearing capacity of approx 40 metric ton, raising/ lowering time 6-8 seconds, operating temperature ranging from -20'C to 50'C, manual override (in case of power failure), constructed in heavy duty grade keeping in view the actual entrance size. The barrier includessubmersible pump for water drainage, complete with all related accessories, as approved by the engineer	P/Job	2	1,852,923.00		3705846.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
686	8-10-04	Supply of vehicle inspection mirror with flash light complete in all respect as approved by the Engineer Incharge.	P/Job	1	31,919.00		31919.00
687	8-4	IP CCTV CAMERAS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
688	8-4-15	Supply, installation, testing and commissioning of PTZ Dome Camera i/c controller having following specifica:ions, 8MP14K with 200 mtr IR, 36x or higher zoom, Two 213" progressive scan CMOS, Min. Illumination Color: 0.0005 Lux @F1 .5, B/W: 0.0005Lux @F1 .5, 0 Lux with laser, Horizontal field of view: 56.1' to 2.0' (wide-tele), Vertical field of view: 33.4' to 1.1' (widetele), Diagonal field of view: 62.9' to 2.3' (wide-tele), (optical lens, wide-tele), Working Distance 10 mm to 1500 mm (wide-tele), Aperture Range F1.5 to F4.0, Focal Length 7.5 mm to 270 mm, 36x or higher Optical, Digital Zoom 16x or higher, Optical Defog, Rain Wiper, Preset/Pattern Scan/Patrol Scan/Auto Scan/Tilt Scan/Random Scan/Frame Scan/Panorama	P/Job	1	999,449.00		999449.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
689		PART-I COST =					
690		PREMIUM @25%					1590974.00
691		TOTAL PART-I COST (SCHEDULE ITEMS WITH PREMIUM) =					
692		NON-SCHEDULED ITEMS					
693		E. ELECTRICAL WORKS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
694		Supply, installation, testing and commissioning of the following items of work (unless specifically stated otherwise) including all material, labour, tool, plant, accessories, related civil works etc required for proper completion of each item as per specifications (Section-8001 "General Specifications for Electrical Works" shall be applicable to all BOQ items). The contractor is bound to submit all relevent data, information, literature, drawings, submittals etc. as per specifications & recommended manufacturers list to The engineer for necessary approvals.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
695		L.T. DISTRIBUTION BOARDS					
696		Ref. Spec. Sec. 8133, 8240					
697	NS-01	Following LT Distribution Boards (as per single line diagrams shown on drawings), recessed mounted including all accessories, related civil works etc. complete in all respects:					
698	a)	DB-GATE	Job.	1	200,000.00		200000.00
699		LT CABLES					
700		(Ref. Specification Section-8001, 8212)					
701	NS-E-02	10 sqmm, 4 core CU/PVC/PVC stranded copper conductor cable, 600/1000 V grade in already installed conduit/on cable tray.	Rft.	50	1023		51150.00
702		LED LIGHT FIXTURE					

PUBLIC PROCUREMENT REGULATORY AUTHORITY PPRA EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
703		(Ref. Spec. Nos. 8001, 8150)					
704		Supply, installation, testing & commissioning of the following types of light fixtures including LED Light with driver, internal wiring complete with all mounting accessories as per architectural arrangements/ requirements, dust & moisture protected and corrosion proof and suitable for this area as acceptably supplied and installed and as approved by the Engineer.					
705	NS-E-17	12 W Weather Proof Bulkhead die cast aluminum body WALL mounted OUTDOOR LIGHT IP 55 or better	Each	6	12,989		77934.00
706		WIRING ACCESSORIES					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
707		(Ref. Specification Section-8001, 8220)					
708	NS-E-10	Simplex Universal Switch socket outlet with switch 13 A - Simplex, 230V. Mounting Height as per site including appropriate size powder coated metallic back box.	No.	6	2,487.00		14922.00
709		EARTHING					
710		(Ref. Spec. Nos. 8001, 8240)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
711	NS-E-12	Earth electrode for lightning protection system comprise 1/2" dia, 10' long Copper deposited steel rod, including appropriate clamp for clamping of the down conductor. The copper deposited steel rod shall be hammered into the ground to the depth of twelve inches below the ground surface. The earth electrode includes excavation, backfilling, etc.	Job.	1	23,466.00		23466.00
712		STRUCTURED CABLING NETWORK (TELEPHONE & NETWORKING)					
713		(Ref. Spec. Nos. 8001, 8312)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
714	NS-E-21	Wiring from RJ45 outlet point to relevant Building / floor distributor with CAT-6 UTP cable in already laid concealed conduit / already installed cable tray or cable trunking including all accessories complete in all respect.	No.	2	16,416		32832.00
715	NS-E-22	Simplex Face plate with RJ-45 I/0 CAT-6 UTP telecommunication outlet including sheet steel back box shall make of 16 SWG shall be finished in powder coated paint. including all mounting accessories.	No.	2	2,649		5298.00
716		NON-SCHEDULE ITEMS =					
717		TOTAL Total B-3-ii) SCHEDULE ITEMS + NON-SCHEDULE ITEMS					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
718	B-4)	STORM DRAINAGE NETWORK					
719		GENERAL NOTE					
720		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 drawings, specifications and as approved by the Engineer.					
721		SCHEDULED ITEMS					
722		EXTERNAL STORM DRAINAGE					
723		EARTH WORK					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
724		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:					
725	103-1	Lift upto 5 feet	%Cft	45334	1624.63		736509.83

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
726		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:					
727	103-2	Lift upto 5 feet	%Cft	22667	1862.13		422089.05

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
728		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
729	103-5	Lift upto 5 feet	%Cft	11334	5547.38		628712.37
730		Excavation for foundation trenches and drains in soft or disintegrated rock by hammering, chiselling and Jumper work including, stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
731	103-7	Lift upto 5 feet	%Cft	17000	2328.63		395872.96
732		Excavation for foundation trenches and drains in hard rock by hammering chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
733	103-8	Lift upto 5 feet	%Cft	17000	4434.88		753940.76

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
734	104-7	Supplying earth from approved site within the area acquired including digging or cutting, loading, unloading and filling in foundation trenches, plinth or under floor etc. including breaking clods, dressing watering and consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction complete within a lead of one chain (30.5 R.m) and lift of 5 feet (1.52 m) as directed by the Engineer-in-charge.	%Cft	6008	1507.81		90586.22
735		RCC DRAIN					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
736	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	%Cft	4330	32221.55		1395060.20

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
737	106-12	Providing and laying in situ 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	%Cft	649	34857.58		226378.41

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
738	106-15	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	%Cft	500	39059.08		195295.40

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
739	114-2 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	%Cft	7777	33562.40		2610089.11

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
740	114-9 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight walls more than 6 inches (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	%Cft	1544	45915.19		708930.53

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
741	114-10 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight walls 5" (127 mm) to 6" (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	%Cft	6744	55457.69		3739858.65

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
742	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	%Cft	6744	45945.52		3098393.57

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
743	114-57 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab more than 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	%Cft	1033	44075.39		455298.78

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
744	114-166	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	6410	282.45		1810414.83

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
745	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	57687	266.70		15385161.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
746	127-163	Providing and laying dry stone uncoarsed rubble pitching up to 12" (305 mm) thick in bottom and sides of channel or drain as per direction of the Engineer-in-Charge .	%Cft	19528	10001.00		1952995.28
747	127-164	Cement pointing to stone pitching in 1:2 cement mortar in channels or drain including curing etc. and raking out joint complete	%Sft	19528	2307.19		450548.06
748		CARRIAGE					
749	134-2	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:					
750	i)	1/2 mile (0.80km) lead of part thereof.	%Cft	21111	332.98		70293.80
751	ii)	1 mile (1.6 km) lead.	%Cft	21111	383.79		81020.05

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
752	iii)	2 miles (3.2 km) lead.	%Cft	21111	483.37		102041.91
753	iv)	3 miles (4.8 km) lead.	%Cft	42221	576.78		243522.48
754	v)	Extra per mile (1.6 km) above 3 miles to 6 miles (4.8 km to 9.6 km) of lead.	%Cft	126663	84.72		107308.98
755		RCC PIPES					
756		Providing R.C.C. pipes and collars of class 'B' and fixing in trench including cutting, fitting and jointing with maxphalt composition and cement mortar (1:1) and back filling the excavated material in trench including testing with water to a pressure head of 50 feet (15.24m) and cartage within 10 miles (16.09 km), for the following pipes:					
757	311-9	12 inches (765 mm) dia. pipe..	R.ft.	400	548.16		219264.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
758		SUB TOTAL (SCHEDULED) =					
759		Premium @ 25% =					8969897.00
760		TOTAL B-4 (SCHEDULED ITEMS) =					
761	B-5)	WATER SUPPLY NETWORK					
762		GENERAL NOTE					
763		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 drawings, specifications and as approved by the Engineer.					
764		SCHEDULED ITEMS					
765		EARTH WORK & PIPE TRENCHES					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
766	103-1	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	27,720	1,624.63		450347.44

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
767	103-2	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	7,920	1,862.13		147480.70

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
768	103-5	Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5R.m) and lift upto 5feet (1.52m)	100 Cft	3,960	5,547.38		219676.25
769	104-9	Supplying stacking and filling sand of approved quality from outside sources in foundation, trenches, plinth or under floor, etc. including dressing, watering and consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction and lift upto 5 feet (1 .52 m).	100 Cft	19,800	4,869.94		964248.12

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
770	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregates) cement concrete using 50% crushed graded bolders 3/4" (19mm) and down gauge and 50% graded screened bajri 3/4" (19mm) and down gauge with lawancepur sand in foundation, basement and plinth including formwork, compacting, curing and removal of formwork etc. complete foundation and basements upto 5 feet depth (1.52m) and plinth upto 4 feet(1.2m) height from ground level. (For concrete encasement and thrust blocks)	100Cft	1,320	39,230.33		517840.36
771		WATER SUPPLY PIPES AND FITTINGS					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
772		Providing and fixing polyethylene pipe (HDPE) (PN-16) with specials including cutting and fitting complete and cartage within 10 miles of following diameters:					
773	306-37	25mm e/d	Rft	20	109.28		2185.60
774	306-38	32mm e/d	Rft	20	161.25		3225.00
775	306-39	40mm e/d	Rft	20	240.00		4800.00
776	306-40	50mm e/d	Rft	20	295.13		5902.60
777	306-41	75mm e/d	Rft	20	669.70		13394.00
778		VALVES					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
779		Providing and fixing cast iron sluice valves with flanged ends and two tail pieces to each valve complete with bolts and nuts, including the cost of insertion rubber washers (valves to stand test pressure head of 400 feet (122 m). (in chambers on water supply network)					
780	310-1	3 inches (80 mm) dia..	Each	1	7,961.40		7961.40
781	310-2	4 inches (100 mm) dia..	Each	2	10,236.40		20472.80
782	310-3	6 inches (150 mm) dia..	Each	1	12,516.80		12516.80
783		Providing and fixing full way gun metal valves with wheels threaded or flanged ends with rubber washers, (standard pattern) of following diameters:					
784	307-9	1 inch (25mm) dia	Each	1	4,012.90		4012.90
785	307-10	1-1/4 inch (32mm) dia	Each	1	6,366.65		6366.65

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
786	307-11	1-1/2 inch (40mm) dia	Each	1	8,169.15		8169.15
787	307-12	2 inch (50mm) dia	Each	1	8,699.40		8699.40
788		VALVE CHAMBERS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
789	103-1	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	370	1,624.63		6011.13

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
790	103-2	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	105	1,862.13		1955.24

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
791	103-5	Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5R.m) and lift upto 5feet (1.52m)	100 Cft	55	5,547.38		3051.06

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
792	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregates) cement concrete using 50% crushed graded bolders 3/4" (19mm) and down gauge and 50% graded screened bajri 3/4" (19mm) and down gauge with lawancepur sand in foundation, basement and plinth including formwork, compacting, curing and removal of formwork etc. complete foundation and basements upto 5 feet depth (1.52m) and plinth upto 4 feet(1.2m) height from ground level. (For concrete thrust blocks)	100Cft	5	39,230.33		1961.52

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
793	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100 Cft	32	32,221.00		10310.72

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
794	106-12	Providing and laying in situ 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100Cft	50	34,857.58		17428.79

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
795		Providing and laying first class solid burnt brick masonry set in cement mortar 1:4 in straight or curved walls 9" to 13-/2 inches (228 mm to 343 mm) thick including scaffolding, raking out Joints and curing etc. complete in foundation, basement and plinth .					
796	112-2 +112-79	foundation and basement masonry upto 5 feet (1.52 Ru.m.) depth and plinth upto 4 feet (1.2 Ru.m.) height from ground level	100Cft	175	39,770.93		69599.13

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
797	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100Cft	30	45,945.52		13783.66

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
798	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	Kg	70	266.70		18669.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
799	122-3	1/2" (13 mm) thick cement plaster 1:3 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete.	100 Sq.ft.	490	4,707.17		23065.13
800	108-12	Providing a coat of bitumen emulsion at 10 Lbs per 100sft (0.49 kg/sm) on walls and floors in ground floor.	100 Sq.ft.	360	1,010.75		3638.70
801		Total (Scheduled) =					
802		PREMIUM 25% =					641693.00
803		TOTAL WITH PREMIUM (SCHEDULED) =					
804		NON-SCHEDULED ITEMS					
805		WATER SUPPLY PIPES AND FITTINGS					
806		(Ref. Specs: 5216)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
807	NS-01	Providing and laying Poly Ethylene Pressure Pipe (PN-12.5 & HDPE-100) conforming to ISO 4427:1996, DIN 8074/8075 with Compression / Butt fusion fittings and specials (as required) in pipe trenches including flanges (BS-4504; PN-16) wherever required, flushing, cleaning and disinfecting as per specifications and as directed by the Engineer of following internal diameters.					
808	(a)	63mm e/d	Rft	200	644.00		128800.00
809	(b)	110mm e/d	Rft	2700	1,828.00		4935600.00
810	(c)	160mm e/d	Rft	50	3,853.00		192650.00
811	(d)	200mm e/d	Rft	10	5,931.00		59310.00
812		VALVES					
813		(Ref. Specs: 5216, 5220)					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
814	NS-02	C.I. gate valves conforming to BS-5163 (PN-16) including Adapters, flanges, nuts & bolts, transition pipe pieces with flanges, rubber seal, making required type of joints on both ends complete in all respect as shown on drawings or as directed by the Engineer of following diameters.					
815	a)	8" dia	Each	1	186,695		186695.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
816	NS-03	Provide and install double acting air relief valve (PN-16) of 2 inch (50mm) inner dia with integral isolating valve, in valve chamber, of approved manufacturers, including tees, Adapter, transition pipe pieces with flanges, making required type of joints on both ends as shown on drawing and as directed by the Engineer, complete in all respects.	Each	1	72,195		72195.00
817		VALVE CHAMBER COVERS					
818		(Ref. Specs: 2100, 2200, 2300)					
819	NS-04	RCC valve chamber cover 24" dia, 2.5" MS angle RCC1:2:4 etc complete with frame as per drawings.	Each	5	20,555		102775.00
820		TOTAL (NON-SCHEDULED) =					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
821		TOTAL B-5) SCHEDULED + NON SCHEDULED					
822	B-6)	FIRE FIGHTING NETWORK					
823		GENERAL NOTE					
824		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 drawings, specifications and as approved by the Engineer.					
825		SCHEDULED ITEMS					
826		EARTH WORK & PIPE TRENCHES					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
827	103-1	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	13,360	1,624.63		217050.57

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
828	103-2	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	3,820	1,862.13		71133.37

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
829	103-5	Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5R.m) and lift upto 5feet (1.52m)	100 Cft	1,910	5,547.38		105954.96
830	104-9	Supplying stacking and filling sand of approved quality from outside sources in foundation, trenches, plinth or under floor, etc. including dressing, watering and consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction and lift upto 5 feet (1 .52 m).	100 Cft	9,550	4,869.94		465079.27

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
831	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregates) cement concrete using 50% crushed graded bolders 3/4" (19mm) and down gauge and 50% graded screened bajri 3/4" (19mm) and down gauge with lawancepur sand in foundation, basement and plinth including formwork, compacting, curing and removal of formwork etc. complete foundation and basements upto 5 feet depth (1.52m) and plinth upto 4 feet(1.2m) height from ground level. (For concrete encasement and thrust blocks)	100Cft	1,320	39,230.33		517840.36
832		VALVE CHAMBERS					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
833	103-1	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	370	1,624.63		6011.13

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
834	103-2	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	105	1,862.13		1955.24

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
835	103-5	Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5R.m) and lift upto 5feet (1.52m)	100 Cft	55	5,547.38		3051.06

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
836	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregates) cement concrete using 50% crushed graded bolders 3/4" (19mm) and down gauge and 50% graded screened bajri 3/4" (19mm) and down gauge with lawancepur sand in foundation, basement and plinth including formwork, compacting, curing and removal of formwork etc. complete foundation and basements upto 5 feet depth (1.52m) and plinth upto 4 feet(1.2m) height from ground level. (For concrete thrust blocks)	100Cft	5	39,230.33		1961.52

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
837	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100 Cft	32	32,221.00		10310.72

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
838	106-12	Providing and laying in situ 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100Cft	50	34,857.58		17428.79

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
839		Providing and laying first class solid burnt brick masonry set in cement mortar 1:4 in straight or curved walls 9" to 13-/2 inches (228 mm to 343 mm) thick including scaffolding, raking out Joints and curing etc. complete in foundation, basement and plinth .					
840	112-2 +112-79	foundation and basement masonry upto 5 feet (1.52 Ru.m.) depth and plinth upto 4 feet (1.2 Ru.m.) height from ground level	100Cft	180	39,770.93		71587.67

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
841	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100Cft	30	45,945.52		13783.66

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
842	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	Kg	70	266.70		18669.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
843	122-3	1/2" (13 mm) thick cement plaster 1:3 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete.	100 Sq.ft.	490	4,707.17		23065.13
844	108-12	Providing a coat of bitumen emulsion at 10 Lbs per 100sft (0.49 kg/sm) on walls and floors in ground floor.	100 Sq.ft.	360	1,010.75		3638.70
845		Total (Scheduled) =					
846		PREMIUM 25% =					387130.00
847		TOTAL WITH PREMIUM (SCHEDULED) =					
848		NON-SCHEDULED ITEMS					
849		WATER SUPPLY PIPES AND FITTINGS					
850		(Ref. Specs: 5216)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
851	NS-01	Providing and laying Poly Ethylene Pressure Pipe (PN-16 & HDPE-100) conforming to ISO 4427:1996, DIN 8074/8075 with Compression / Butt fusion fittings and specials (as required) in pipe trenches including flanges (BS-4504; PN-16) wherever required, flushing, cleaning and disinfecting as per specifications and as directed by the Engineer of following internal diameters.					
852	(a)	110mm e/d	Rft	20	2,249.00		44980.00
853	(b)	160mm e/d	Rft	600	4,644.00		2786400.00
854	(c)	200mm e/d	Rft	850	7,176.00		6099600.00
855	(d)	250mm e/d	Rft	50	11,128.00		556400.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
856	NS-02	MS pipes with flanges, specials and clamps etc, conforming to ASTM A53 Sch. 40, Grade-B, including fixing, cutting, welding, fixing & supports; and other fittings complete with and including the cost of breaking, through walls and slabs, making walls & slabs good thereafter, etc, anticorrosive treatment from inside & outside, after cleaning the pipe.					
857	(a)	3" dia	Rft	20	2,037.00		40740.00
858	(b)	4" dia	Rft	60	2,913.00		174780.00
859	(c)	6" dia	Rft	50	5,037.00		251850.00
860	(d)	8" dia	Rft	10	7,527.00		75270.00
861		VALVES					
862		(Ref. Specs: 5216, 5220)					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
863	NS-03	C.I. gate valves conforming to BS-5163 (PN-16) including Adapters, flanges, nuts & bolts, transition pipe pieces with flanges, rubber seal, making required type of joints on both ends complete in all respect as shown on drawings or as directed by the Engineer of following diameters.					
864	a)	3" dia	Each	1	62,820		62820.00
865	b)	4" dia	Each	2	78,945		157890.00
866	c)	6" dia	Each	1	139,945		139945.00
867	d)	8" dia	Each	1	186,695		186695.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
868	NS-04	Provide and install double acting air relief valve (PN-16) of 2 inch (50mm) inner dia with integral isolating valve, in valve chamber, of approved manufacturers, including tees, Adapter, transition pipe pieces with flanges, making required type of joints on both ends as shown on drawing and as directed by the Engineer, complete in all respects.	Each	1	72,195		72195.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
869	NS-05	Fire piller Hydrant of 04"dia, 02 outlets of 2.5" & female 2.5" instantaneous coupling, from approved manufacturers including stand pipe, Adapter, transition pipe pieces with flanges, nuts & bolts, making required type of joints on both ends complete in all respects.	Each	2	727,275		1454550.00
870		VALVE CHAMBER COVERS					
871		(Ref. Specs: 2100, 2200, 2300)					
872	NS-06	RCC valve chamber cover 24" dia, 2.5" MS angle RCC1:2:4 etc complete with frame as per drawings.	Each	5	20,555		102775.00
873		TOTAL (NON-SCHEDULED) =					
874		TOTAL B-6) SCHEDULED + NON SCHEDULED					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
875	B-7)	SANITARY SEWER NETWORK					
876		GENERAL NOTE					
877		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 drawings, specifications and as approved by the Engineer.					
878		SCHEDULED ITEMS					
879		SECTION-A - EXTERNAL SEWERAGE NETWORK					
880		EARTH WORK & PIPE TRENCHES					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
881		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:					
882	103-1	Lift upto 5 feet	100Cft	22000	1,624.63		357418.60

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
883	103-1 + 103-28	Lift 5 to 8 feet	100Cft	9170	1,862.13		170757.32
884	103-1 + 103-28	Lift 8 to 11 feet	100Cft	3670	2,099.63		77056.42
885	103-1 + 103-28	Lift 11 to 14 feet	100Cft	1840	2,337.13		43003.19
886		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
887	103-2	Lift upto 5 feet	100Cft	5870	1,862.13		109307.03
888	103-2 + 103-28	Lift 5 to 8 feet	100Cft	7450	2,099.63		156422.44
889	103-2 + 103-28	Lift 8 to 11 feet	100Cft	980	2,337.13		22903.87
890	103-2 + 103-28	Lift 11 to 14 feet	100Cft	490	2,574.63		12615.69
891		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
892	103-5	Lift upto 5 feet	100Cft	1470	5,547.38		81546.49
893	103-5 + 103-29	Lift 5 to 8 feet	100Cft	615	5,844.26		35942.20

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
894	103-5 + 103-29	Lift 8 to 11 feet	100Cft	245	6,141.14		15045.79
895	103-5 + 103-29	Lift 11 to 14 feet	100Cft	125	6,438.02		8047.53
896	104-9	Supplying stacking and filling sand of approved quality from outside sources in foundation, trenches, plinth or under floor, etc. including dressing, watering and consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction and lift upto 5 feet (1 .52 m).	100 Cft	20380	4,869.94		992493.77
897		CONCRETE					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
898	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregates) cement concrete using 50% crushed graded bolders 3/4" (19mm) and down gauge and 50% graded screened bajri 3/4" (19mm) and down gauge with lawancepur sand in foundation, basement and plinth including formwork, compacting, curing and removal of formwork etc. complete foundation and basements upto 5 feet depth (1.52m) and plinth upto 4 feet(1.2m) height from ground level. (For concrete encasement)	100Cft	1650	39,230.33		647300.44
899		RCC MANHOLES (3'x3')					
900		EARTH WORK					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
901		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:					
902	103-1	Lift upto 5 feet	100Cft	2650	1,624.63		43052.70

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
903	103-1 + 103-28	Lift 5 to 8 feet	100Cft	1100	1,862.13		20483.43
904	103-1 + 103-28	Lift 8 to 11 feet	100Cft	440	2,099.63		9238.37
905	103-1 + 103-28	Lift 11 to 14 feet	100Cft	220	2,337.13		5141.69
906		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
907	103-2	Lift upto 5 feet	100Cft	700	1,862.13		13034.91
908	103-2 + 103-28	Lift 5 to 8 feet	100Cft	300	2,099.63		6298.89
909	103-2 + 103-28	Lift 8 to 11 feet	100Cft	120	2,337.13		2804.56
910	103-2 + 103-28	Lift 11 to 14 feet	100Cft	60	2,574.63		1544.78
911		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
912	103-5	Lift upto 5 feet	100Cft	180	5,547.38		9985.28
913	103-5 + 103-29	Lift 5 to 8 feet	100Cft	75	5,844.26		4383.20

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
914	103-5 + 103-29	Lift 8 to 11 feet	100Cft	30	6,141.14		1842.34
915	103-5 + 103-29	Lift 11 to 14 feet	100Cft	15	6,438.02		965.70
916	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	100Cft	205	32,221.55		66054.18

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
917	106-12	Providing and laying in situ 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100Cft	240	34,857.58		83658.19

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
918	106-15	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100Cft	10	39,059.08		3905.91

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
919	114-2 + 114-136	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100Cft	320	33,203.65		106251.68

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
920	114-10 + 114-136	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight walls 5" (127 mm) to 6" (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	100Cft	1680	55,098.94		925662.19

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
921	114-56 + 114-136	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100Cft	240	45,586.77		109408.25

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
922	114-166	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	1020	282.45		288099.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
923	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	4065	266.70		1084135.50

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
924	122-3	1/2" (13 mm) thick cement plaster 1:3 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete.	100 Sq.ft.	2400	4,707.17		112972.08
925	108-12	Providing a coat of bitumen emulsion at 10 Lbs per 100sft (0.49 kg/sm) on walls and floors in ground floor.	100 Sq.ft.	4480	1,010.75		45281.60
926		SUB-TOTAL (SCHEDULED) =					
927		PREMIUM 25% =					1418516.00
928		TOTAL WITH PREMIUM (SCHEDULED) =					
929		NON-SCHEDULED ITEMS					
930		(Ref. Specs: 5100)					
931		SEWER PIPES					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
932	NS-01	uPVC non-pressure pipes for sanitary drainage conforming to BS-5481/BS-4660 (SN8) with rubber ring fittings and specials compatable with pipe material as per manufacturer's recommendations, complete in all respects, flushing cleaning and disinfecting as per specifications and as directed by the Engineer of following diameters.					
933	(a)	06 inches (160mm)	R.ft.	50	1788.00		89400.00
934	(b)	08 inches (200mm)	R.ft.	460	2756.00		1267760.00
935	(c)	10 inches (250mm)	R.ft.	1870	4386.00		8201820.00
936	(c)	12 inches (315mm)	R.ft.	330	6700.00		2211000.00
937		BRICK MASONRY MANHOLES					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
938	NS-02	RCC manhole cover 24" dia, 2.5" MS angle, RCC 1:2:4 etc, complete with frame; as shown in drawing.	Each	40	20,555		822200.00
939	NS-03	3/4inch diameter Galvanised MS ladder rungs for manholes; each rung of 18inch width, 6 inch projected outside the wall and 6 inch embeded in wall on both ends; including all necessary works for complete installation.	Each	200	1,513		302600.00
940		SUB-TOTAL (NON-SCHEDULED) =					
941		TOTAL B-7) SCHEDULED + NON SCHEDULED =					
942	B-8)	TUBE WELL					
943		GENERAL NOTE					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
944		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.					
945		SCHEDULED ITEMS					
946		TUBEWELL					
947	5-17-01	Conducting Electric Resistivity survey at different locations to configure the subsurface lithologies/possibilty of ground water suitable for drilling tube well.	Job	1	33,000		33000.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
948	5-17-04	Drilling of Trial Bore in shingle gravel and rock including sinking and with drawing of casing pipes 6"-10" dia					
949	a	Ground level to 250 Rft-(8" dia Trial bore)	Rft	100	1,764		176400.00
950	b	Exceeding 250 Rft-(8" dia Trial bore)	Rft	100	901		90100.00
951	5-17-05	Conversion of Trial Bore in shingle gravel and rock including sinking and with drawing of casing pipes 15"-18" dia					
952	a	Ground level to 250 Rft-(18" dia bore)	Rft	100	2,531		253100.00
953	b	Exceeding 250 Rft-(18" dia bore)	Rft	100	2,729		272900.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
954	5-17-06	Drilling of Trial Bore in all type of soil except shingle gravel and rock including sinking and with drawing of casing pipe complete as required: 6"-10" dia					
955	a	Ground level to 250 Rft-(8" dia Trial bore)	Rft	150	1,388		208200.00
956	b	Exceeding 250 Rft-(8" dia Trial bore)	Rft	250	1,542		385500.00
957	5-17-07	Conversion of Trial Bore into successful bore in all type of soil except shingle gravel and rock including sinking and with drawing of casing pipe complete as required: 6"-10" dia** **15"-18" dia (TYPO ERROR CORRECTED)					
958	a	Ground level to 200 Rft-(18" dia bore)	Rft	100	1,718		171800.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
959	b	Exceeding 200 Rft-(18" dia bore)	Rft	300	1,938		581400.00
960	5-17-08	Providing and installing 10" dia uPVC blind pipe BSS class 'E' in tube well bore hole including sockets and solvent etc complete as required as approved by the Engineer incharge as required.	Rft	400	3,118		1247200.00
961	5-17-10	Providing and installing 10" dia uPVC strainer BSS class 'E" in tube well bore hole including sockets and solvent etc complete as required as approved by the Engineer incharge as required.	Rft	200	3,118		623600.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
962	5-17-12	Providing and installing PVC Bail/ end plug in tube well bore hole 2 ft long and 10" dia class "E" complete as required.	No.	1	2,805		2805.00
963	5-17-14	Shrouding with graded PEA gravel into the space between bore hole and blind pipe/strainer.	Cft	650	150		97500.00
964	5-17-15	Electric/video logging of successful bore hole for proper placement of strainer/blind pipe etc complete as required.	Job	1	33,000		33000.00
965	5-17-17	Testing develop and sterlize of tube well through compressor upto 1.5 cusecs discharge in accordance with approved procedure upto duration of 72 hours as required by the Engineer	Job	1	34,320		34320.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
966		SUB TOTAL (SCHEDULED) =					
967		PREMIUM 25% =					1052706.00
968		TOTAL WITH PREMIUM (SCHEDULED) =					
969		NON-SCHEDULED ITEMS					
970		(Ref. Spec. 5240, 5600)					
971		TUBEWELL					
972	NS-01	Mobilization and de-mobilization of drilling rig and related equipments at drilling site.	Job	1	80,000		80000.00
973	NS-02	Collection of lithological samples at every 5 feet interval or change of lithology whichever is less.	Job	1	20,000		20000.00
974	NS-03	Yield test by air compressor.	Job	1	100,000		100000.00
975	NS-04	Furnishing sample of water from bore hole and getting water quality test report from approved Laboratory.	Job	1	20,000		20000.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY PPRA EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
976	NS-05	Supply and install Centralizers as per specifications.	No	10	3000		30000.00
977	NS-06	Provision and fixing 2 Nos. dia 2" PVC gravel feed pipe including sanitary seal to min. 20 ft. depth from top level of tubewell, complete in all respects.	Job	1	50,000		50000.00
978		PUMPING MACHINERY					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
979	NS-07	Submersible deep well pump with motor, including control panel (location as per plan), appropriate power cable from panel to motor, valves, GI (ASTM A53 Sch-40) Riser pipe upto ground of required dia. & standard specifications and all other installation accessories as required/ recommended by the pump manufacturer for complete installation and operation, of following tentative requirements: Discharge = 4000-5000 gph; Head=600-700 feet & Setting Depth=350-400 feet	Job	1	6,351,057		6351057.00
980		SUB TOTAL (NON-SCHEDULED) =					
981		TOTAL B-8) SCHEDULED + NON SCHEDULED					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
982	B-9)	ELEVATED WATER TANK					
983	i)	CIVIL WORKS					
984		GENERAL NOTE.					
985		SCOPE : (Applicable to all sections)					
986		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.					
987		PART-I (SCHEDULE ITEMS)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
988	(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	9021	1862.13		167982.75
989	(103-28)	5'-00" to 8'-00" Depth	%Cft	5413	2099.63		113652.97
990	(103-28)	8'-00" to 11'-00" Depth	%Cft	5413	2337.13		126508.85
991	(103-28)	11'-00" to 14'-00" Depth	%Cft	2255	2574.63		58057.91

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
992	(104-1)	Filling excavated earth available at site in foundation, plinth or under floor, etc. including breaking clods, dressing, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction complete within a lead of one chain (30.5 R.m) and lift of 5 feet (1.52m).	%Cft	500	735.19		3675.95
993	(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	%Cft	597	24504.59		146292.40

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
994	(108-12)	Providing 4 coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	%Sft	11872	1010.75		119996.24
995	(114-2) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	%Cft	3360	36931.79		1240908.14

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
996	(114-4) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in columns of square or rectangular shape of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth .	%Cft	333	45648.76		152010.37

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
997	(114-8) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in plinth beams of required shape and design including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, tn foundation basement and plinth	%Cft	249	44093.41		109792.59

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
998	(114-107) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3750 lbs per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in slanting or vertical columns and braces of over head water tank, bins, bunkers, intze tank and silos up to a height of 30 feet (9 m) above ground including form works and its removal compacting and curing etc. complete but excluding the cost of reinforcement.	%Cft	1551	73004.01		1132292.20

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
999	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 40 feet	%Cft	517	76971.61		397943.22
1000	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 50 feet	%Cft	515	80939.21		416836.93

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1001	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 60 feet	%Cft	502	84906.81		426232.19
1002	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 70 feet	%Cft	506	88874.41		449704.51

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1003	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 80 feet	%Cft	468	92842.01		434500.61
1004	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 90 feet	%Cft	322	96809.61		311726.94

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1005	(114-112) + (114-134) + (114-137) + (114-127*12)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight walls in over head water tank bins, bunkers, intze tank and silos up to a height of 90 feet above ground including form works and its removal compacting and curing etc. complete but excluding the cost of reinforcement.	%Cft	1244	89848.31		1117712.98

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1006	(114-114) + (114-134) + (114-137) + (114-127*12)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in square of rectangular bottom slab of over head water tank up to a height of 90 feet above ground including form works and its removal, compacting and curing etc. complete but excluding the cost of reinforcement .	%Cft	492	86852.62		427314.89

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1007	(114-118) + (114-134) + (114-137) + (114-127*12)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in roof slab of over head water tank up to a height of 90 feet above ground including form works and its removal, compacting and curing etc. complete but excluding the cost of reinforcement .	%Cft	328	81245.02		266483.67

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1008	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	14794	282.45		4178565.30

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1009	(114-166) + (114-174)	First Floor	Kg	3005	286.89		862104.45
1010	(114-166) + (114-174) + (114-175)	Second Floor	Kg	3037	291.33		884769.21
1011	(114-166) + (114-174) + (114-175)	Third Floor	Kg	3005	295.77		888788.85
1012	(114-166) + (114-174) + (114-175)	Fourth Floor	Kg	3005	300.21		902131.05

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1013	(114-166) + (114-174) + (114-175)	Fifth Floor	Kg	2834	304.65		863378.10
1014	(114-166) + (114-174) + (114-175)	Sixth Floor	Kg	4880	309.09		1508359.20
1015	(114-166) + (114-174) + (114-175)	Seventh Floor	Kg	7111	313.53		2229511.83

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1016	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	2607	266.7		695286.90
1017	(114-167) + (114-174)	First Floor	Kg	1286	271.14		348686.04
1018	(114-167) + (114-174) + (114-175)	Second Floor	Kg	1302	275.58		358805.16

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1019	(114-167) + (114-174) + (114-175)	Third Floor	Kg	1286	280.02		360105.72
1020	(114-167) + (114-174) + (114-175)	Fourth Floor	Kg	1286	284.46		365815.56
1021	(114-167) + (114-174) + (114-175)	Fifth Floor	Kg	1220	288.9		352458.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1022	(114-167) + (114-174) + (114-175)	Sixth Floor	Kg	1422	293.34		417129.48
1023	(114-167) + (114-174) + (114-175)	Seventh Floor	Kg	962	297.78		286464.36

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1024	(117-6) + (114-136) + (117-26)	Providing, and laying floors of 2 inches (76 mm) thick 1:2:4(1 cement 2 sand and 4 coarse aggregate) cement concrete using graded crushed boulders 3/4 inches (19 mm) and down gauge in Third floor laid in panels including form work, consolidation, finishing, curing etc. complete..	%Sft	504	8487.27		42775.84
1025	(124-97)	Providing and fixing PVC ribbed water stops 9" (229 mm) wide in vertical or horizontal expansion joints including cutting or jointing etc., complete in all floors.	Rft	109	448.81		48920.29

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1026	(119-42) + (119-57) + (119-58)*6	Providing and fixing M. S. tees, angles and flats including welding all the sides of the section at the junction, gusset plates, bolts, nuts etc. complete with hoisting and erecting in position in steel trusses, frames, towers and stair etc. of any design upto seventh floor.	Kg	1950	423.46		825747.00
1027	(124-199)	Providing and carrying out Termite proofing in foundations, under floors and wood work surface with a solution using of control TC with water and spraying the solution of the area to be treated as completed as per direction of Engineer Incharge.	Sft.	4267	13.13		56025.71

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1028	(127-33)	Supplying and laying machine crushed 1-1/2" to 1/2" (38 mm to 13 mm) stone ballast of approved grade and quality in sub-base or base courses in required grade and camber and compacting to the required density by approved mechanical means (Vibratory Roller, Road Packer and Smooth Wheel Roller etc.) including watering with all lead and lift complete (actual compacted depth shall be considered for payment)	%Cft	166	8654.02		14365.67
1029	(134-2)	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1030		1 miles (1.6 km) lead.	%Cft	4405	383.79		16905.95
1031		Sub Total of Schedule Items (Rs.) =					
1032		Add premium on Schedule Items @ 25% (Rs.) =					6031681.00
1033		Total of Schedule Items (Rs.) =					
1034		PART-II (NON- SCHEDULE ITEMS)					
1035		WATER PROOFING & EXPANSION JOINT FILLING					
1036		Ref. Spec. No. 6411					
1037	N.S-01	Applying 2-Coats of Sikalstic 560 chemical of SIKA or approved equivalent at green areas complete in all respects	Sft	1763	150		264450.00
1038		Total of Non-Schedule Items (Rs.) =					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1039		TOTAL B-9-i) SCHEDULE AND NON-SCHEDULE ITEMS					
1040	ii)	PLUMBING WORKS					
1041		GENERAL NOTE					
1042		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 drawings, specifications and as approved by the Engineer.					
1043		SCHEDULED ITEMS					
1044		VALVES					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1045		Providing and fixing cast iron sluice valves with flanged ends and two tail pieces to each valve complete with bolts and nuts, including the cost of insertion rubber washers (valves to stand test pressure head of 400 feet (122 m). (in chambers on water supply network)					
1046	310-3	6 inches (150 mm) dia..	Each	2	12,516.80		25033.60
1047		CAST IRON COVERS					
1048	315-28	Providing & fixing C.I Cover & Frame 30" dia (765 mm) weight 3 cwt (152.41 Kg.)	Each	2	43,965.00		87930.00
1049		TOTAL (SCHEDULED) =					
1050		PREMIUM 25% =					28241.00
1051		TOTAL WITH PREMIUM (SCHEDULED) =					
1052		NON-SCHEDULED ITEMS					

PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1053		WATER SUPPLY PIPES AND FITTINGS					
1054	NS-01	Galvanized Iron (GI) pipes for potable or firefighting water supply conforming to ASTM-A53 Sch. 40, Grade-B with specials/flanges hangers and clamps etc, including fixing, cutting, welding, fixing & support systems; giving anti corrosive treatment and other fittings complete with and including the cost of breaking, through walls and slabs, making walls & slabs good thereafter, etc, painting with two coats of approved enamel paint after cleaning the pipe.					
1055	(a)	04 inches	Rft	150	3,940		591000.00
1056	(b)	06 inches	Rft	300	6,830		2049000.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1057		MISCELLANEOUS					
1058	NS-02	Providing and fixing level indicator complete on Elevated water tank as per drawing and directed by the Engineer incharge.	Job	1	314,639		314639.00
1059	NS-03	Dia 4" u-turned G.I. vent pipes, pudddle plate, with insect proof mesh at open end etc., complete in all respects.	Job	2	13,534		27068.00
1060	NS-04	Galvanised MS ladder rungs 3/4" dia inside and outside water tanks; Each rung of 18" width, 6" projected outside the wall and 6" embeded in RCC on both ends; including all necessary works for complete installation	Each	20	1,513		30260.00
1061		TOTAL (NON-SCHEDULED) =					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1062		TOTAL B-9-ii) SCHEDULED + NON SCHEDULED					
1063	iii)	ELECTRICAL WORKS					
1064		SCHEDULED ITEMS					
1065	3-9	EXCAVATION					
1066	3-09-01	Excavation in soft soil including lift upto 5ft and filling excavated earth including breaking clods dressing, watering, consolidation and ramming in layers to full compaction i/c disposal of surplus excavated stuff as directed as required.	P/CFT	700	11		7889.07

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1067	3-09-03	Excavation in Hard soil including lift up to 5ft and filling excavated earth including ,breaking clods, dressing ,watering, consolidation and ramming: in layers to full compaction l/c disposal of surplus us excavated stuff as directed.	P/CFT	700	15.00		10500.00
1068		CABLE PULLING PIT (1 No. 2'X2'X3')					
1069		EARTH WORK					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1070		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:					
1071	103-1	Lift upto 5 feet	100CFT	165	1,624.63		2680.64

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1072		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:					
1073	103-2	Lift upto 5 feet	100cft	11	1,862.13		203.59

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1074		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
1075	103-5	Lift upto 5 feet	100cft	5	5,547.38		303.25
1076		Excavation for foundation trenches and drains in soft or disintegrated rock by hammering, chiselling and Jumper work including, stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1077	103-7	Lift upto 5 feet	100cft	5	2,328.63		127.30
1078		Excavation for foundation trenches and drains in hard rock by hammering chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
1079	103-8	Lift upto 5 feet	100cft	5	4,434.88		242.44
1080		RCC CHAMBER					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1081	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	100cft	3	32,221.55		1036.12

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1082	114-2 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100cft	5	33,562.40		1585.82

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1083	114-10 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight walls 5" (127 mm) to 6" (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	100cft	16	55,457.69		8734.59

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1084	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100cft	5	45,945.52		2170.93

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1085	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	57	266.70		15240.00
1086		CARRIAGE					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1087	134-2	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:					
1088	i)	1/2 mile (0.80km) lead of part thereof.	100cft	17	332.98		56.83
1089	ii)	1 mile (1.6 km) lead.	100cft	9	383.79		32.75
1090	iii)	2 miles (3.2 km) lead.	100cft	17	483.37		82.49
1091		LT CABLES					
1092	2-26	Single pvc insulated wire and pvc ,pvc cable in existing conduits/ducts					
1093	2-26-05	Supply & drawing of 10 mm^2, single core, PVC insulated wire in all kinds of existing or given conduit/cable duct as required.	Rft	200	139.00		27800.00
1094		CONDUITS & PIPES					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1095	306-23	Providing and Fixing un Polyvinyl chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 2 inches (50 mm) dia pipe	P/Rft	200	434.72		86944.00
1096		WIRING IN CONCEALED CONDUITS					
1097	2-3	Point wiring in recessed PVC conduit					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1098	2-3-01	Wiring for light or fan point with (3/.029") pvc insulated wire in 20 mm² (3/4") dia upvc conduit recessed in the wall, column, roof including 1 mm² single core pvc insulated wire as ECC as Required.	Point	20	2,836.00		56720.00
1099	2-27	2 Wire with ECC wire in existing conduits/cable duct					
1100	2-27-02	Supply & drawing of 2 x 2.5 mm² single core pvc insulated wire including 1 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	200	99.00		19800.00
1101	2-61	UPVC CONDUIT & DUCT					

PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1102	2-61-06	Supply and fixing 20mm (3/4") dia Upvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	150	49.00		7350.00
1103	2-61-07	Supply and fixing 25mm (1") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	100	55.00		5500.00
1104		NOTE: The wiring shall be done as following.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1105	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, fan box etc) complete in all respects.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1106	b	Wiring from switch to light or fan point 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, fan box etc) complete in all respects.					
1107	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, fan box etc) complete in all respects.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1108		LIGHTNING PROTECTION SYSTEM					
1109	3-08	EARTHING AND LIGHTNING ARRESTOR					
1110	3-8-04	Providing and fixing 1'' diameter 3ft long lighting copper rod with five spikes and balls on its head as required.	Job	2	26,301.00		52602.00
1111	3-8-05	Providing and fixing 1-1/2'' x 1/8'' Thick copper strip with suitable saddle at 12'' intervals complete as required.	P/Rft	400	268.00		107200.00
1112		PART-I COST =					
1113		PREMIUM @ 25%			25%		103700.00
1114		TOTAL PART-I COST (SCHEDULE ITEMS WITH PREMIUM) =					
1115		NON-SCHEDULED ITEMS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1116		LT DISTRIBUTION BOARD					
1117		(Ref. Spec. 8001 , 8133)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1118	NS-E-01	LT 415 V AC shall be made from 16 SWG sheet steel . This shall be designed, fabricated and manufactured as a free standing floor type. 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, TPN and E copper busbars, accessories etc. The DB should be provided with the armored glands. The bus-bars shall be insulated in RED, YELLOW, BLUE and BLACK insulations. The insulation shall be heat					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1119		DB-EWT	Job	1	41,691.00		41691.00
1120		LT CABLES					
1121		(Ref. Specification Section-8001, 8212)					
1122	NS-E-02	10 sqmm, 4 core CU/PVC/PVC stranded copper conductor cable, 600/1000 V grade in already installed conduit/on cable tray.	Rft.	200	1,023.00		204600.00
1123		WIRING ACCESSORIES					
1124		(Ref. Specification Section-8001, 8220)					
1125	NS-E-10	Simplex Universal Switch socket outlet with switch 13 A - Simplex, 230V. Mounting Height as per site including appropriate size powder coated metallic back box.	No.	2	2,487.00		4974.00
1126		LIGHT FIXTURES					

PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1127		(Ref. Spec. 8001, 8150, 8262)					
1128		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 reponsible for compatibility of recessed mounted light fixtures with gypsum / aluminium / dampa etc., false ceiling types in coordination with architectural design.)					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1129	ED-9-E-NS-02	Providing & fixing Air Craft Warning Light with daylight switch battery & Solar Panel for charging the battery complete in all respects	No.	1	60,000.00		60000.00
1130	ED-9-E-NS-02	Supply and erection of fancy wall type bracket with brass holder & fancy shade : Single (Elevated Water Tank)	Each	10	2,500.00		25000.00
1131	ED-9-E-NS-02	Supply and Erection of AC ENERGY EFFICIENT LED LIGHT BULBS (10 W)	No.	10	800.00		8000.00
1132		EARTHING SYSTEM					
1133		(Ref. Specification Section-8001, 8240)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1134	NS-E-10	Earth Electrode for earthing shall comprise of 75 mm x 4877 mm x 6 mm thick copper plate with 4 Nos. 6 mm dia brass nuts, bolts and washers 70 sqmm HDHC Copper wire as earthing leads.					
1135		A 100 mm dia Medium Duty GI pipe shall be used with 10 mm dia holes @500 mm c-c. The total length of this GI pipe should be 45 ft.					
1136		A 150 mm dia 80 ft long hole should be drilled in ground by percussion method and above mentioned 100 mm dia medium duty GI pipe should be fixed in this hole simultaneously up to the depth of 60 ft from NSL.					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1137		When the drilling up to 80 ft depth is complete, The above mentioned earth electrode shall be drop down to the bottom of the hole with the help of 2 Nos 70 sqmm earth leads.					
1138		Once the plate is in place fill in the hole with moisture retaining bentonite slurry with tremie method up to the top. When the bentonite settle down cast a (1:4:8) concrete manhole 700 mm x 700 mm & 500 mm deep as shown in the drawing. Place a medium duty CI cover as shown in the drawing.	Job	1	238,848.00		238848.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1139	NS-E-11	305 mm long, 50 mm wide and 6mm thick copper busbar as ECP (Earth Connecting Point) complete with insulators, washers, nuts, bolts mounting installation and operational accessories as per site requirements.	Each	2	6,960.00		13920.00
1140	NS-E-12	Earth electrode for lightning protection system comprise 1/2" dia, 10' long Copper deposited steel rod, including appropriate clamp for clamping of the down conductor. The copper deposited steel rod shall be hammered into the ground to the depth of twelve inches below the ground surface. The earth electrode includes excavation, backfilling, etc.	Job.	2	23,466.00		46932.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1141		CABLE PULLING PIT (1 No. 2'X2'X3')					
1142	NS-E-29	RCC manhole cover 24" dia, 2.5" MS angle, RCC 1:2:4 etc, complete with frame; as shown in drawing.	Each	1	19,300		19300.00
1143		NON-SCHEDULE ITEMS =					
1144		TOTAL B-9) SCHEDULE ITEMS +NON-SCHEDULE ITEMS					
1145		TOTAL B-9) = (i + ii + iii)					
1146	B-10)	UNDERGROUND WATER TANK & PUMP ROOM					
1147	i)	CIVIL WORKS					
1148		GENERAL NOTE.					
1149		SCOPE : (Applicable to all sections)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1150		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.					
1151		PART-I (SCHEDULE ITEMS)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1152	(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	12361	1862.13		230177.89
1153	(103-28)	5'-00" to 8'-00" Depth	%Cft	7417	2099.63		155729.56
1154	(103-28)	8'-00" to 11'-00" Depth	%Cft	7417	2337.13		173344.93
1155	(103-28)	11'-00" to 14'-00" Depth	%Cft	7417	2574.63		190960.31
1156	(103-28)	14'-00" to 17'-00" Depth	%Cft	7417	2812.13		208575.68
1157	(103-28)	17-00" to 20'-00" Depth	%Cft	7417	3049.63		226191.06

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1158	(103-28)	20-00" to 23'-00" Depth	%Cft	3577	3287.13		117580.64
1159	(104-1)	Filling excavated earth available at site in foundation, plinth or under floor, etc. including breaking clods, dressing, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction complete within a lead of one chain (30.5 R.m) and lift of 5 feet (1.52m).	%Cft	2272	735.19		16703.52
1160	(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	%Cft	1000	24504.59		245045.90

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1161	(109-113) + (109-120)	Providing and laying 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge in steps including cost of form work and its removal etc. complete in ground floor.	100Cft	38	29075.48		11048.68
1162	(108-12)	Providing 4 coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	%Sft	1191	1010.75		12038.03

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1163	(112-03) +(112-79)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:4 in straight or curved wall 4-1/2 inches (114 mm) or less thickness including scaffolding, raking out joints and curing etc, complete in foundation, basement and plinth (foundation and basement masonry upto 5 (1.52 Ru.m.) feet depth and plinth upto 4 feet (1.2 Ru.m.) height from ground level) .	%Cft	382	43334.68		165538.48
1164	(112-03) + (112-79) + (112-20)	5'-00" to 10'-00" Depth	%Cft	382	44616.13		170433.62

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1165	(112-03) + (112-79) + (112-20)*2	10'-00" to 15'-00" Depth	%Cft	382	45897.58		175328.76
1166	(112-25)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:6 in straight or curved walls 9 to 13-1/2 inches (229 mm to 343 mm) thick including scaffolding, raking, out joints and curing etc. complete in ground floor superstructure .	100Cft	886	41260.97		365572.19

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1167	(114-4) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in columns of square or rectangular shape of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth .	100Cft	181	45648.76		82624.26

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1168	(114-32) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight walls, vertical fins etc.3 inches (70mm) thick and less than 5 inches (127mm) thick including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in ground floor.	100Cft	85	75,188.86		63910.53

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1169	(114-38) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight beams, lintels cantilever beams of required shape or section including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement and ground floor.	100Cft	186	51051.03		94954.92

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1170	(114-99) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in foundation or bottom slab of rectangular underground tank including form works and its removal, levelling, compacting and curing etc. complete but excluding the cost of reinforcement	%Cft	3531	35159.55		1241483.71

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1171	(114-101) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in in walls of rectangular underground water tank or septic tank including form works and its removal, compacting and curing etc. complete, but excluding the cost of reinforcement.	%Cft	4458	58261.17		2597282.96

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1172	(114-104) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in top slab of rectangular underground water tank or septic tank its removal, compacting and curing ate. complete but excluding the cost of reinforcement	%Cft	1407	50480.37		710258.81

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1173	(114-50) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight stairs and landing of required section including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor.	100Cft	113	61558.17		69560.73

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1174	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	29165	282.45		8237654.25

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1175	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	1523	266.7		406184.10
1176	(117-6) + (114-136)	Providing, and laying floors of 2 inches (51 mm) thick 1:2:4(1 cement 2 sand and 4 coarse aggregate) cement concrete using graded crushed boulders 3/4 inches (19 mm) and down gauge in ground floor laid in panels including form work, consolidation, finishing, curing etc. complete..	%Sft	656	7392.27		48493.29

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1177	(117-6) + (114-136) + (117-26)	Providing, and laying floors of 2 inches (51 mm) thick 1:2:4 (1 cement 2 sand and 4 coarse aggregate) cement concrete using graded crushed boulders 3/4 inches (19 mm) and down gauge in basement and mezzanine floor laid in panels including form work, consolidation, finishing, curing etc. complete (RoofScreed).	%Sft	724	8128.52		58850.48

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1178	(117-10)	Providing and laying terrazzo floor 1-1/4 inches (32 mm) thick consisting of 1/4 inch (6.4 mm) thicktopping 1:2 (one grey cement 2 approved marble chip No. 0 to 2) in ground floor over base of 1:2:4 (one cement 2 sand and 4 screened graded bajri) cement concrete 1 inch (25 m) thick laid in panels or pattern including form work, curing cutting, rubbing and polishing etc. complete..	%Sft	1313	8953.27		117556.44
1179	(118-1)	Providing and laying dado and skirting with 3/4 inch (19 mm) thick cement plaster 1:3 in ground floor including finishing smooth with a floating coat of neat cement, rounding corners and curing etc. complete.	%Sft	1764	7274.72		128326.06

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1180	118-2	Providing and laying dado and skirting with 1/2 inch (13 mm) thick cement plaster 1:3 in ground floor including finishing smooth with a floating coat of neat cement, rounding corners and curing etc. complete..	%Sft.	69	6170.64		4257.74
1181	(119-6)	Providing and fixing double leaf steel doors made to crittal or equivalent standard and of approved sections fully panelled with M. S. Sheet of 16 gauge painted with two coats of red oxide paint including using approved brass section oxidized fitting iron lugs, cutting holes and making good damages to walls etc. complete as required in any floor.	Sft.	44	988.98		43515.12

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1182	(119-32)	Providing and fixing iron grills with required section of angle iron and MS square bar as per approved design including welding all sides of the section at the junction, and fixing with sunk iron screws, painting two coats of red oxide paint etc. complete as required in any floor in masonry or concrete work.	Kg.	110	290.89		31997.90

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1183	(119-48	Providing & fixing partly fixed and partly hung steel Windows and ventilators made of M.S. pipe (18 guage) of approved section comprising of frame L-Section l-l/2" x l-l/2" shutter frame of T Section 2" x 1" and vertical partition of T-Section 2" x l-l/2" and l/2" x l/2" M.S. pipe beading for fixing glass panes, clamping the screws at 4 inches center to center, rubber packing for glazing, painted two coats with red oxide paint including using iron lugs, cutting holes and making good damages to walls etc. complete as required in any floor but excluding the cost of glass panes.	Sft	101	1747.83		176530.83

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1184	(122-2)	1/4" thick cement plaster 1:4 on soffits of ceiling cantilever slabs sides and soffits of beams etc. in basement mezzanine and ground floor including making edges corners and curing etc. complete.	100Sft	656	3852.59		25272.99
1185	(122-4)	1/2" (13 mm) thick cement plaster 1:4 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete .	100Sft	5078	4381.84		222509.84

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1186	(122-151)	Distempering with vinyle distemper (ICI) Dulux Paintex of approved make and shade in two coats over and including the cost of one priming coat of lime wash including sand papering, dusting, and filling the holes, cracks and inequalities, if any, at any height in any floor.	%Sft	656	3401.25		22312.20
1187	(122-162)	Painting with (ICI) Dulux Plastic emulsion paint VIP of approved shade two coats over and including the cost of one priming coat complete over plastered surface at any height in any floor.	100Sft	1006	6737.38		67778.04

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1188	(122-172)	Painting three coats with weather shield paint deluxe (ICI) make of approved shade on plaster surface (External) and including the cost of cleaning the surface, sand papering etc. complete at any height in any floor.	%Sft	572	4408.75		25218.05
1189	(124-97)	Providing and fixing PVC ribbed water stops 9" (229 mm) wide in vertical or horizontal expansion joints including cutting or jointing etc., complete in all floors.	Rft	223	448.81		100084.63
1190	(124-170)	Providing and laying 3/8"(9mm) thick Marble patties (Panel strips) upto 1" depth in floor and dado of any description in all floors.	Rft.	210	17.38		3649.80

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1191	(124-199)	Providing and carrying out Termite proofing in foundations, under floors and wood work surface with a solution using of control TC with water and spraying the solution of the area to be treated as completed as per direction of Engineer Incharge.	Sft.	7172	13.13		94168.36

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1192	(119-33)	Providing and fixing stair railing 3 feet height of MS square pipe 1-1/ 2" x1-1/ 2" of 16 SWG vertical on alternate step and M.S. square pipe 3/4"x3/4" 16 SWG 2 Nos horizontal pipe and 2-1/2" x2-1/2" ,16 SWG MS square pipe as top rail as per design including cuttingmaking holes fixing with sunk iron screws, painting two coats of red oxide paint etc. complete as required in any floor.	Rft	53.00	893.60		47360.80
1193	(134-2)	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:					
1194		1 miles (1.6 km) lead.	%Cft	22721	383.79		87200.93

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1195		Sub Total of Schedule Items (Part-I) =					
1196		Premium @ 25% =					4318317.00
1197		TOTAL PART-I (SCHEDULE ITEMS) =					
1198		PART-II (NON- SCHEDULE ITEMS)					
1199		BRICK MASONRY					
1200	N.S - 1	Extra payment for Face work (half brick thick) using first class sorted/fair bricks at any floor complete in all respects.	Cft.	401.00	75.00		30075.00
1201		WATER PROOFING & EXPANSION JOINT FILLING					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1202	N.S -2	Providing and fixing two layer of 2mm thick torch applied Bitumenous Membrane on earth-faced RCC basement walls over primed surfaces coated as per manufacturer's recommended primer, complete in all respect.	Sft	5,924	150		888600.00
1203	N.S- 3	Applying 2-Coats of Sikalstic 560 chemical of SIKA or approved equivalent at green areas complete in all respects	Sft	3087	150		463050.00
1204		Sub Total of Non-Schedule Items (Part-II) =					
1205		TOTAL B-10-i) (PART-I + PART-II) =					
1206	ii)	PLUMBING WORKS					
1207		GENERAL NOTE					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1208		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 drawings, specifications and as approved by the Engineer.					
1209		SCHEDULED ITEMS					
1210		WATER SUPPLY PIPES AND FITTINGS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1211		Providing G.I. pipes, specials and clamps etc., including fixing cutting and fitting complete with and including the cost of breaking through walls and roof, making good etc., painting 2 coats after cleaning the pipe etc.; with white zinc paint with pigment to match the colour of the building and testing with water to a pressure head of 200 feet (61 M) and cartages within 10 miles (16.09 km.) (ILLM)					
1212	305-5	1-1/2 inches (40 mm) dia pipe (ILLM).	Rft	50	534.17		26708.50
1213	305-7	03 inches (80 mm) dia pipe (ILLM).	Rft	50	1,142.06		57103.00
1214	305-8	04 inches (100 mm) dia pipe (ILLM).	Rft	50	1,787.59		89379.50

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1215		VALVES					
1216		Providing and fixing cast iron sluice valves with' flanged ends and two tail pieces to each valve complete with bolts and nuts, including the cost of insertion rubber washers (valves to stand test pressure head of 400 feet (122 m). 3 inches (80 mm) dia..					
1217	310-01	03 inches (80 mm) dia..	Each	2	7,961.40		15922.80
1218	310-02	04 inches (100 mm) dia.	Each	2	10,236.40		20472.80
1219	310-03	06 inches (150 mm) dia.	Each	2	12,516.80		25033.60
1220		CAST IRON COVERS					
1221	315-28	Providing & fixing C.I Cover & Frame 30" dia (765 mm) weight 3 cwt (152.41 Kg.)	Each	5	43,965.00		219825.00
1222		TOTAL (SCHEDULED) =					
1223		PREMIUM 25% =					113611.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1224		TOTAL WITH PREMIUM (SCHEDULED) =					
1225		NON-SCHEDULED ITEMS					
1226		PUMPING MACHINERY					
1227		(Ref. Specs: 5240)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1228	NS-01	Automatically operated skid mounted Horizontal centrifugal pump set (in pump room with UGWT) for lifting water from Underground water tank to Elevated water tank, comprising two (02) number pumps with electric motors (one working second standby),Each of Head=200feet and discharge=150gpm, including all accessories, level switches to be installed in Elevated & under ground water tank for automatic operation of pumps at set levels, dry running protection, combined motor control unit & automatic duty cycle relay, pressure guages, foot check valve, Gate and swing check valves, flexible joints, Y-strainers, all PN-16 pressure rating,manual tools, spare	Job	1	4,483,557		4483557.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1229	NS-02	FM approved/UL listed, Skid Mounted Firefighting pumping unit (NFPA compliance) consisting 01 Nos. Horizontal Centrifugal Pump (Electric driven) of Q=750gpm & H=09Bars, 01 No. Horizontal centrifugal Pump (Diesel engine driven) of Q=750gpm & H=09Bars, 01 No. jockey pump vertical centrifugal of Q=50gpm & H=10 Bars with electric motor,pressure tank, including FFPU motor control unit with VFD for electric driven pump, diesel day tank, all accessories, manual, tools, spare parts, gate valves, check valves, automatic recirculation valve on return line, pressure switches, pressure gauges, Stainless steel flexible joints, strainers, anti vortex plate at suction ends etc, unit complete in all respects as	Job	1	35,621,057		35621057.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1230	NS-03	Automatically operated submersible storm disposal pump & motor including all accessories, gate and check valve, level switches ,manual tools spare parts,Control panel complete in all respectsas per drawings and specs of approved make, Each of the 30gpm capacity and 30feet pumping head.	Job	1	373,028		373028.00
1231		WATER SUPPLY/ FIREFIGHTING PIPES AND FITTINGS					
1232		(Ref. Specs: 5216)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1233	NS-04	Galvanized Iron (GI) pipes for potable water supply conforming to ASTM-A53 Sch. 40, Grade-B with specials/flanges hangers and clamps etc, including fixing, cutting, welding, fixing & support systems; giving anti corrosive treatment and other fittings complete with and including the cost of breaking, through walls and slabs, making walls & slabs good thereafter, etc, painting with two coats of approved enamel paint after cleaning the pipe.					
1234	(a)	06 inches	Rft	10	6,830		68300.00
1235	(b)	04 inches	Rft	100	3,940		394000.00
1236	(c)	03 inches	Rft	100	2,799		279900.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1237	NS-05	Mild Steel (MS) pipes for firefighting water supply conforming to ASTM-A53 Sch. 40, Grade-B with specials/flanges hangers and clamps etc, including fixing, cutting, welding, fixing & support systems; giving anti corrosive treatment and other fittings complete with and including the cost of breaking, through walls and slabs, making walls & slabs good thereafter, etc, painting with two coats of approved enamel paint after cleaning the pipe.					
1238	(a)	3" dia	Rft	10	2,037.00		20370.00
1239	(b)	4" dia	Rft	50	2,913.00		145650.00
1240	(c)	6" dia	Rft	100	5,037.00		503700.00
1241	(d)	8" dia	Rft	50	7,527.00		376350.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1242		VALVES					
1243		(Ref. Specs: 5216, 5220)					
1244	NS-06	C.I. gate valves conforming to BS-5163 (PN-16) including Adapters, flanges, nuts & bolts, transition pipe pieces with flanges, rubber seal, making required type of joints on both ends complete in all respect as shown on drawings or as directed by the Engineer of following diameters.					
1245	a)	3" dia	Each	2	62,820		125640.00
1246	b)	4" dia	Each	2	78,945		157890.00
1247	c)	6" dia	Each	6	139,945		839670.00
1248	d)	8" dia	Each	1	186,695		186695.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1249	NS-07	Float valve, of approved make, including jointing arrangement of pipes on both ends of valves; nuts, bolts etc. complete in all respects as per specifications, to be installed in overhead water tank, of 03 inches diameter.	Each	1	47,535		47535.00
1250		MISCELLANEOUS					
1251	NS-08	Dia 4" u-turned G.I. vent pipes, pudddle plate, with insect proof mesh at open end etc., complete in all respects.	Job	4	13,534		54136.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1252	NS-09	Galvanised MS ladder rungs 3/4" dia inside and outside water tanks; Each rung of 18" width, 6" projected outside the wall and 6" embeded in RCC on both ends; including all necessary works for complete installation	Each	60	1,513		90780.00
1253		TOTAL (NON-SCHEDULED) =					
1254		TOTAL Total B-10-ii) SCHEDULED + NON SCHEDULED					
1255	iii)	ELECTRICAL WORKS					
1256		SCHEDULED ITEMS					
1257	2-80	CEILING FANS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1258	2·80·03	Providing & installing 140 Cm (56") sweep ceiling fan with blades, canopy, standard length of down, rod including connection with 14.0076" flexible wire complete as required. (without regulator) Pak, Rovat FC,Younas, Millat	Each	2	9,349		18698.00
1259	2-87	FAN CLAMPS, DOWN ROD & MAKING HOLE.					
1260	2-87-01	Providing & installing of Ceiling fan down rod 3/4" dia heavy gauge GI pipe of require length, one end arrangement for fan insulator and other end duly threaded and hole for split pin etc to be hold all sweep ceiling fan as required.	P/Rft.	2	70		140.00
1261	2-3	Point wiring in recessed PVC conduit					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1262	2-3-01	Wiring for light or fan point with (3/.029") pvc insulated wire in 20 mm² (3/4") dia upvc conduit recessed in the wall, column , roof including 1 mm² single core pvc insulated wire as ECC as Required.	Point	10	2,836		28360.00
1263	2-7	Extension /Additional Point wiring					
1264	2-7-03	Extension /additional wiring for light fan call bell or light plug point controlled with same switch with (3/.029") pvc insulated wire in 20 mm (3/4") dia PVC conduit recessed in the wall , column or roof including 1mm² single core pvc insulated wire as ECC as required.	P/Point	5	1,179		5895.00
1265	2-27	2 Wire with ECC wire in existing conduits/cable duct					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1266	2-27-02	Supply & drawing of 2 x 2.5 mm² single core pvc insulated wire including 1 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	200	99		19800.00
1267	2-27-03	Supply & drawing of 2 x 4 mm² single core pvc insulated wire including 1.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required. (DB to first Socket 13A/15A , Socket to Socket).	Rft	210	145		30450.00

PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1268	2-27-04	Supply & drawing of 2 x 6 mm² single core pvc insulated wire including 2.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	200	209		41800.00
1269		NOTE: The wiring shall be done as following.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1270	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, fan box etc) complete in all respects.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1271	b	Wiring from switch to light or fan point 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, fan box etc) complete in all respects.					
1272	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, fan box etc) complete in all respects.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1273	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.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1274	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 solid or stranded copper conductor cables in concealed 1" PVC conduit laid underfloor including PVC conduit, conduit accessories, etc.complete in all respects.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1275	f	Wiring of circuit from distribution board to 15A, 230 Volts, 3 Pin switched socket outlet with 2 Nos. one core 4 Sqmm and One no. 2.5 sq mm PVC insulated 300/500 Volts grade solid or stranded copper conductor cables in concealed 1" PVC conduit laid underfloor including PVC conduit, conduit accessories, etc. complete in all respects.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1276	g	Wiring from 15 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 solid or stranded copper conductor cables in concealed 1" PVC conduit laid underfloor including PVC conduit, conduit accessories, etc.complete in all respects.					
1277		LIGHT FIXTURES					
1278	2-78	(Sunlight , Pierlite , Future Technology)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1279	2-78-01 (a)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having warm/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (7-10) Watts	Each	10	1,824		18240.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1280	2-78-03 (c)	Providing, Installation, Testing & Commissioning of 4 Feet 36 Watts LED Tube/ Batten Lights including driver, having warm / neutral white / cool white colour, 80-90 lm/watts efficiency, 0.9 or above power factor, 10000-15000 hours life cycle, including connection, complete in all respect as approved by the Engineer Incharge	Each	6	3,854		23124.00
1281		WIRING ACCESSORIES					
1282	2-66	SCHNEIDER /PHILIPS ACCESSORIES ON RECESSED METAL BOARD					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1283	2-66-01	Providing & fixing 10 Amps Polycarbonate flame retardant, S.P Switch with fancy required gang plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required. (Schneider/ Philips)	Each.	10	471		4710.00
1284	2-66-11	Providing & fixing Polycarbonate flame retardant, Fan Dimmer with plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required. (Schneider / Philips)	Each	2	1,197		2394.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1285	2-66-06	Providing & fixing 15 Amps Polycarbonate flame retardant 3-Pin switch socket unit with fancy gang plate fixed on die fabricated, powder coated metal board recessed in wall or column including connection as required. (Clipsal make)	Each	5	1,290		6450.00
1286	2-61	UPVC CONDUIT & DUCT					
1287	2-61-05	Supply and fixing 50mm (2") dia Upvc conduit with all especial such as bends, sockets, junction etc Fitted on surface as required.	P/Rft	100	231		23100.00
1288	2-61-06	Supply and fixing 20mm (3/4") dia Upvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	200	49		9800.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1289	2-61-07	Supply and fixing 25mm (1") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	200	55		11000.00
1290	2-61-10	Supply and fixing 50mm (2") dia uPVC conduit with all especial such as bends, sockets, junction etc recessed in the wall or floor as required.	P/Rft	100	177		17700.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1291	306-23	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 2 inches (50 mm) dia pipe	P/Rft	100	435		43472.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1292	306-24	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 3 inches (80 mm) dia pipe	P/Rft	150	503		75520.50
1293	3-04	4 CORE LT UN ARMOURED CABLE IN EXISTING CONDUIT OR CABLE DUCT					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1294	3-4-01 (a)	Providing & laying 4 core, 16 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	100	804		80400.00
1295	3-4-01 (f)	Providing & laying 4 core, 95 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	200	4,443		888600.00
1296	2-37	4 Wire with ECC wire in Recessed uPVC conduit					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1297	2-37-04	Wiring for sub-main with 4 x 6 mm², PVC insulated wire 300/00 volts grade, single core, stranded copper conductor wire in 25 mm (1'') dia uPVC conduit recessed in the wall, column and roof etc including 2.5 mm² PVC insulated wire single core wire as ECC as required (for Floor Standing AC).	Rft	50	518		25900.00
1298	2-26	Single pvc insulated wire and pvc ,pvc cable in existing conduits/ducts					
1299	2-26-05	Supply & drawing of 10 mm², single core, PVC insulated wire in all kinds of existing or given conduit/cable duct as required.	Rft	100	139		13900.00
1300	3-9	EXCAVATION					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1301	3-09-01	Excavation in soft soil including lift upto 5ft and filling excavated earth including breaking clods dressing, watering, consolidation and ramming in layers to full compaction i/c disposal of surplus excavated stuff as directed as required.	P/CFT	1,200	11		13524.11
1302	3-09-03	Excavation in Hard soil including lift up to 5ft and filling excavated earth including ,breaking clods, dressing ,watering, consolidation and ramming: in layers to full compaction l/c disposal of surplus us excavated stuff as directed.	P/CFT	1,200	15.00		18000.00
1303		CABLE PULLING PIT (3 No. 2'X2'X3')					
1304		EARTH WORK					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1305		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:					
1306	103-1	Lift upto 5 feet	100CFT	495	1624.63		8041.92

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1307		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:					
1308	103-2	Lift upto 5 feet	100cft	33	1862.13		610.77

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1309		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
1310	103-5	Lift upto 5 feet	100cft	16	5547.38		909.75
1311		Excavation for foundation trenches and drains in soft or disintegrated rock by hammering, chiselling and Jumper work including, stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1312	103-7	Lift upto 5 feet	100cft	16	2328.63		381.89
1313		Excavation for foundation trenches and drains in hard rock by hammering chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
1314	103-8	Lift upto 5 feet	100cft	16	4434.88		727.31
1315		RCC CHAMBER					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1316	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	100cft	10	32221.55		3108.37

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1317	114-2 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100cft	14	33562.40		4757.47

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1318	114-10 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight walls 5" (127 mm) to 6" (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	100cft	47	55457.69		26203.76

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1319	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100cft	14	45945.52		6512.78

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1320	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	171	266.70		45720.00
1321		CARRIAGE					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1322	134-2	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:					
1323	i)	1/2 mile (0.80km) lead of part thereof.	100cft	51	332.98		170.48
1324	ii)	1 mile (1.6 km) lead.	100cft	26	383.79		98.25
1325	iii)	2 miles (3.2 km) lead.	100cft	51	483.37		247.48
1326		PART-I COST =					
1327		PREMIUM @ 25%			25%		379617.00
1328		TOTAL PART-I COST (SCHEDULE ITEMS WITH PREMIUM) =					
1329		NON SCHEDULE ITEMS					
1330		LT DISTRIBUTION BOARD					
1331		(Ref. Spec. 8001 , 8133)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1333	NS-E-01	LT 415 V AC weather proof (DB), shall be made from 14 SWG sheet steel. This shall be designed, fabricated and manufactured as a free standing floor type. 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, TPN and E copper busbars, accessories etc. The DB should be provided with the armored glands. The bus-bars shall be insulated in RED, YELLOW, BLUE and BLACK insulations. The					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1334	a)	DB-PR	Job	1	193,881.00		193881.00
1335		LED LIGHT FIXTURE					
1336		(Ref. Spec. Nos. 8001, 8150)					
1337		Supply, installation, testing & commissioning of the following types of light fixtures including LED Light with driver, internal wiring complete with all mounting accessories as per architectural arrangements/ requirements, dust & moisture protected and corrosion proof and suitable for this area as acceptably supplied and installed and as approved by the Engineer.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1338	NS-E-17	12 W Weather Proof Bulkhead die cast aluminum body WALL mounted OUTDOOR LIGHT IP 55 or better	Each	2	12,989		25978.00
1339		LT CABLES					
1340		(Ref. Specification Section-8001, 8212)					
1341	NS-E-02	10 sqmm, 4 core CU/PVC/PVC stranded copper conductor cable, 600/1000 V grade in already installed conduit/on cable tray.	Rft.	100	1023		102300.00
1342		WIRING ACCESSORIES					
1343		(Ref. Specification Section-8001, 8220)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1344	NS-E-10	Simplex Universal Switch socket outlet with switch 13 A - Simplex, 230V. Mounting Height as per site including appropriate size powder coated metallic back box.	No.	10	2,487		24870.00
1345		Following rating SP&N/TP&N load break switches AC-3 duty in weather proof enclosure of the following rating:					
1346	NS-E-37	32 Amp, SP&N	Each	1	7,151		7151.00
1347	NS-E-38	20 Amp, SP&N	Each	1	6,371		6371.00
1348	NS-E-39	16 Amps, 400 Volts 5 Pole Industrial Socket	No.	1	6,441		6441.00
1349		EARTHING					
1350		(Ref. Spec. Nos. 8001, 8240)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1351	NS-E-10	Earth Electrode for earthing shall comprise of 75 mm x 4877 mm x 6 mm thick copper plate with 4 Nos. 6 mm dia brass nuts, bolts and washers 70 sqmm HDHC Copper wire as earthing leads.					
1352		A 100 mm dia Medium Duty GI pipe shall be used with 10 mm dia holes @500 mm c-c. The total length of this GI pipe should be 45 ft.					
1353		A 150 mm dia 80 ft long hole should be drilled in ground by percussion method and above mentioned 100 mm dia medium duty GI pipe should be fixed in this hole simultaneously up to the depth of 60 ft from NSL.					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1354		When the drilling up to 80 ft depth is complete, The above mentioned earth electrode shall be drop down to the bottom of the hole with the help of 2 Nos 70 sqmm earth leads.					
1355		Once the plate is in place fill in the hole with moisture retaining bentonite slurry with tremie method up to the top. When the bentonite settle down cast a (1:4:8) concrete manhole 700 mm x 700 mm & 500 mm deep as shown in the drawing. Place a medium duty CI cover as shown in the drawing.	Job	1	238,848.00		238848.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1356	NS-E-11	305 mm long, 50 mm wide and 6mm thick copper busbar as ECP (Earth Connecting Point) complete with insulators, washers, nuts, bolts mounting installation and operational accessories as per site requirements.	Each	1	6,960		6960.00
1357	NS-E-12	Earth electrode for lightning protection system comprise 1/2" dia, 10' long Copper deposited steel rod, including appropriate clamp for clamping of the down conductor. The copper deposited steel rod shall be hammered into the ground to the depth of twelve inches below the ground surface. The earth electrode includes excavation, backfilling, etc.	Job.	1	23,466.00		23466.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1358		CABLE PULLING PIT (1 No. 2'X2'X3')					
1359	NS-E-29	RCC manhole cover 24" dia, 2.5" MS angle, RCC 1:2:4 etc, complete with frame; as shown in drawing.	Each	3	19,300		57900.00
1360		NON-SCHEDULE ITEMS =					
1361		TOTAL B-10-iii) SCHEDULE ITEMS +NON-SCHEDULE ITEMS					
1362		TOTAL B-10) = (i + ii + iii)					
1363	B-11)	SEPTIC TANK					
1364		GENERAL NOTE.					
1365		SCOPE : (Applicable to all sections)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1366		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.					
1367		PART-I (SCHEDULE ITEMS)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1368	(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	2900	1862.13		54001.77
1369	(103-2) + (103-28)	5'-00" to 8'-00" Depth	%Cft	1739	2099.63		36512.57
1370	(103-2) + (103-28)*2	8'-00" to 11'-00" Depth	%Cft	1739	2337.13		40642.69

PUBLIC PROCUREMENT REGULATORY AUTHORITY PPRA EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1371	(103-2) + (103-28)*3	11'-00" to 14'-00" Depth	%Cft	1739	2574.63		44772.82
1372	(104-1)	Filling excavated earth available at site in foundation, plinth or under floor, etc. including breaking clods, dressing, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction complete within a lead of one chain (30.5 R.m) and lift of 5 feet (1.52m).	%Cft	5580	735.19		41023.60

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1373	(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	%Cft	138	24504.59		33816.33
1374	(108-12)	Providing one coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	100Sft	2722	1010.75		27512.62

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1375	(114-4) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in columns of square or rectangular shape of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth .	100Cft	144.00	45648.76		65734.21

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1376	(114-38) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in straight beams, lintels cantilever beams of required shape or section including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement and ground floor.	100Cft	28.00	51051.03		14294.29

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1377	(114-99) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in foundation or bottom slab of rectangular underground tank including form works and its removal, levelling, compacting and curing etc. complete but excluding the cost of reinforcement	%Cft	1056	35159.55		371284.85

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1378	(114-101) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in in walls of rectangular underground water tank or septic tank including form works and its removal, compacting and curing etc. complete, but excluding the cost of reinforcement.	%Cft	1008	58261.17		587272.59

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1379	(114-104) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in top slab of rectangular underground water tank or septic tank its removal, compacting and curing ate. complete but excluding the cost of reinforcement	%Cft	257	50480.37		129734.55

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1380	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	9500	282.45		2683275.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1381	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	750	266.7		200025.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1382	(117-12)	Providing and laying terrazzo floor 1-1/2 inches (38 mm) thick consisting of 1/2 inch (13 mm) thicktopping 1:2 (one grey cement 2 approved marble chip No. 0 to 2) in ground floor over base of 1:2:4 (one cement 2 sand and 4 screened graded bajri) cement concrete 1 inch (25 m) thick laid in panels or pattern including form work, curing cutting, rubbing and polishing etc. complete..	%Sft	284	11007.52		31261.36

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1383	(118-4) + (118-5)	Providing and laying dado and skirting etc. 1 inch (25 mm) thick consisting of 1/2 inch (13 mm) thick topping 1 :2 (one grey cement 2 marble chips 0 to 4 No.) in ground floor over 1 /2 inch (13 mm) thick cement mortar base 1 :4 with grinding, rubbing, polishing and curing etc. complete.	%Sft	1197	16588.59		198565.42
1384	(124-97)	Providing and fixing PVC ribbed water stops 9" (229 mm) wide in vertical or horizontal expansion joints including cutting or jointing etc., complete in all floors.	Rft	119	448.81		53408.39

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1385	(124-171)	Providing and laying 1/2"(13mm) thick Marble patties (Panel strips) upto 1-1/2" (38mm)depth in floor and dado of any description in all floors.	Rft.	197	20.19		3977.43
1386	(124-199)	Providing and carrying out Termite proofing in foundations, under floors and wood work surface with a solution using of control TC with water and spraying the solution of the area to be treated as completed as per direction of Engineer Incharge.	Sft.	1412	13.13		18539.56
1387	(134-2 M002)	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:					
1388		1 miles (1.6 km) lead.	%Cft	2536	383.79		9732.91

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1389		Sub Total of Schedule Items (Rs.) =					
1390		Add premium on Schedule Items @ 25% (Rs.) =					1161347.00
1391		Total of Schedule Items (Rs.) =					
1392		TOTAL B-11) SCHEDULE ITEMS (Rs.) =					
1393	B-12)	EXTERNAL ELECTRICAL WORKS					
1394		SCHEDULE ITEMS					
1395	2-4	Point wiring in recessed PVC conduit					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1396	2-3-01	Wiring for light or fan point with (3/.029") pvc insulated wire in 20 mm² (3/4") dia upvc conduit recessed in the wall , column , roof including 1 mm² single core pvc insulated wire as ECC as Required.	Point	60	2,836.00		170160.00
1397	2-7	Extension /Additional Point wiring					
1398	2-7-03	Extension /additional wiring for light fan call bell or light plug point controlled with same switch with (3/.029") pvc insulated wire in 20 mm (3/4") dia PVC conduit recessed in the wall , column or roof including 1mm² single core pvc insulated wire as ECC as required	P/Point	30	1,179.00		35370.00
1399	2-33	2 Wire with ECC wire in existing conduits/cable duct					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1400	2-27-02	Supply & drawing of 2 x2.5 mm² single core pvc insulated wire including 1 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required	Rft	4,000	99.00		396000.00
1401	2-27-03	Supply & drawing of 2 x4 mm² single core pvc insulated wire including 1.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required	Rft	2,500	145.00		362500.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1402	2-33-04	Supply & drawing of 2 x6 mm² single core pvc insulated wire including 2.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required	Rft	2,500	209.00		522500.00
1403	2-61	PVC CONDUIT & DUCT					
1404	2-61-05	Supply and fixing 50mm (2") dia pvc conduit with all especial such as bends, sockets, junction etc Fitted on surface as required	P/Rft	2,500	231.00		577500.00
1405	2-61-08	Supply and fixing 30mm (1-1/4") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required	P/Rft	2,500	78.00		195000.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1406	2-66	CLIPSAL ACCESSORIES ON RESSED METAL BOARD					
1407	2-66-11	Providing & fixing Polycarbonate flame retardant, 400 watts fan dimmer with plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required.	Each	4	1,197.00		4788.00
1408		ELECTRIC FANS					
1409	2-80	Ceiling Fan					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1410	2-80-03	Providing & installing 140 Cm (56") sweep ceiling fan with blades, canopy, standard length of down rod including connection with 14.0076" flexable wire complete as required. (without regulator) Millat/Pak/Asia/Younas/ Climax/Royal.	Each	4	9,349.00		37396.00
1411	2-107	Wall Bracket Fan					
1412	2-81-01	Providing & installing 35 Cm (14") sweep Plastic body Louvre wall bracket fan complete with blades, regulator & moveing grill with motor, fitted on wall or column with GI clip including connection with 14.0076" flexible wire complete as required. Millat / Pak / Asia / Younas / Climax / Royal.	Each	4	4,100.00		16400.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1413	2-113	Fan Clamps					
1414	2-87-06	Providing & fixing 3"x4"x5" size (14 SWG) thick recessed type fan clamp box with 1/2" dia MS bar fan clamp fixed in roof at casting time as required.	Each.	4	1,376.00		5504.00
1415	2-85	Double Action Plastic BodyExhaust Fans					
1416	2-85-02	Providing & installing 25 Cm (10") sweep Plastic body Louvre wall bracket fan complete with blades, regulator & moveing grill with motor, fitted on wall or column with GI clip including connection with 14.0076" flexible wire complete as required. Millat / Pak / Asia / Younas / Climax / Royal.	Each	2	4,249.00		8498.00

PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1417	2-26	Single pvc insulated wire and pvc ,pvc cable in existing conduits/ducts					
1418	2-26-06	Supply & drawing of 16 mm², single core, PVC insulated wire in all kinds of existing or given conduit/cable duct as required.	Rft	500	209.00		104500.00
1419	3-08	EARTHING AND LIGHTNING ARRESTOR					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1420	3-8-01	Providing and fixing Earthing set with 2'x2'x1/8" copper plate Burried in the ground at the depth of 12 feet or less if water comes out from the ground level (with salt and charcoal or earthing chemical powder) etc making the pit 12 feet deep by excavation of all type of soil (except soft or hard rock)i/c fixing of 8 SWG copper wire in 1/2" GI conduit complete in all respect as required.	Job	6	54,979.00		329874.00
1421	3-12	OCB & VCB					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1422	3-'12-01	Providing , fixing testing and commissioning of HT 11 KV 630 A VCB Transformer Protection Panel as per Wapda specifications complete in all respect as approved by the Engineer incharge	Each	1	2,605,240.0		2605240.00
1423	3-'12-02	Providing , fixing testing and commissioning of HT 11 KV 630 A VCB Wapda Industrial / Metering Panel as per Wapda specifications complete in all respect as approved by the Engineer incharge	Each	1	2,671,240.0		2671240.00
1424		2-78 (Sunlight , Piere Light , Future Technology)					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1425	2-78-01(c)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (18-20) Watts	Each	20	2,886.00		57720.00
1426		CIVIL WORKS					
1427	3-9	EXCAVATION					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1428	3-09-01	Excavation in soft soil including lift upto 5ft and filling excavated earth including breaking clods dressing, watering, consolidation and ramming in layers to full compaction i/c disposal of surplus excavated stuff as directed as required.	P/CFT	6,000	11.0		66000.00
1429	3-09-03	Excavation in Hard soil including lift up to 5ft and filling excavated earth including ,breaking clods, dressing ,watering, consolidation and ramming: in layers to full compaction l/c disposal of surplus us excavated stuff as directed.	P/CFT	6,000	15.0		90000.00
1430	3-4	4 CORE LT UN ARMOURED CABLE IN EXISTING CONDUIT OR CABLE DUCT					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1431	3-4-03	Providing & laying 4 core, 35 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	500	1,668.0		834000.00
1432	3-4-01(a)	Providing & laying 4 core, 16 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	1,000	804.00		804000.00
1433		Indoor/ pole Mounted Transformer					

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1434	3-11-04 (h)	Providing fixing and commisioning in door / pole mounted step down 11000/400 volts three phase 50 hz , transformer as per electricity code complete in all respect as required (630 KVA)	Each	1	3,913,228.0		3913228.00
1435	3-11-04 (f)	Providing fixing and commisioning in door / pole mounted step down 11000/400 volts three phase 50 hz , transformer as per electricity code complete in all respect as required (200 KVA)	Each	1	1,778,849.0		1778849.00
1436		Sub Total of Scheduled Items =					
1437		Premium @50% =					7793133.50
1438		Total Scheduled Items =					
1439		NON SCHEDULE ITEMS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1440		E. ELECTRICAL WORKS					
1441		Supply, installation, testing and commissioning of the following items of work (unless specifically stated otherwise) including all material, labour, tools, plant, accessories, related civil works, etc., required for proper completion of each item as per specifications (Section-8001 "General Specifications for Electrical Works" shall be applicable to all BOQ items).					
1442	NS-01	Supply and Installation of 6" dia Asbestos pipe for HT CABLE , complete in all respect.as Per IESCO Standards.	RFT	300	1,000.00		300000.00
1443		CABLE PULLING PIT (6'X6'X7')					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1444	NS-02	Cable pulling pit (6' X 6' X 7') made of RCC(1:2:4) and RCC cover with MS angle frame for easy pulling of cables including all accessories located as per drawings.	No	2	205,910.00		411820.00
1445	NS-03	Sealing of conduits after cable pulling with jute & Plaster of Paris as per Engineer's Instructions.	No.	6	800.00		4800.00
1446		STRUCTURED CABLING NETWORK(TELEPHONE & NETWORKING) (EXTERNAL)					
1447	NS-04	Supply and Installation of 2" dia PVC Class 'D' pipe for STRUCTURED CABLING NETWORK (TELEPHONE & NETWORKING) complete in all respect.	Rft	2,000	439.00		878000.00
1448	NS-05	100 pair telephone junction box (TJB) (IP-65) rated.	No.	10	28,600.00		286000.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1449	NS-06	(2 X 25)50 pair Cat-5 UTP cable for voice back bone only in already installed trunking / conduit.	Rft.	2,000	1,830.00		3660000.00
1450	NS-07	12 core, 9/125 um, OM3 10G supported optical fibre single mode (SM) back bone cable in already installed conduit / trunking.	Rft.	2,000	420.00		840000.00
1451	NS-08	Cable pulling pit (2' X 2' X 3') made of RCC(1:2:4) and RCC cover with MS angle frame for easy pulling of cables including all accessories located as per drawings.	No	20	85,780.00		1715600.00
1452		HT & LT CABLES & SYSTEMS					
1453		HT 11 KV CABLE					

PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1454	NS-09	Supply & Installation of 1 core, 240 mm2 8.7/15 kV Aluminum conductors, XLPE cable laid in already installed uPVC conduits in already excavated cable trenches as per requirements of the MV distribution system as per WAPDA standards.	Rft	600	889.00		533400.00
1455	NS-10	Supply & Installation of 15kV termination kits suitable for following size 1 core, 240 mm2 8.7/15 kV Aluminum conductors, XLPE including all accessories, complete in all respects for Transformers	No	6	29,122.00		174732.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1456	NS-11	Supply & erection of MS angle lattice structure pole 36' long 14" sq at base & 8" sq at top for elect distribution along with drop out cutouts , PG Connector (T-220) , PG Connector (T-150) , PG Connector (T-110) , dead end clamp , 11 KV Pin Insulator , 11 KV pin for Steel-x-arm , Steel-X-Arm with braces , Steel-x-Arm / D-Fitting , 11 KV Disc Insulator , Spool Insulator , eye nut , Stay set Complete , Stay Wire , Earth Rod , Earthing wire GSL 6 mm , D-Bracket along with cotter pin , 11 KV pin for Steel-x-arm , double Arming Bolt Complete In all respect as Approved By the Engineer as Per IESCO Standards	Job	30	125,000.00		3750000.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1457	NS-12	Supply & stringing of ACSR Osprey Conductor as Per IESCO Standards	Rft	7,000	850.00		5950000.00
1458	NS-13	Supply & erection of double pole platform for transformers as Per IESCO Standards	Each	5	25,000.00		125000.00
1459	NS-14	Supply & stringing of AAC Wasp Conductor (7/0.173") as Per IESCO Standards	Rft	500	295.00		147500.00
1460	NS-15	Supply & stringing of ACSR Rabbit Conductor (7/0.132") as Per IESCO Standards	Rft	500	210.00		105000.00
1461		L.T SWITCHBOARDS /					
1462		SUB MAIN DISTRIBUTION BOARDS					
1463		Ref. Spec. Sec. 8133, 8212, 8240					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1464		Following L.T. Switchboard and Submain Distribution Boards, (as per single line diagram shown on the drawing), including all control wiring, foundation, related civil works and all accessories, complete in all respects.					
1465	NS-16	DB-EXT-01	Job	1	195,000.00		195000.00
1466		EXTERNAL POLES & LIGHTS					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1467		Following Epoxy Painted, Hot Dipped Galvanized steel lighting columns, including pole cap, base plate, shim plates, clamps, cable connection box with one mcb for each light fixtures and all other accessories, RCC foundation and all related civil works, numbering, etc. complete in all respects.					
1468	NS-17	9 M high column with Single arms.	Nos.	43	195,000.0		8385000.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1469	NS-18	Rod Type Earth comprising of 12.7mm dia, 3m long Copper deposited steel rod, including appropriate clamp for clamping of the down conductor. The copper deposited steel rod shall be hammered into the ground to the depth of 300mm below the ground surface. The earth electrode includes excavation, backfilling, etc.	Job	43	15,550		668650.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1470		Supply, installation, testing & commissioning of the following types of LED light fixtures including, internal wiring(light to cable termination box) including cable termination box with circuit breaker complete with all mounting accessories as per architectural arrangements/ requirements, dust & moisture protected and corrosion proof and suitable for this area as acceptably supplied and installed as per sample per specifications approved by the Engineer.					
1471	NS-19	1m high Decorative led Bollard type light with foundation.	No.	20	35,000.00		700000.00
1472	NS-20	Decorative gate light fixture	No.	4	25,000.00		100000.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1473	NS-21	Decorative Planter Light	No.	20	18,400.00		368000.00
1474	NS-22	90 Watt DC street Light along with 300 watt solar panel , controller , dry Type Battary for the 12 hour Back up , Mounting Accessories(for solar Panel and Battary) with 5 year replacebale Warranty) complete in all Respect.	No.	46	250000.00		11500000.00
1475		WIRING ACCESSORIES					
1476	NS-23	13 Amps Multi switch socket outlet including sheet steel back box shall make of 16 SWG shall be finished in powder coated paint.	No.	20.00	1984.00		39680.00
1477	NS-24	15 Amps, 3 pin round switch socket outlet including sheet steel back box shall make of 16 SWG shall be finished in powder coated paint.	No.	5.00	2178.00		10890.00

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1478	NS-25	20 Amps, 250 Volts double pole switch & neonincluding sheet steel back box shall make of 16 SWG shall be finished in powder coated paint.	No.	5.00	3065.00		15325.00
1479		CONDUITS & PIPES					
1480		(Ref. Spec. Sec. 8001 8230)					
1481	NS-26	Supply and Installation of 4" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	500.00	1296.00		648000.00
1482	NS-27	Supply and Installation of 3" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	1500.00	799.00		1198500.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Sr.No	Ref;PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount in words (Rs.) optional	Amount (Rs.)
1483	NS-28	Supply and Installation of 2" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	1500.00	370.00		555000.00
1484		Sub Total of Non-Scheduled Items =					
1485		TOTAL B-12) (PART-I + PART-II) =					
1486		TOTAL = (B) Rs.					
1487		NET TOTAL = (A + B) Rs.					
1488		Qouted Premium Above/Below on Net Total (A+B) Rs.=					0.36
1489	DAB	Provision for DAB	job	1	1000000		1000000.00
						GRAND TOTAL:	Rs1,069,041,852.00

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Scope of Work

The scope of works mainly comprises construction of building works (Covered area=57133-Sft) and related External development works i.e. Roads, Walkways, Paved Areas, Car Parking, Boundary wall (3534-Rft) including Retaining wall, Gates, Guard Rooms, Electric Room, Storm Drainage System, Water supply Networks, Fire Fighting System, Sewerage System, Tube Well (1-No.), Elevated Water Tank, Underground Water Tank, Pump room, Septic Tank etc. lying within the boundaries and 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.

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Price Schedule

For Individual Jobs

#	Job Title	Quantity	Unit Price (PKR)	Total Price (PKR)	Delivery Location	Delivery Period / Year	Country of Origin
1							
2							

For Lots

#	Lot Title	Total Lot Price (PKR)	Country of Origin
1	[Lot 1 Title]		

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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EPADS

General Conditions of Contract

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

A. General

1. **Definitions**

1.1. Unless the context otherwise requires, the following terms whenever used in this Contract shall have the same meaning and shall be interpreted as indicated

1.1.1. “Applicable Law” means the laws and any other instruments having the force of law in the Government’s Country, or in such other country as may be specified in the Special Conditions of the Contract (SC), as they may be issued and in force from time to time;

1.1.2. “The Contract” means an agreement enforceable by law;

1.1.3. “The Contract Price” means the price payable to the Contractor under the Contract for the full and proper performance of its contractual obligations;

1.1.4. “The Services” means the work to be performed by the Contractor pursuant to this Contract and as prescribed in the Specifications and Schedule of Activities included in the Contractor’s Bid;

1.1.5. “Ancillary Services” means those services ancillary to the provision of Services, such as transportation and insurance, and any other incidental services, such as installation, commissioning, provision of technical assistance, training, and other such obligations of the Contractor covered under the Contract;

1.1.6. “GCC” means the General Conditions of Contract contained in this section;

1.1.7. “SCC” means the Special Conditions of Contract by which the GCC may be amended or supplemented;

1.1.8. **“**Day” means calendar day unless indicated otherwise;

1.1.9. “Effective Date” means the date on which this Contract comes into force and effect;

1.1.10. “The Contractor” means the individual or corporate body whose Bids to provide the Services has been accepted by the Procuring Agency;

1.1.11. “The Project Site,” where applicable, means the place or places named in Bid Data Sheet and technical Specifications;

1.1.12. “Government” means the Government of Pakistan;

1.1.13. “Local Currency” means the currency of Pakistan;

1.1.14. “In Writing” means communicated in written form with proof of receipt;

1.1.15. “Completion Date” means the date of completion of the Services by the Contractor as certified by the Procuring Agency;

1.1.16. “Foreign Currency” means any currency other than the currency of the country of the Procuring Agency;

1.1.17. “Party” means the Procuring Agency or the Contractor, as the case may be, and “Parties” means both of them;

1.1.18. "Service" means any object of procurement other than goods or works;

1.1.19. “Subcontractor” means any entity to which the Bidder subcontracts any part of the Services.

2. **Applicable Law**

2.1. The contract shall be governed and interpreted in accordance with the laws of Pakistan, unless otherwise specified in SCC.

3. **Language**

3.1. The Contract as well as all correspondence and documents relating to the Contract exchanged between the Contractorand the Procuring Agency, shall be written in the **English language** unless otherwise stated in the **SCC** . Supporting documents and printed literature that are part of the Contract may be in another language provided these are accompanied by an accurate translation of the relevant passages in English, in which case, for purposes of interpretation of the Contract, this translation shall govern.

4. **Notices**

4.1. Any notice, request, or consent made pursuant to this Contract shall be in writing and shall be deemed to have been made when delivered in person to an authorized representative of the Party to whom the communication is addressed, or when sent by registered mail, telex, telegram, or facsimile to such Party at the address specified in the **SCC**.

5. **Location**

5.1. The Services shall be performed at such locations as the Procuring Agency may approve and as specified in **SCC.**

5.2. A {DOCUMENTS}

6. **Authorized Representatives / Authority of Member in charge**

6.1. Any action required or permitted to be taken, and any document required or permitted to be executed, under this Contract by the Procuring Agency or the Contractor may be taken or executed by the officials specified in the **SCC**.

B. Commencement, Completion, Modification, and Termination of Contract

7. **Effectiveness of Contract**

7.1. This Contract shall come into effect on the date the Contract is signed by both parties and such other later date as may be stated in the **SCC.**

8. **Commencement of Services**

8.1. The Contractor shall confirm availability of Key Experts and begin carrying out the Services not later than the number of days after the Effective Date specified in the **SCC.**

9. **Program schedule**

9.1. Before commencement of the Services, the Contractor shall submit to the Procuring Agency for approval a Program showing the general methods, arrangements, order and timing for all activities. The Services shall be carried out in accordance with the approved Program as updated.

10. **Starting Date/Expiration Date**

10.1. The Contractor shall start carrying out the Services Five (05) days after the date the Contract becomes effective, or at such other date as may be specified in the **SCC.**

10.2. Unless terminated earlier pursuant to Clause **GCC 14** hereof, this Contract shall expire at the end of such time period after the Effective Date as specified in the **SCC.**

11. **Entire Agreement**

11.1. This Contract contains all covenants, stipulations and provisions agreed by the Parties. No agent or representative of either Party has authority to make, and the Parties shall not be bound by or be liable for, any statement, representation, promise or agreement not set forth herein.

12. **Modification**

12.1. Any modification or variation of the terms and conditions of this Contract, including any modification or variation of the scope of the Services, may only be made by written agreement between the Parties. However, each Party shall give due consideration to any modification(s) or variation(s) made by the other Party.

12.2. In cases of any modification(s) or variation(s), the prior written consent of the Procuring Agency is required.

13. **Force Majeure**

13.1. **Definition**
For the purposes of this Contract, “Force Majeure” means an event which is beyond the reasonable control of a Contractor and which makes a Contractor’s performance of its obligations under the Contract impossible or so impractical as to be considered impossible under the circumstances.

13.2. **No Breach of Contract**
The failure of a Party to fulfill any of its obligations under the contract shall not be considered to be a breach of, or default under, this Contract in so far as such inability arises from an event of Force Majeure, provided that the Party affected by such an event (a) has taken all reasonable precautions, due care and reasonable alternative

measures in order to carry out the terms and conditions of this Contract, and (b) has informed the other Party as soon as possible about the occurrence of such an event.

13.3. **Extension of Time**
Any period within which a Contractor shall, pursuant to this Contract, complete any action or task, shall be extended for a period equal to the time during which such Party was unable to perform such action as a result of Force Majeure.

13.4. **Payments**
During the period of their inability to perform the Services as a result of an event of Force Majeure, the Contractor shall be entitled to continue to be paid under the terms of this Contract, as well as to be reimbursed for additional costs reasonably and necessarily incurred by them during such period for the purposes of the Services and in reactivating the Service after the end of such period.

14. **Termination**

14.1. **By the Procuring Agency**
The Procuring Agency may terminate this Contract in case of the occurrence of any of the events specified in paragraphs (a) through (e) of this Clause. In such an occurrence the Procuring Agency shall give at least thirty (30) calendar days' written notice of termination to the Contractor in case of the events referred to in (a) through (d); at least sixty (60) calendar days' written notice in case of the event referred to in (e);

14.1.1. If the Contractor fails to remedy a failure in the performance of its obligations hereunder, as specified in a notice of suspension;

14.1.2. If the Contractor becomes (or, if the Contractor consists of more than one entity, if any of its members becomes) insolvent or bankrupt or enter into any agreements with their creditors for relief of debt or take advantage of any law for the benefit of debtors or go into liquidation or receivership whether compulsory or voluntary;

14.1.3. If the Contractor fails to comply with any final decision reached as a result of arbitration proceedings;

14.1.4. If, as the result of Force Majeure, the Contractor is unable to perform a material portion of the Services for a period of not less than sixty (60) calendar days;

14.1.5. If the Procuring Agency, in its sole discretion and for any reason whatsoever, decides to terminate this Contract;

14.2. **By the Contractor**
The Contractor may terminate this Contract, by not less than thirty (30) calendar days' written notice to the Procuring Agency, in case of the occurrence of any of the events specified in paragraphs (a) through (d) of this Clause.

14.2.1. If the Procuring Agency fails to pay any money due to the Contractor pursuant to this Contract and not subject to dispute within forty-five (45) calendar days after receiving written notice from the Contractor that such payment is overdue;

14.2.2. If, as the result of Force Majeure, the Contractor is unable to perform a material portion of the Services for a period of not less than sixty (60) calendar days;

14.2.3. If the Procuring Agency fails to comply with any final decision reached as a result of arbitration;

14.2.4. If the Procuring Agency is in material breach of its obligations pursuant to this Contract and has not remedied the same within forty-five (45) days (or such longer period as the Bidder may have subsequently approved in writing) following the receipt by the Procuring Agency of the Contractor's notice specifying such breach.

C. Obligations of the Contractor

15. **General**

15.1. **Standard of Performance**

15.1.1. The Contractor shall perform the Services and carry out the Services with all due diligence, efficiency and economy, in accordance with generally accepted professional standards and practices, and shall observe sound management practices, and employ appropriate technology and safe and effective equipment, machinery, materials and methods. The Contractor shall always act, in respect of any matter relating to this Contract or to the Services, as a faithful adviser to the Procuring Agency, and shall at all times support and safeguard the Procuring Agency's legitimate interests in any dealings with the third parties;

15.1.2. The Contractor shall employ and provide such qualified and experienced Experts and Sub-Contractors as are required to carry out the Services.

15.2. **Law Applicable to Services**

The Contractor shall perform the Services in accordance with the Contract and in accordance with the Law of Pakistan and shall take all practicable steps to ensure that any of its Experts and Sub-Bidders, comply with the Applicable Law.

16. **Conflict of Interests**

16.1. **Contractor Not to Benefit from Commissions and Discounts**

The remuneration of the Contractor shall constitute the Contractor's sole remuneration in connection with this Contract or the Services, and the Contractor shall not accept for their own benefit any trade commission, discount, or similar payment in connection with activities pursuant to this Contract or to the Services or in the discharge of their obligations under the Contract, and the Contractor shall use their best efforts to ensure that the Personnel, any Subcontractors, and agents of either of them similarly shall not receive any such additional remuneration.

16.2. **Contractor and Affiliates Not to be Otherwise Interested in Project**

The Contractor agree that, during the term of this Contract and after its termination, the Contractor and its affiliates, as well as any Subcontractor and any of its affiliates, shall be disqualified from providing Services (other than the Services and any continuation thereof) for any project resulting from or closely related to the Services.

16.3. **Prohibition of Conflicting Activities**
Neither the Bidder nor its Subcontractors nor the Personnel shall engage, either directly or indirectly, in any of the following activities:

16.3.1. during the term of this Contract, any business or professional activities in the Government's country which would conflict with the activities assigned to them under this Contract;

16.3.2. during the term of this Contract, neither the Contractor nor their Subcontractors shall hire public employees in active duty or on any type of leave, to perform any activity under this Contract;

16.3.3. after the termination of this Contract, such other activities as may be specified in the **SCC.**

17. **Insurance to be Taken Out by the Contractor**

17.1. The Contractor(a) shall take out and maintain, and shall cause any Subcontractors to take out and maintain, at its (or the Sub-contractors', as the case may be) own cost but on terms and conditions approved by the Procuring Agency, insurance against the risks, and for the coverage, as shall be specified in the **SCC**; and (b) at the Procuring Agency's request, shall provide evidence to the Procuring Agency showing that such insurance has been taken out and maintained and that the current premiums have been paid.

18. **Contractor's Actions Requiring Procuring Agency's Prior Approval**

18.1. The Contractor shall obtain the Procuring Agency's prior approval in writing before taking any of the following actions:

18.1.1. appointing such members of the Personnel not provided by the Contractor;

18.1.2. changing the Program of activities; and

18.1.3. any other action that may be specified in the **SCC.**

19. **Reporting Obligations**

19.1. The Contractor shall submit to the Procuring Agency the reports and documents in the numbers, and within the periods as prescribed by the Procuring Agency.

20. **Liquidated Damages**

20.1. **Payments of Liquidated Damages**
The Contractor shall pay liquidated damages to the Procuring Agency at the rate per day stated in the **SCC** for each day that the Completion Date is later than the Intended Completion Date. The total amount of liquidated damages shall not exceed the amount defined in the **SCC**. The Procuring Agency may deduct liquidated damages from payments due to the Contractor. Payment of liquidated damages shall not affect the Contractor's liabilities.

20.2. **Correction for Over-payment**
If the Intended Completion Date is extended after liquidated damages have been paid, the Procuring Agency shall correct any overpayment of liquidated damages by the Contractor by adjusting the next payment certificate. The

Contractor shall be paid interest on the overpayment, calculated from the date of payment to the date of repayment, at the rates specified in **SCC.**

20.3. **Lack of performance penalty**
If the Contractor has not corrected a Defect within the time specified in the Procuring Agency's notice, a penalty for Lack of performance will be paid by the Contractor. The amount to be paid will be calculated as a percentage of the cost of having the Defect corrected, assessed as specified in the Contractor

21. **Performance Guarantee**

21.1. Within the time stipulated in the acceptance letter from the Procuring Agency, the successful Bidder shall furnish the Performance Guarantee in shape and amount **specified in SCC.**

21.2. The proceeds of the Performance Guarantee shall be payable to the Procuring agency as compensation for any loss resulting from the Supplier's failure to complete its obligations under the Contract.

21.3. The Performance Guarantee shall be denominated in the currency of the Contract, or in a freely convertible currency acceptable to the Procuring agency and shall be in the acceptable form as specified in **SCC**.

21.4. The Performance Guarantee will be discharged by the Procuring agency and returned to the Supplier not later than thirty (30) days following the date of completion of the Supplier's performance obligations under the Contract, including any warranty obligations, unless otherwise **specified in SCC.**

22. **Sustainable Procurement**

22.1. The Contractor shall conform to the sustainable procurement contractual provisions, if and as specified in the **SCC.**

D. Contractor's Personnel

23. **Description of Personnel**

23.1. The titles, agreed job descriptions, minimum qualifications, and estimated periods of engagement in the carrying out of the Services of the Contractor's Key Personnel. The Key Personnel listed by title as well as by name are hereby approved by the Procuring Agency.

24. **Removal and / or Replacement of Personnel**

24.1. Except as the Procuring Agency may otherwise agree, no changes shall be made in the Key Personnel. If, for any reason beyond the reasonable control of the Contractor, it becomes necessary to replace any of the Key Personnel, the Contractor shall provide as a replacement a person of equivalent or better qualifications.

24.2. If the Procuring Agency finds that any of the Personnel have (i) committed serious misconduct or have been charged with having committed a criminal action, or (ii) have reasonable cause to be dissatisfied with the performance of any of the Personnel, then the Contractor shall, at the Procuring Agency's written request specifying the grounds thereof, provide as a replacement a person with qualifications and experience acceptable to the Procuring Agency.

24.3. The Contractor shall have no claim for additional costs arising out of or incidental to any removal and/or replacement of Personnel.

E. Obligations of the Procuring Agency

25. **Change in the Applicable Law**

25.1. If, after the date of this Contract, there is any change in the Applicable Law with respect to taxes and duties which increases or decreases the cost of the Services rendered by the Contractor, then the remuneration and reimbursable expenses otherwise payable to the Contractor under this Contract shall be increased or decreased accordingly by agreement between the Parties, and corresponding adjustments shall be made to the amounts referred in the **SCC.**

26. **Services and Facilities**

26.1. The Procuring Agency shall make available to the Contractor and the Experts, for the purposes of the Services and free of any charge, the services, facilities and property described in the Terms of Reference, at the times and in the manner specified in the Terms of Reference.

26.2. In case that such services, facilities and property shall not be made available to the Contractor, the Parties shall agree on (i) any time extension that it may be appropriate to grant to the Contractor for the performance of the Services, (ii) the manner in which the Contractor shall procure any such services, facilities and property from other sources, and (iii) the additional payments, if any, to be made to the Contractor as a result thereof.

F. Payments to the Contractor

27. **Contract Price**

27.1. The price payable shall be in Pakistani Rupees unless otherwise specified in the **SCC**.

28. **Terms and Conditions of Payment**

28.1. Payments will be made to the Contractor according to the payment schedule stated in the **SCC** and as per actual invoice submitted by the Contractor.

28.2. Unless otherwise stated in the **SCC**, the advance payment shall be made against the provision by the Contractor of a bank guarantee for the same amount, and shall be valid for the period stated in the **SCC.** Any other payment shall be made after the conditions listed in the **SCC** for such payment have been met, and the Contractor have submitted an invoice to the Procuring Agency specifying the amount due.

29. **Quality Control Identifying Defects**

29.1. The principle and modalities of Inspection of the Services by the Procuring Agency shall be as indicated in the **SCC.** The Procuring Agency shall check the Contractor’s performance and notify him of any Defects that are

found. Such checking shall not affect the Contractor's responsibilities. The Procuring Agency may instruct the Contractor to search for a Defect and to uncover and test any service that the Procuring Agency considers may have a Defect. Defect Liability Period is as defined in the **SCC**.

29.2. A {INSPECTION}

30. **Correction of Defects, and Lack of Performance Penalty**

30.1. The Procuring Agency shall give notice to the contractor of any Defects before the end of the Contract. The Defects liability period shall be extended for as long as Defects remain to be corrected.

30.2. Every time notice a Defect is given; the contractor shall correct the notified Defect within the length of time specified by the Procuring Agency's notice.

30.3. If the contractor has not corrected a Defect within the time specified in the Procuring Agency's notice, the Procuring Agency will assess the cost of having the Defect corrected, the contractor will pay this amount, and a Penalty for Lack of Performance.

31. **Settlement of Disputes Amicable Settlement**

31.1. The Parties shall use their best efforts to settle amicably all disputes arising out of or in connection with this Contract or its interpretation.

32. **Dispute Settlement**

32.1. **Arbitration**

If any dispute of any kind whatsoever shall arise between the procuring agency and the contractor in connection with or arising out of the Contract, including without prejudice to the generality of the foregoing, any question regarding its existence, validity or termination, or the execution of the contract, the parties shall seek to resolve any such dispute or difference by mutual consultation. If the parties fail to resolve such a dispute or difference even after negotiations or mediation, then the dispute shall be referred within fourteen (14) days in writing by either party to the Arbitrator, with a copy to the other party.

Any dispute in respect of which a notice of intention to commence arbitration has been given, in accordance with **GCC sub-clause 32.1**, shall be finally settled by arbitration. Arbitration may be commenced prior to or after completion of the Contract. Arbitration proceedings shall be conducted in accordance with Arbitration Act 1940. Notwithstanding any reference to arbitration herein, the parties shall continue to perform their respective obligations under the Contract unless otherwise agreed. The Procuring Agency shall continue to pay the Contractor any undisputed amounts due under the Contract during the resolution of any dispute.

Special Conditions of Contract

SECTION VIII. SPECIAL CONDITIONS OF CONTRACT

The following Special Conditions of Contract shall supplement the General Conditions of Contract. Whenever there is a conflict, the provisions herein shall prevail over those in the Conditions of Contract. The corresponding clause number of the GCC is indicated in parentheses.

Number of GC Clause

Amendments of, and Supplements to, Clauses in the General Conditions of Contract

Number of GC Clause 1

Definitions

The Procuring Agency is: National Institute of Intelligence and Security Studies (NIISS) (National Institute of Intelligence and Security Studies (NIISS)), Project Director NIISS, Quaid-i-Azam University, Islamabad Capital Territory

The Supplier is:

The title of the subject procurement is: CIVIL WORKS COMPONENT OF THE PSDP PROJECT ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD (on GtoG basis)

Number of GC Clause 2

Applicable/Governing Law:

The Contract shall be interpreted in accordance with the laws of Islamic Republic of Pakistan

Number of GC Clause 3

Language:

The language of the Contract, all correspondence and communications to be given, and all other documentation to be prepared and supplied under the Contract shall be in **English.**

Number of GC Clause 4

Notices:

The addresses for the notices are:

Procuring Agency:

National Institute of Intelligence and Security Studies (NIISS) (National Institute of Intelligence and Security Studies (NIISS)), Project Director
NIISS, Quaid-i-Azam University, Islamabad Capital Territory
+92-300-574-4929
pd@niiss.qau.edu.pk

Contractor/ Bidder:

[Name, address and telephone number]

The Contractor/ Bidder's Representative(s)

[Name, address, telephone number and e-mail address]

Number of GC Clause 6.1

The Authorized Representatives are:

For the Procuring Agency:

National Institute of Intelligence and Security Studies (NIISS) (National Institute of Intelligence and Security Studies (NIISS)), Project Director
NIISS, Quaid-i-Azam University, Islamabad Capital Territory
+92-300-574-4929
pd@niiss.qau.edu.pk

For the Bidder:

Name: ……

Designation: ……..

Address: ……..

Number of GC Clause 7

Effectiveness of the contract

The Contractor/Bidder shall be effective within ….. days from the date of signature of the Contract by both parties

Number of GC Clause 8

Commencement of Contract:

The Contractor/Bidder shall provide Non-Consultancy Services from the effective date of contract.

Number of GC Clause 10.2

Expiration of Contract:

The time period shall be ……

Number of GC Clause 14

Termination

In the event of termination of the contract due to any reason as already defined in the General Conditions of Contract, the Bidder shall be responsible for providing to the Authority the Goods till the time of alternate arrangements.

Number of GC Clause 16

Conflict of Interest:

The Procuring Agency reserves the right to determine on a case-by-case basis whether the Bidder should be disqualified from providing goods or services due to a conflict of a nature described in Clause GCC 17.

Number of GC Clause 20

Liquidated Damages

If the Bidder fails to provide services as required under the contract or in case of any data loss/data breach or any incident compromising the data security or other such failures related to any services, the Bidder shall pay to the Procuring Agency as Liquidated Damages at a rate of **0.04%** to **10.00%** of the Contract value, in accordance with the extent of performance failure & the cost of investigating such incidents as judged by the Authority.

Number of GC Clause 21

Performance Guarantee:

The amount of performance guarantee shall be **10.00%** of the contract price in acceptable form of **Pay Order, Banker's Cheque, Call at Deposit, Bank Guarantee, Demand Draft**

Number of GC Clause 27

Currency of Payment:

All the payment to be released to the contractor/Bidder shall be in Pakistani Rupees.

Number of GC Clause 28

Payment terms:

Payment will be made to the Bidder against the procured Goods and services according to the actual invoice or running bills submitted by the Bidder against the services provided within the time given in the conditions of the contract.

Number of GC Clause 29

Identifying Defects:

The Authority reserves the right at any time to inspect the premises of the provider to inspect the goods and monitor the goods being provided.

Inspections & Tests Requirements

Lab tests of bricks, steel, concrete, cubes and electric cables from the UET Taxila.

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.

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.

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 whatsoever, the Contractor shall promptly replace the same as and when directed by the Engineer.

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.

Delivery & Documents

Insurance Certificate;

Manufacturer’s or Supplier’s Valid Warranty Certificate;

The Contractor shall provide, operate and maintain 01 No (1,000 CC), brand new latest model, air conditioned Car along with driver for exclusive use of the Engineer / Engineer’s staff, to meet the transportation needs in connection with the project. The vehicle shall be registered in the name of Employer (NIISS-QAU) right from start of project.

The Contractor shall furnish supply and provide, as may be necessary without specific direction of the Engineer / Engineer’s staff, all fuels, lubricants, tyres and other supplies, all maintenance, repairs, comprehensive insurance cover and running costs and suitability qualified driver at all times for running of vehicle not exceeding 4500 km per month and will provide a substitute vehicle in case of any break down.

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/ Engineer’s representative at no additional cost to the Employer.

The Contractor shall handover the said vehicle to the Employer on Completion of the Contract. During the period of DLP, for the site visits of the Engineer / Engineer’s staff, contractor shall provide pick n drop

service only as and when required.

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

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.

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.

The Contractor shall construct, provide, furnish and maintain for Engineer, a site office along with stabilized access road.

The Contractor shall provide internet connection for the Engineer at site up-to an average billing of Rs. 4,000/- per month, one (01) computer (Core I-7, minimum with 500 GB Hard disk, 8 Gb Ram, a DVD writer, 17" Flat Colour monitor, etc.), one flash drive of at-least 8 GB capacity each, an A3 size printer, stationery & pantry, a digital camera (12.5 pixel minimum), UPS, stabilizers, air conditioners, 6 cubic feet refrigerators, etc., and the site office shall be connected to the electrical system

The Contractor shall provide replacement of the equipment(s), if any of the above-mentioned equipment(s) 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 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.

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 (DLP Period) by the Engineer.

The site office along with all fittings, fixtures and gadgets shall become property of the Employer after the completion of the project and shall be handed over to the Employer along with list of all items given for the use of Engineer. The site office shall be removed /dismantled if directed by the Engineer/Employer. In such case, the area shall be developed in accordance with the drawings or to its natural state and as per the instructions of the Engineer.

No payment shall be made to the Contractor for the works involved under this Sub-Clause-34

Number of GC Clause 31

Following is the guidance for Dispute Resolution

i. If any dispute of any kind whatsoever shall arise between the Authority and the Bidder in connection with or arising out of the Contract... (full clause unchanged)

ii. At future of negotiation the dispute shall be resolved through mediation...

iii. At failure of mediation, arbitration under Arbitration Act 1940...

iv. Cost sharing equally...

v. Proceedings may commence before/after completion...

Notwithstanding any reference to the arbitration herein, the parties shall continue to perform their respective obligations under the Contract.

Rules of procedure for arbitration proceedings:

Any dispute between the Authority and a Bidder shall be referred to arbitration under the laws of Pakistan including Arbitration Act 1940.

Place of Arbitration and Award:

The arbitration shall be conducted in English language and place shall be Islamabad. The award shall be final and binding.

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Bid Securing Declaration

Form 9: Bid Securing Declaration

Date: *[insert date (as day, month and year)]*

Bid No.:***P116962***

To: **National Institute of Intelligence and Security Studies (NIISS) (National Institute of Intelligence and Security Studies (NIISS)), Project Director NIISS, Quaid-i-Azam University, Islamabad Capital Territory**

We, the undersigned, declare that:

We understand that, according to your conditions, Bids must be supported by a Bid Securing Declaration.

We accept that we will be blacklisted and henceforth cross debarred for participating in respective category of public procurement proceedings for a period of (not more than) six months, if fail to abide with a bid securing declaration, however without indulging in corrupt and fraudulent practices, if we are in breach of our obligation(s) under the Bid conditions, because we:

1. have withdrawn or modified our Bid during the period of Bid Validity specified in the Form of Bid;

2. Disagreement to arithmetical correction made to the Bid price; or

3. having been notified of the acceptance of our Bid by the Procuring Agency during the period of Bid Validity, (i) failure to sign the contract if required by Procuring Agency to do so or (ii) fail or refuse to furnish the Performance Security or to comply with any other condition precedent to signing the contract specified in the Bidding Documents.

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 (28) days after the expiration of our Bid.

Contract Form

SECTION IX: CONTRACT FORMS

THIS AGREEMENT made the _____ day of _____ 20_____ between **National Institute of Intelligence and Security Studies (NIISS) (National Institute of Intelligence and Security Studies (NIISS)), Project Director NIISS, Quaid-i-Azam University, Islamabad Capital Territory**

(hereinafter called "the Procuring Agency") of the one part and *[name of Bidder]* of *[city and country of Bidder]* (hereinafter called "the Bidder") of the other part:

WHEREAS the Procuring Agency invited Bids for provision of goods, viz., **CIVIL WORKS COMPONENT OF THE PSDP PROJECT ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD (on GtoG basis) (*P116962*)** and has accepted a Bids by the Bidder for the provision of Goods 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:-

1. This form of Contract;
2. the Form of Bids and the Price Schedule submitted by the Bidder;
3. the Schedule of Requirements;
4. the Technical Specifications;
5. the Special Conditions of Contract;
6. the General Conditions of the Contract;
7. the Procuring Agency's Letter of Acceptance; and
8. [*add here: any other documents*]

3. In consideration of the payments to be made by the Procuring Agency to the Bidder as hereinafter mentioned, the Bidder hereby covenants with the Procuring Agency to provide the Goods related services and to remedy defects therein in conformity in all respects with the provisions of the Contract.

4. The Procuring Agency hereby covenants to pay the Bidder in consideration of the provision of Goods 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)

Witness to the signatures of the Procuring Agency:

……

Signed, sealed, delivered by _____the _____ (for the Procuring Agency)

Witness to the signatures of the Bidder: ……

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Integrity Pact

Integrity Pact

DECLARATION OF FEES, COMMISSION AND BROKERAGE ETC. PAYABLE BYTHE SUPPLIERS OF GOODS, SERVICES & WORKS IN CONTRACTS WORTH RS.10.00 MILLION OR MORE

Contract Number: Contract Value: Contract Title:

Dated:

[Name of Supplier] hereby declares that it has not obtained or induced the procurement of any contract, right, interest, privilege or other obligation or benefit from Government of 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 Supplier] 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 Supplier] certifies that it has made and will make full disclosure of all agreements and arrangements with all persons in respect of or related to the transaction with GoP and has not taken any action or will not take any action to circumvent the above declaration, representative or warranty.

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

Performance Guarantee Form

Performance Guarantee Form

To: **National Institute of Intelligence and Security Studies (NIISS) (National Institute of Intelligence and Security Studies (NIISS)), Project Director NIISS, Quaid-i-Azam University, Islamabad Capital Territory**

WHEREAS *[name of Bidder]* (hereinafter called "the Bidder") has undertaken, in pursuance of Contract No. *[reference number of the contract]* dated *[insert date]* for provision of Goods*(*hereinafter called "the Contract").

AND WHEREAS it has been stipulated by you in the said Contract that the Bidder shall furnish you with a Bank Guarantee by a reputable bank for the sum specified therein as security for compliance with the Bidder's performance obligations in accordance with the Contract.

AND WHEREAS we have agreed to give the Bidders guarantee:

THEREFORE, WE hereby affirm that we are Guarantors and responsible to you, on behalf of the Bidder, 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 Bidder 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}

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Annexure

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Bidding Document Volume-I

This document may be read for clarification and guidance.
The priority of document will be such that the EPADS documents will be primary while this document will be secondary.
The bidder will provide signed hard copy of this document.

Information (Read-Only)

See Form Under Additional Forms and Documents: **Bidding Document Volume-I** (page number: 605)

Bidding Document Volume-II

This document may be read for clarification and guidance.
The priority of document will be such that the EPADS documents will be primary while this document will be secondary.
The bidder will provide signed hard copy of this document.

Information (Read-Only)

See Form Under Additional Forms and Documents: **Bidding Document Volume-II** (page number: 703)

Bidding Document Volume-III (A)

This document may be read for clarification and guidance.
The priority of document will be such that the EPADS documents will be primary while this document will be secondary.
The bidder will provide signed hard copy of this document.

Information (Read-Only)

See Form Under Additional Forms and Documents: **Bidding Document Volume-III (A)** (page number: 977)

Bidding Document Volume-III (B)

This document may be read for clarification and guidance.
The priority of document will be such that the EPADS documents will be primary while this document will be secondary.
The bidder will provide signed hard copy of this document.

Information (Read-Only)

See Form Under Additional Forms and Documents: **Bidding Document Volume-III (B)** (page number: 1039)

Bidding Document Volume-IV

This document may be read for clarification and guidance.
The priority of document will be such that the EPADS documents will be primary while this document will be secondary.
The bidder will provide signed hard copy of this document.

Information (Read-Only)

See Form Under Additional Forms and Documents: **Bidding Document Volume-IV** (page number: 1090)

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Procurement Forms

Past Experience and Completed Contracts

Applicants must provide details of relevant past experience and completed contracts to demonstrate their technical capability and performance history. Vendors should complete the form and upload supporting documents such as contract agreements, purchase orders, completion certificates, performance certificates, or client reference letters. All information must be accurate, verifiable, and relevant to the scope of the procurement. Failure to provide sufficient evidence may affect the evaluation of the application.

See Form Under Additional Forms and Documents: **Past Experience and Completed Contracts** (page number: 1228)

Historical Contract Non-Performance, and Pending Litigation and Litigation History

Applicants must disclose any historical contract non-performance, ongoing disputes, or litigation involving their organization. Vendors should provide complete and accurate information and upload relevant supporting documents, where applicable. The information submitted will be used for eligibility verification and risk assessment during the evaluation process.

See Form Under Additional Forms and Documents: **Historical Contract Non-Performance, and Pending Litigation and Litigation History** (page number: 1229)

Current Contracts and Their Progress

Applicants must provide details of all ongoing contracts and their current execution status. Vendors should upload relevant supporting documents, such as contract agreements, work orders, or progress reports, to demonstrate their current workload and capacity. All information must be accurate and verifiable, as it will be used to assess the applicant’s ability to undertake additional commitments.

See Form Under Additional Forms and Documents: **Current Contracts and Their Progress** (page number: 1231)

Financial Capacity and Net Worth Evaluation Form

Applicants must provide complete and accurate financial information for the specified period to demonstrate their financial capacity and net worth. Vendors should upload relevant supporting documents, including audited financial statements, balance sheets, income statements, bank certificates, or other financial records as required. All submitted information must be verifiable and may be subject to review during the evaluation process. Failure to provide sufficient financial evidence may affect the eligibility and evaluation of the application.

See Form Under Additional Forms and Documents: **Financial Capacity and Net Worth Evaluation Form** (page number: 1232)

Average Annual Turnover

Applicants must provide their Average Annual Turnover for the specified period and upload supporting financial documents, such as audited financial statements, income statements, or tax records. The information provided must be accurate and verifiable, as it may be used to determine eligibility and support the evaluation process.

See Form Under Additional Forms and Documents: **Average Annual Turnover** (page number: 1234)

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Additional Forms and Documents

QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

CIVIL WORKS COMPONENT OF THE PSDP PROJECT

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

TECHNICAL BID

BIDDING DOCUMENTS VOLUME – I

AUGUST, 2026

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD
NESPAK House, Sector G-5/2, Islamabad, Tel: 051-9221910-13, Fax: 051-9221914.

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QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

CIVIL WORKS COMPONENT OF THE PSDP PROJECT

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

VOLUME – I

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- **Conditions of Contract, Part-I - General Conditions.**
- **Conditions of Contract, Part II – Particular Conditions**

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INSTRUCTIONS TO BIDDERS

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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INSTRUCTIONS TO BIDDERS

(Note: These Instructions to Bidders along with Bidding Data will not be part of the Contract and will cease to have effect once the contract is signed.)

A. GENERAL

IB.1 Scope of Bid

1.1 The Employer as defined in the Bidding Data hereinafter called "the Employer" wishes to receive bids for the construction and completion of works as described in these Bidding Documents, and summarized in the Bidding Data hereinafter referred to as the "Works".

1.2 The successful bidder will be expected to complete the Works within the time specified in the Bidding Data.

IB.2 Source of Funds

2.1 The Employer has applied for/received a funding from the source(s) in various currencies towards the cost of the project specified in the Bidding Data and it is intended that part of the proceeds of this funding will be applied to eligible payments under the Contract for which these Bidding Documents are issued.

IB.3 Eligible Bidders

3.1 This Invitation for Bids is open to all Bidders meeting the following requirements at the time of submission of Bids and thereafter:

(a) Duly prequalified for this bidding process;
(b) Duly licensed by the Pakistan Engineering Council (PEC) in the category relevant to the value of the Works in the relevant field of specialization.

However, a Foreign Constructor can submit provisional licence with its Bid but the Foreign Constructor will be required to submit standard licence after award of Contract and before start of work.

Foreign Constructor shall not be eligible to participate in bidding individually. Foreign Constructor shall enter into joint venture with Pakistani Constructor registered with the Pakistan Engineering Council in equivalent/compatible category and submit the joint venture agreement to the Employer before participating in bidding in accordance with PEC Construction and Operation of Engineering Works Bye-laws, 1987;

(c) Pakistani Constructor must be on Active Taxpayer List of the Federal Board of Revenue and provincial revenue authority/ board where applicable; and
(d) All partners constituting the Bidder including proposed subcontractors do not appear in the list of debarred/ blacklisted firms and individuals on the websites of PEC and Federal & Provincial Procurement Regulatory Authorities and have not been declared debarred/ blacklisted by foreign country, international organizations or other foreign institutions.

IB.4 Eligible Materials, Equipment and Services

4.1 All materials, equipment and services to be supplied under this Contract shall have their origin in eligible countries described under paragraph 4.4 hereunder

4.2 For purpose of this Clause, "origin" means the place where the Goods are mined, grown or produced or from where the ancillary services are supplied. Goods are produced when, through manufacturing, processing or substantial and major assembling of

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components, a commercially recognized product results that is substantially different in basic characteristics or in purpose or utility from its components.

4.3 The origin of Goods and Services is distinct from the nationality of the Bidder

4.4 Eligible countries to participate in this bidding process are those which have been notified by Ministry of Interior, Government of Pakistan as Business Friendly Countries (BVL); information can be accessed through following link:

http://www.dgip.gov.pk/Files/Visa%20Categories.aspx#L

IB.5 One Bid per Bidder

5.1 Each Bidder shall submit only one Bid either by himself, or as a partner in a joint venture. A Bidder who submits or participates in more than one Bid (other than alternatives pursuant to Clause IB.17) will be disqualified.

IB.6 Site Visit

6.1 The Bidders are advised to visit and examine the Site of Works and its surroundings and obtain for themselves on their own responsibility all information that may be necessary for preparing the Bid and entering into a contract for construction of the Works. All cost in this respect shall be at the Bidder's own expense.

6.2 The Bidders and any of their personnel or agents will be granted permission by the Employer to enter upon his premises and lands for the purpose of such inspection, but only upon the express condition that the Bidders, their personnel and agents, will release and indemnify the Employer, his personnel and agents 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 such inspection.

B. BIDDING DOCUMENTS

IB.7 Contents of Bidding Documents

7.1 The Bidding Documents, in addition to Invitation for Bids, are those stated below and should be read in conjunction with any Addenda issued in accordance with Clause IB.9.

1. Instructions to Bidders.
2. Bidding Data.
3. Evaluation Criteria and Qualification Updating Forms
4. General Conditions (GC).
5. Particular Conditions (PC).
   Part A - Contract Data;
   Part B - Special Provisions
6. Specifications (SP)
   Part A – Specific Provisions
   Part B – Technical Provisions
7. Letter of Bid.
8. Schedules to Bid
9. Standard Forms
   (i) Form of Bid Security;
   (ii) Letter of Acceptance;
   (iii) Form of Contract Agreement;
   (iv) Form of Performance Security;

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(v) DAAB Agreement;
(vi) Form of Mobilization Advance Guarantee

10. Drawings.

7.2 The Bidders are expected to examine carefully the contents of all the above documents. Failure to comply with the requirements of Bid submission will be at the Bidder's own risk. Pursuant to Clause IB.26, bids which are not substantially responsive to the requirements of the Bidding Documents will be rejected.

IB.8 Clarification of Bidding Documents, Pre-Bid Meeting

8.1 Any prospective Bidder requiring any clarification(s) in respect of the Bidding Documents may notify the Employer in writing at the Employer's address indicated in the Invitation for Bids. The Employer will respond to any request for clarification which he receives earlier than the period specified in the Bidding Data, prior to the deadline for submission of bids.

8.2 Copies of the Employer's response will be forwarded to all purchasers of the Bidding Documents, including a description of the enquiry but without identifying its source.

8.3 The Employer may, on his own or at the request of any prospective Bidder(s), hold a pre-bid meeting to clarify issues and to answer any questions on matters related to the Bidding Documents. The date, time and venue of pre-bid meeting, if convened, are as stipulated in the Bidding Data. All prospective Bidders or their authorized representatives shall be invited to attend such a pre-bid meeting.

8.4 The Bidders are requested to submit questions, if any, in writing so as to reach the Employer not later than seven (7) days before the proposed pre-bid meeting.

8.5 Minutes of the pre-bid meeting, including the text of the questions raised and the replies given, will be transmitted without delay to all purchasers of the Bidding Documents. Any modification of the Bidding Documents listed in Sub-Clause IB.7.1 hereof which may become necessary as a result of the pre-bid meeting shall be made by the Employer exclusively through the issue of an Addendum pursuant to Clause IB.9 and not through the minutes of the pre-bid meeting.

8.6 Absence at the pre-bid meeting will not be a cause for disqualification of a Bidder.

IB.9 Amendment of Bidding Documents

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

9.2 Any addendum thus issued shall be part of the Bidding Documents listed in Sub-Clause IB.7.1 hereof and shall be communicated in writing to all purchasers of the Bidding Documents. Prospective Bidders shall acknowledge receipt of each addendum in writing to the Employer.

9.3 Such addendum shall be issued not later than number of days prior to the deadline for submission of bids, specified in the Bidding Data. To afford prospective Bidders reasonable time in which to take an addendum into account in preparing their bids,

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the Employer may extend the deadline for submission of bids in accordance with Clause IB.20.

C. PREPARATION OF BIDS

IB.10 Cost of Bidding

10.1 The Bidders shall bear all costs associated with the preparation and submission of their respective bids and the Employer will in no case be responsible or liable for those costs, regardless of the conduct or outcome of the bidding process.

IB.11 Language of Bid

11.1 The Bid and all correspondence and documents related to the Bid exchanged by a Bidder and the Employer shall be in the Bid language stipulated in the Bidding Data and Particular Conditions of Contract. Supporting documents and printed literature furnished by the Bidders may be in any other language provided the same are accompanied by duly certified translation of the relevant parts in the Bid language, in which case, for purposes of evaluation of the bid, the translation in Bid language shall prevail.

IB.12 Documents Comprising the Bid

12.1 Each bidder shall:

(a) submit duly filled in, signed and stamped Letter of Bid and completed Schedules to Bid as required, including priced Bill of Quantities, in accordance with Clause IB.18 hereof;

(b) submit Bid Security in accordance with Clause IB.16 hereof

(c) submit alternative proposal, if permissible in accordance with Clause IB.17

(d) submit a written power of attorney authorizing the signatory of the Bid to act for and on behalf of the Bidder. The name and position held by each person signing the authorization must be typed or printed below the signature.

(e) submit the Qualification Updating Forms duly filled in, signed and stamped along with requisite attachments, to establish that the Bidder continues to meet the Eligibility and Qualification Criteria set out in the Pre-Qualification Documents and as provided in the Section “Evaluation Criteria and Qualification Updating Forms”.

(f) furnish a technical proposal taking into account the various Schedules to Bid, specially the following:

Schedule-C to Bid,	Proposed Construction Schedule;
Schedule-D to Bid,	Method of Performing the Work;
Schedule-E to Bid,	List of Major Equipment;
Schedule-F to Bid,	Organization Chart for Supervisory Staff;

and other pertinent information, such as mobilization programme, etc

12.2 Bids submitted by a joint venture of two (2) or more firms specified in **Bidding Data**, shall comply with the following requirements:

(a) the bid, and in case of a successful bid, the Form of Contract Agreement shall be signed by all members so as to be legally binding on all partners;

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(b) one of the joint venture partners shall be nominated as being in-charge; and this authorization shall be evidenced by submitting a power of attorney signed by legally authorized signatories of all the joint venture partners;

(c) the partner-in-charge shall always be duly authorized to deal with the Employer regarding all matters related with and/or incidental to the execution of Works as per the terms and Conditions of Contract and in this regard to incur any and all liabilities, receive instructions, give binding undertakings and receive payments on behalf of the joint venture;

(d) all partners of the joint venture shall at all times and under all circumstances be liable jointly and severally for the execution of the Contract in accordance with the Contract terms and a statement to this effect shall be included in the authorization mentioned under Sub-Para(b) above as well as in the Letter of Bid and in the Form of Contract Agreement (in case of a successful bid); and

(e) a copy of the agreement entered into by the joint venture partners shall be submitted with the bid stating the conditions under which it will function, its period of duration, the persons authorized to represent and obligate it and which persons will be directly responsible for due performance of the Contract and can give valid receipts on behalf of the joint venture, the proportionate participation and corresponding duties & responsibilities of the several firms forming the joint venture, and any other information necessary to permit a full appraisal of its functioning. No amendments/ modifications whatsoever in the joint venture agreement shall be agreed to between the joint venture partners without prior written consent of the Employer.

12.3 Bidders shall also submit proposals of work methods and schedule, in sufficient detail to demonstrate the adequacy of the Bidders' proposals to meet the technical specifications and the completion time referred to in Sub-Clause IB.1.2 hereof.

IB.13 Bid Prices

13.1 The price and discount if any quoted by the Bidders in the Letter of Bid and in the Bill of Quantity shall conform to the requirement specified below:

13.2 The Bidder shall quote any discounts and the methodology for their application.

13.3 If bids are being invited for individual lots (contracts) or for any combination of lots, the Bidders can offer discounts for the individual lots (contracts) as well as for award of more than one Contract and shall specify in their bid.

13.4 Unless stated otherwise in the Bidding Documents, the Contract shall be for the whole of the Works as described in Sub-Clause IB.1.1 hereof, based on the unit rates and/or prices.

13.5 The Bidders shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by a Bidder will not be paid for by the Employer when executed and shall be deemed covered by rates and prices for other items in the Bill of Quantities.

13.6 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 the deadline for submission of bids shall be included in the

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rates and prices and the total Bid Price submitted by a Bidder.

Additional/reduced duties, taxes and levies due to subsequent additions or changes in legislation shall be reimbursed/ deducted as per Sub Clause 13.6 [*Adjustment for Changes in Laws*] of the Conditions of Contract

13.7 The rates and prices quoted by the Bidders are subject to adjustment during the performance of the Contract in accordance with the provisions of Sub-Clause 13.7 [*Adjustments for Changes in Cost*] of the General Conditions of Contract. The Bidders shall furnish the prescribed information for the price adjustment formulae in Schedule-A to Bid, and shall submit with their bids such other requisite supporting information if required under the said Schedule

IB.14 Currencies of Bid and Payment

14.1 The unit rates and the prices shall be quoted by the Bidder entirely PKR.
A Bidder expecting to incur expenditures in other currencies for inputs to the Works supplied from outside the Employer's country (referred to as the "Foreign Currency Requirements") shall indicate in Table III of Schedule-A to Bid the proportion of the Bid Price (excluding Provisional Sums) needed by him for the payment of such Foreign Currency Requirements; in such case the unit rates and the prices shall be quoted by the Bidder in Equivalent PKR.

14.2 The rates of exchange to be used by the Bidder for currency conversion shall be the TT Selling Rates published or authorized by the State Bank of Pakistan prevailing on the date twenty eight (28) days prior to the deadline for submission of bids. Such rates shall be notified by the Employer not later than fourteen (14) days prior to the deadline for submission of Bids.

For the purpose of payments, the exchange rates used in Bid preparation shall apply for the duration of the Contract.

IB.15 Bid Validity

15.1 Bids shall remain valid for the period stipulated in the Bidding Data after the date of Bid Opening specified in Clause IB.23.

15.2 In exceptional circumstances, prior to expiry of the original bid validity period, the Employer may request that the Bidders extend the period of validity for a specified additional period which normally may not be more than the original bid validity period. The request and the responses thereto shall be made in writing. A Bidder may refuse the request without forfeiting his Bid Security. A Bidder agreeing to the request will not be required or permitted to modify his bid, but will be required to extend the validity of his Bid Security for the period of the extension, and in compliance with Clause IB.16 in all respects.

IB.16 Bid Security

16.1 Each Bidder shall furnish, as part of his bid, a Bid Security in original form in the amount stipulated in the Bidding Data in PKR or an equivalent amount in a freely convertible currency.

16.2 The Bid Security shall be, at the option of the Bidder, in the form of Call Deposit Receipt (CDR)/ Pay Order or a Security issued in the prescribed form included in the Bidding Documents, by (a) a Scheduled Bank in Pakistan or (b) a foreign bank duly counter-guaranteed by a Scheduled Bank in Pakistan or (c) an Insurance Company listed in the Bidding Data and rated by PACRA/VIS of

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rating as provided in Table below in favour of the Employer valid for a period 14 days beyond the Bid Validity date. The Bid Security of Joint Venture shall be in the name of Joint Venture or Lead/either Firm of the JV or in ratio of shares of the individual JV partners, submitting the bid.

Bid Price (In Eq. million PKR)	Minimum Rating Insurance Company
Up to 1000	A (+)
1001 to no limit	AA

[Note: Insurance Company includes Joint Venture Insurance Companies also]

16.3 Any Bid not accompanied by an acceptable Bid Security shall be rejected by the Employer as non-responsive.

16.4 The Bid Securities of the Bidders except the lowest three will be returned by the Employer within twenty eight (28) days from the opening of Bids, provided a Bidder requests for the return of its Bid Security, or upon the expiry of original validity of Bid Security or as extended, whichever is earlier.

16.5 The Bid Security of the lowest three Bidders including the successful Bidder will be returned when the successful Bidder has furnished the required Performance Security.

16.6 The Bid Security may be forfeited:

(a) if the Bidder withdraws his bid except as provided in Sub Clause IB.22.1;
(b) if the Bidder does not accept the correction of his Bid Price pursuant to Sub Clause IB.28.2 hereof; or
(c) in the case of successful Bidder, fails to furnish the required Performance Security.

16.7 In case of annulment, all Bids submitted and specially, Bid securities, shall be returned to the Bidders within 14 days of annulment.

IB.17 Alternate Proposals by Bidder

17.1 Unless otherwise specified in the **Bidding Data**, alternative proposal(s) shall not be considered.

17.2 Should any Bidder consider that he can offer any advantages to the Employer by a modification to the designs, specifications or other conditions, he may, in addition to his Bid to be submitted in strict compliance with the Bidding Documents, submit any alternative proposal(s) containing (a) relevant design calculations; (b) technical specifications; (c) proposed construction methodology; and (d) any other relevant details/conditions, provided always that the total sum entered on the Letter of Bid shall be that which represents complete compliance with the Bidding Documents.

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17.3 Alternative proposal(s), if any, of the Bidder having submitted most advantageous Bid only may be considered by the Employer as the basis for the award of Contract to such Bidder.

IB.18 Format and Signing of Bid

18.1 Bidders are particularly directed that the amount entered on the Letter of Bid shall be for performing the Contract strictly in accordance with the Bidding Documents.

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

18.3 No alteration is to be made in the Letter of Bid nor in the Schedules thereto except in filling up the blanks as directed. If any such alterations be made or if these instructions be not fully complied with, the Bid may be rejected.

18.4 Each Bidder shall prepare by filling in the forms completely and without alterations one (1) original and number of copies, specified in the **Bidding Data**, of the documents comprising the Bid as described in Clause IB.12 and clearly mark them “ORIGINAL” and ‘COPY” as appropriate. In the event of discrepancy between them, the original shall prevail.

The Bidder shall also provide complete searchable PDF versions as well as Word, Excel, etc., versions of the Bid if so required in the **Bidding Data**.

18.5 The original of the Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder pursuant to Sub-Clause IB.12.1(d) hereof. All pages of the Bid shall be initialled and stamped by the person or persons signing the bid.

18.6 The Bid shall contain no alterations, omissions or additions, except to comply with instructions issued by the Employer, or as are necessary to correct errors made by the Bidder, in which case such corrections shall be initialled by the person or persons signing the Bid.

18.7 Bidders shall indicate in the space provided in the Letter of Bid their full and proper addresses at which notices may be legally served on them and to which all correspondence in connection with their bids and the Contract is to be sent.

18.8 Bidders should retain a copy of the Bidding Documents and the Bid as their file copy.

18.9 All documents executed outside Pakistan required to be submitted with the Bid must be certified by Pakistani Embassy in the respective country (ies).

D. SUBMISSION OF BIDS

IB.19 Sealing and Marking of Bids

19.1 Each Bidder shall submit his Bid as under:

(a) ORIGINAL and each copy of the Bid shall be separately sealed and put in separate envelopes and marked as such.

(b) The envelopes containing the ORIGINAL and copies will be put in one sealed envelope and addressed / identified as given in Sub Clause IB.19.2 hereof.

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19.2 The inner and outer envelopes shall:
(a) be addressed to the Employer at the address provided in the **Bidding Data**;
(b) bear the specific identification of this bidding process as specified in the **Bidding Data**; and
(c) provide a warning not to open before the time and date for bid opening, as specified in the **Bidding Data**.

19.3 In addition to the identification required in Sub-Clause IB.19.2 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 Clause IB.21.

19.4 If the outer envelope is not sealed and marked as above, the Employer will assume no responsibility for the misplacement or premature opening of the Bid.

IB.20 Deadline for Submission of Bids

20.1 (a) Bids must be received by the Employer at the address specified no later than the time and date stipulated in the **Bidding Data**.

(b) Bids with charges payable will not be accepted, nor will arrangements be undertaken to collect the bids from any delivery point other than that specified above. Bidders shall bear all expenses incurred in the preparation and delivery of Bids. No claims will be entertained for refund of such expenses.

(c) Where delivery of a Bid is by mail and the Bidder wishes to receive an acknowledgment of receipt of such Bid, he shall make a request for such acknowledgment in a separate letter attached to but not included in the sealed Bid envelope.

(d) Upon request, acknowledgment of receipt of Bids will be provided to those making delivery in person or by messenger..

20.2 The Employer may, at his discretion, extend the deadline for submission of Bids by issuing an amendment in accordance with Clause IB.9, in which case all rights and obligations of the Employer and the Bidders previously subject to the original deadline will thereafter be subject to the deadline as extended.

IB.21 Late Bids

21.1 (a) Any Bid received by the Employer after the deadline for submission of bids prescribed in Clause IB.20 shall be declared late, rejected and returned unopened to such Bidder.

(b) Delays in the mail, delays of person in transit, or delivery of a Bid to the wrong office shall not be accepted as an excuse for failure to deliver a Bid at the proper place and time. It shall be the Bidder's responsibility to determine the manner in which timely delivery of his Bid will be accomplished either in person, by messenger or by mail.

IB.22 Modification, Substitution and Withdrawal of Bids

22.1 Any Bidder may modify**,** substitute or withdraw his Bid after Bid submission provided that the modification, substitution or written notice of withdrawal is received by the Employer prior to the deadline for submission of bids.

22.2 The modification, substitution, or notice for withdrawal of any Bid

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shall be prepared, sealed, marked and delivered in accordance with the provisions of Clause IB.19 with the outer and inner envelopes additionally marked "MODIFICATION", "SUBSTITUTION" or "WITHDRAWAL" as appropriate.

22.3 No Bid may be modified by a Bidder after the deadline for submission of Bids except in accordance with Sub Clauses IB.22.1 and 28.2.

22.4 Withdrawal of a Bid during the interval between the deadline for submission of Bids and the expiration of the period of Bid validity specified in the Letter of Bid may result in forfeiture of the Bid security in pursuance to Clause IB.16.

E. BID OPENING AND EVALUATION

IB.23 Bid Opening

23.1 The Employer will open the Bids including withdrawals, substitution and modifications made pursuant to Clause IB.22, in the presence of Bidders' representatives who choose to attend, at the time, date and location stipulated in the **Bidding Data**. The Bidders' representatives who are present shall sign a register evidencing their attendance.

23.2 Envelopes marked "MODIFICATION", "SUBSTITUTION" or "WITHDRAWAL" shall be opened and read out first. Bids for which an acceptable notice of withdrawal has been submitted pursuant to Clause IB.22 shall not be opened. Only bids that are opened and read out at Bid opening shall be considered further.

23.3 The Bidder's name, total Bid Price and price of any alternative proposal(s), any discounts, Bid modifications**,** substitution and withdrawals, the presence or absence of Bid security, and such other details as the Employer may consider appropriate, will be announced by the Employer at the opening of Bids. Only discounts and alternative proposals.

read out at Bid opening shall be considered for evaluation. The Letter of Bid and the Summary Bill of Quantities are to be initialled by representative(s) of the Employer attending Bid opening. The Employer shall neither discuss the merits of any Bid nor reject any Bid (except for late Bids, in accordance with Sub-Clause IB 21.1)

23.4 The Employer shall prepare minutes of the Bid opening, including the information disclosed to those present in accordance with the Sub-Clause IB.23.3.

IB.24 Process to be Confidential

24.1 Information relating to the examination, clarification, evaluation and comparison of Bids and recommendations for the award of Contract shall not be disclosed to Bidders or any other person not officially concerned with such process before the announcement of the result of Bid evaluation in the form of final evaluation report giving justification for acceptance or rejection of Bids which shall be done at least fifteen (15) days prior to award of Contract. The announcement to all Bidders will include table(s) comprising read out prices, discounted prices, price adjustments made, final evaluated prices and recommendations against all the Bids evaluated. Any effort by a Bidder to influence the Employer's processing of Bids or Contract award decisions may result in the rejection of such Bidder's Bid. Whereas any Bidder feeling aggrieved may lodge a written complaint not later than five (5)

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days after the announcement of the final evaluation report.

IB.25 Clarification of Bids

25.1 To assist in the examination, evaluation and comparison of Bids, the Employer may, at his discretion, ask any Bidder for clarification of his Bid, including breakdowns of unit rates and lump sum prices. Any clarification submitted by a Bidder that is not in response to a request by the Employer shall not be considered. The request for clarification and the response shall be in writing. No change in the price or substance of the Bid shall be sought, offered or permitted except as required to confirm the correction of arithmetic errors discovered by the Employer in the evaluation of the Bids in accordance with Clause IB.28.

25.2 The Employer may, at his discretion, ask any Bidder for confirmation/submission of missing information to clarify its Bid. However, the Employer does not have an obligation to request any additional information or clarification with respect to missing or deficient information in a Bid. The Employer may reject any Bid as non-responsive if found materially incomplete, obscure, irregular or omitting any material information required to be submitted in accordance with the Bidding Documents.

25.3 If a Bidder does not provide clarifications of its Bid by the date and time set reasonably (not less than seven (7) days) in the Employer's request for clarification, the Employer may proceed with the evaluation based on the information submitted in the Bid without waiting for the Bidder's response.

IB.26 Examination of Bids and Determination of Responsiveness

26.1 Prior to the comparison of Bids, the Employer will determine whether each Bid is substantially responsive to the requirements of the Bidding Documents.

26.2 The Employer's determination of a Bid's responsiveness is to be based on the contents of the Bid itself, as defined in Sub- Clause IB.12.

26.3 A substantially responsive Bid is one which meets the requirements of the Bidding Documents, without material deviation, reservation or omission. A material deviation, reservation or omission is one that,

(a) if accepted, would:
  (i) affect in any substantial way the scope, quality or performance of the Works; or
  (ii) limit in any substantial way, inconsistent with the Bidding Documents, the Employer's rights or the Bidder's obligations under the proposed Contract; or

(b) if rectified, would unfairly affect the competitive position of other Bidders presenting substantially responsive Bids.

26.4 During the evaluation of Bids, the following definitions apply:

(a) "Deviation" is a departure from the requirements specified in the Bidding Documents;
(b) "Reservation" is the setting of limiting conditions or withholding from complete acceptance of the requirements specified in the Bidding Documents; and
(c) "Omission" is the failure to submit part or all of the information or documentation required in the Bidding

26.5 The Employer shall examine the technical aspects of the Bid submitted in accordance with Sub-Clause IB.12.1(f), in particular, to confirm that all requirements stated in Specifications have been met without any material deviation, reservation or omission.

26.6 If a Bid is not substantially responsive to the requirements of the Bidding Documents, it will be rejected by the Employer, and may not subsequently be made responsive by correction or withdrawal of the non-conforming deviation, reservation or omission.

IB.27 Nonmaterial Nonconformities

27.1 Provided that a Bid is substantially responsive, the Employer may waive any nonconformities in the Bid.

27.2 Provided that a Bid is substantially responsive, the Employer may request that the Bidder submit the necessary information or documentation, within a reasonable period of time, to rectify nonmaterial nonconformities in the Bid related to documentation requirements. Requesting information or documentation on such nonconformities shall not be related to any aspect of the price of the Bid. Failure of the Bidder to comply with the request may result in the rejection of its Bid.

27.3 Provided that a Bid is substantially responsive, the Employer shall rectify quantifiable nonmaterial nonconformities related to the Bid Price. To this effect, the Bid Price shall be adjusted, for comparison purposes only, to reflect the price of a missing or non-conforming item or component, by adding the average price of the item or component quoted by other lowest two evaluated substantially responsive Bidders. If the price of the item or component cannot be derived from the price of other substantially responsive Bids, the Employer shall use a suitable CSR, adjusted to the date 28 days earlier to the Bid submission date or its best assessment.

IB.28 Correction of Errors

28.1 Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

(a) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted will govern and the unit rate will be corrected.

(c) if there is an error in a total corresponding to the addition or subtraction of subtotals, the subtotals shall prevail and the total shall be corrected

28.2 The amount stated in the Letter of Bid will be adjusted by the 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 Bid Price, his Bid will be rejected, and the Bid security shall be forfeited in accordance with Sub Clause

IB.16.6(b) hereof.

IB.29 Evaluation and Comparison of Bids

29.1 The Employer will evaluate and compare only the Bids determined to be substantially responsive in accordance with Clause IB.26. The Employer shall use the criteria and methodologies listed in this Clause. No other evaluation criteria or methodologies shall be permitted.

29.2 In evaluating and comparing the Bids, the Employer will determine for each Bid the evaluated Bid Price by adjusting the Bid Price as follows:

(a) making any correction for arithmetic errors pursuant to Clause IB.28;
(b) price adjustment due to discounts offered in accordance with Sub-Clause IB.23.3
(c) excluding Provisional Sums and the provision, if any, for contingencies in the Summary Bill of Quantities, but including competitively priced daywork;
(d) making an appropriate price adjustment for any quantifiable nonmaterial nonconformities in accordance with Sub-Clause IB.27.3; and
(e) the additional evaluation factors are specified in Section Evaluation Criteria and Qualification Updating Forms

29.3 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 Bids' comparison.

IB.30 Abnormally Low Bids

30.1 If the Bid Price of the successful Bidder is more than 15% below the lower of the Employer's estimate of the cost of work to be performed under the Contract or average of other lowest two evaluated substantially responsive Bids, 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, the Employer may require an additional Performance Security by 10% of the difference of the Bid Price as determined hereinabove upto issuance of Taking Over Certificate at the expense of the successful Bidder to a level sufficient to protect the Employer against financial loss in the event of default of the successful Bidder under the Contract. The Bids having Bid Price lower than 25% shall be liable to be rejected.

IB. 31 Unbalanced or Front Loaded Bids

31.1 If the Bid of the successful Bidder is seriously unbalanced (Front Loaded) in relation to the average of other evaluated substantially responsive Bids, the Employer during execution of contract may pay against measured quantities of significantly higher quoted line item(s) rate(s) with respect to same line item(s) rate(s) determined from the average of other lowest two evaluated substantially responsive Bids as instructed by the Engineer. The balance line item(s) rate(s) may be paid against the same measured quantities at the time of issuance of Taking Over Certificate or as instructed by the Engineer.

F. AWARD OF CONTRACT

IB.32 Award Criteria

32.1 Subject to Clauses IB.33 and IB.39, the Employer will award the Contract to the Bidder whose Bid has been determined as most advantageous Bid (substantially responsive to requirements of the

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Bidding Documents with the lowest evaluated Bid Price).

IB.33 Employer's Right to Annul the Bidding Process

33.1 Notwithstanding Clause IB.32, the Employer reserves the right to annul the bidding process and reject all Bids, at any time prior to award of Contract, without thereby incurring any liability to the affected Bidders or any obligation.

The Employer shall upon request communicate to any Bidder who submitted a Bid, the grounds for its rejection of all Bids but is not required to justify those grounds. Rejection of all Bids shall be notified to all Bidders promptly.

IB.34 Notification of Award

34.1 Prior to expiration of the period of Bid validity prescribed by the Employer, the Employer will notify the successful Bidder in writing ("Letter of Acceptance") that his Bid has been accepted. This letter shall name the sum which the Employer will pay the Contractor in consideration of the execution and completion of the Works by the Contractor as prescribed by the Contract (hereinafter and in the Conditions of Contract called the "Accepted Contract Amount").

The Letter of Acceptance will also state the remedies with respect to Sub-Clauses IB.30 & IB.31 if applicable.

34.2 No negotiation with the Bidder having submitted most advantageous Bid or any other Bidder shall be permitted, however, Employer may have clarification meetings before issuing Letter of Acceptance to get clarified any item in the Bid evaluation report.

34.3 The Letter of Acceptance/ notification of award and its acknowledgement/acceptance by the Bidder will constitute the formation of the Contract, binding the Employer and the Bidder till signing of the formal Contract Agreement.

34.4 Upon furnishing by the successful Bidder of a Performance Security, the Employer will promptly notify the other Bidders that their Bids have been unsuccessful and return their Bid securities in accordance with Sub-Clause IB.16.5.

IB.35 Performance Security

35.1 The successful Bidder shall furnish to the Employer a Performance Security in the form and the amount stipulated in the Conditions of Contract and additional Performance Security if applicable under IB.30 as stated in the Letter of Acceptance, within a period of 28 days after the receipt of Letter of Acceptance.

35.2 Failure of the successful Bidder to comply with the requirements of Sub Clause IB.35.1 or Clauses IB.36 or IB.37 shall constitute sufficient grounds for the annulment of the award, forfeiture of the Bid security and to award the Contract to the Bidder having submitted next advantageous Bid.

IB.36 Signing of Contract Agreement

36.1 Within 14 days from the date of furnishing of acceptable Performance Security under the Conditions of Contract, the Employer will notify the successful Bidder to depute its representative with appropriate Power of Attorney to sign the Contract Agreement in the form provided in the Bidding Documents, incorporating all agreements between the parties.

36.2 The formal Agreement between the Employer and the successful Bidder shall be executed within 14 days of the receipt of the above

stated notification by the successful Bidder from the Employer.

IB.37 Integrity Pact

37.1 The Bidder shall sign and stamp the Integrity Pact provided at Schedule-J to Bid in the Bidding Documents for all Federal Government procurement contracts exceeding PKR ten million. Failure to provide such Integrity Pact shall make the Bidder non-responsive.

IB.38 Instructions not part of Contract

38.1 Bids shall be prepared and submitted in accordance with the Instructions to Bidders which are provided to assist the Bidders in preparing Bids but do not constitute part of the Contract.

IB.39 Corrupt and Fraudulent Practices

39.1 The Employer will reject a Bid if it determines that the Bidder recommended for award, or any of its personnel, or its agents, or its sub-contractors, service providers, suppliers and/or their employees, has, directly or indirectly, engaged in corrupt, fraudulent, collusive, coercive, or obstructive practices in competing for the contract under this bidding.

39.2 The Employer will blacklist and hence forthwith debar a Constructor or individual, at any time, in accordance with the prevailing Public Procurement Rules 2004

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BIDDING DATA SHEET

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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BIDDING DATA

The following specific data for the Works to be bidded shall complement, amend, or supplement the provisions in the Instructions to Bidders. Wherever there is a conflict, the provisions herein shall prevail over those in the Instructions to Bidders.

Instructions to Bidders Clause Reference	
Clause IB.1	**Scope of Bid**
Sub Clause 1.1	**Name and address of the Employer**
	The Employer is:
	Quaid-i-Azam University (QAU), Islamabad
	(Hereinafter called "The Employer" Which expression shall include the successors, legal representatives and permitted assignees).
	Project Director (NIISS) Quaid-i-Azam University (QAU), Islamabad
	Name of the Project and Summary of the Works
	The name of the Project is:
	"Civil Works Component of The PSDP Project Establishment of National Institute of Intelligence & Security Studies (NIISS) at Quaid-i-Azam University (QAU), Islamabad"
	The Summary of Works:
	Quaid-i-Azam University (QAU), Islamabad intends to construct cCivil Component of PSDP Project Establishment of National Institute & Security Studies (NIISS).
	The scope of works mainly comprises construction of building works and related ancillary works lying within the boundaries and 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.
Sub-Clause 1.2	**Time for Completion**
	910 days
Clause IB.2	**Source of Funds**
Sub-Clause 2.1	Delete the text of Sub-Clause 2.1 and substitute with the following:
	The Employer has sufficient funds of its own to cover the Cost of the entire Project for which these Bidding Documents are issued.

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Clause IB.3 **Eligible Bidders**

Sub-Clause 3.1 Delete the text of Sub-Clause 3.1 in its entirety and substitute with the following:

This Invitation for Bids is open to state owned entities under PPRA Rule 42 (f), "Direct Contracting with State Owned Entities", meeting the following requirements at the time of submission of Bids and thereafter:

(a) Proof of State-Owned Entity

(b) Duly licensed by the Pakistan Engineering Council (PEC) in the category relevant to the value of the Works in the relevant field of specialization.

(c) All partners constituting the Bidder including proposed subcontractors do not appear in the list of debarred/ blacklisted firms and individuals on the websites of PEC and Federal & Provincial Procurement Regulatory Authorities and have not been declared debarred/ blacklisted by foreign country, international organizations or other foreign institutions

Clause IB.5 **One Bid per Bidder**

Sub-Clause 5.1 Delete the text of Sub-Clause 5.1 and substitute with the following:

Each bidder shall submit only one bid. Joint venture of firms is not allowed. A bidder who participates in more than one bid (other than alternatives pursuant to Clause IB.17) will be disqualified.

Clause IB.7 **Contents of Bidding Documents**

Sub-Clause 7.1 Delete the text of Sub-Clause 7.1 and substitute with the following:

The Bidding Documents, in addition to Invitation for Bids, are those stated below, and should be read in conjunction with any Addenda issued in accordance with Clause IB.9.

Technical Bid

7.1.1 **Volume - I**

- Instruction to Bidders;
- Bidding Data;
- Evaluation Criteria and Qualification Updating Forms;
- Letter of Technical Bid;
- Schedules to Bid;
- Form of Bid Security, Form of Performance Security, Letter of Acceptance, Form of Contract Agreement, DAB Agreement, Form of Mobilization Advance Guarantee;
- General Conditions;
- Particular Conditions:
  - Part A – Contract Data;
  - Part B- Special Provisions.

7.1.2 **Volume – II**

- Specifications:
  - Part A – Specific Provisions;
  - Part B – Technical Provisions.

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7.1.3 **Volume – III-A**

- Bid Drawings.

7.1.4 **Volume – III-B**

- Miscellaneous Details.

Price Bid

7.1.5 **Volume – IV**

- Letter of Price Bid;
- Preamble to Bill of Quantities;
- Bill of Quantities.

Clause IB.8 **Clarification of Bidding Documents, Pre-Bid Meeting**

Sub-Clause 8.1 **Time limit for clarification**

07 days

Sub-Clause 8.3 **Venue, time, and date of the pre-bid meeting**

The Bidder or his official representative are invited to attend a pre-bid meeting which will take place on the ---------- at 1100 hrs in the conference room of NIISS, Islamabad.

Sub-Clause 8.4 The Bidders are requested to submit questions, if any, in writing so as to reach the Employer not later than five (05) days before the date given for pre-bid meeting in the Notice Inviting Bids.

Clause IB.9 **Amendment of Bidding Documents**

Sub-Clause 9.3 Number of days: 03 days

Clause IB.11 **Language of Bid**

Sub-Clause 11.1 English.

Clause IB.12 **Documents Comprising the Bid**

Sub-Clause 12.1 Delete the text of Sub-Clause 12.1 and substitute with the following:

12.1 (A) The Bidder shall submit with its **Technical Bid** the following documents:

Volume - I

(i) Letter of Technical Bid;
(ii) Bid Security in accordance with Clause IB.16;
(iii) Written power of attorney authorizing the signatory of the Bid;
(iv) Original Bidding Documents (Volume – I);
(v) Dully filled in Appendices to Bid (except Schedules B to Bid);
(vi) Qualification documents establishing bidders' eligibility as per Section "Evaluation Criteria and Qualification Updating Forms".

Volume – II

(i) Specifications
  - Part A – Specific Provisions
  - Part B – Technical Provisions

Volume – III-A

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(i) Drawings

Volume – III-B

(i) Miscellaneous Details

12.1 (B) The Bidder shall submit with its **Price Bid** the following documents:

Volume – IV

(i) Letter of Price Bid
(ii) Preamble to Bill of Quantities
(iii) Schedule – B to Bid (Bill of Quantities)

Sub-Clause 12.2 Delete the Sub-Clause in its entirety**.**

Sub-Clause 12.3 The Bidder shall also submit along with the Bid the entire original document issued to him comprising Volume-I to Volume-IV.

Clause IB. 13 **Bid Prices**

Sub-Clause 13.5 Delete the text of Sub-Clause 13.5 and substitute with the following:

For Scheduled Items, Bidder Shall Quote Premium in the Form of Percentage Above or Below the estimated price put to bid provided in the Summary of Estimate. Prices provided in the estimate against items are complete inclusive value of the finished work without any hidden technical and/ or financial reservations or implications. Bidders shall not modify, change, nor add any footnotes or any conditions to the Estimate.

For Non-Scheduled items, Bidder shall fill in rates and prices for all items of the Works described in the Bill of Quantities. Items against which no rate or price is entered by a bidder will not be paid for by the Employer when executed and shall be deemed covered by rates and prices for other items in the Bill of Quantities. Corrections in rates and prices, if any, shall be made by crossing out, initialing, dating and re-writing.

Sub-Clause 13.6 The Bidder shall obtain all information as to Pakistan Income Tax, Salaries Tax, Company Taxes, Municipal Octroies, Levies and any other taxes imposed by the Government of Pakistan/Provincial Governments/local bodies, export and import duties and necessary permits and conform the requirements thereof at his own responsibility and include the same in quoted Bid Price. The quoted Bid Price shall also include the cost of accepting the general risks/ liabilities and obligations set forth or implied in the Contract. No claim at any later stage on this account will be entertained.

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 the deadline for submission of bids shall be included in the rates and prices and the total Bid Price submitted by a bidder.

Additional / reduced duties, taxes and levies due to subsequent additions or changes in legislation shall be reimbursed / deducted as per Sub-Clause 13.6 of the Conditions of Contract.

Sub-Clause 13.7 Delete the text of Sub–Clause 13.7 and substitute with the following:

The rates and prices quoted by the bidders are subject to adjustment during the performance of the Contract in accordance with the provisions of

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Clause 13.7 of the Conditions of Contract.

Clause IB. 14 **Currencies of Bid and Payment**

Sub-Clause 14.1 Delete the text of Sub–Clause 14.1 and substitute with the following.

The unit rates and the prices shall be quoted by the Bidder entirely in PKR.

The payments to the Contractor for the works done shall be made in Pakistani Rupees

Sub-Clause 14.2 The Sub-Clause is deleted in its entirety.

Clause IB.15 **Bid Validity**

Sub-Clause 15.1 **Period of Bid validity:**

One hundred and twenty (120) days.

Clause IB. 16 **Bid Security**

Sub-Clause 16.1 **Amount of Bid Security**

Rs. 12,000,000/-

Sub-Clause 16.2 Delete the text of Sub-Clause 16.2 and substitute with the following:

The Bid Security shall be, at the option of the Bidder, in the form of Call Deposit Receipt (CDR)/ Pay Order or a Security issued in the prescribed form included in the Bidding Documents, by (a) a Scheduled Bank in Pakistan or (b) a foreign bank duly counter-guaranteed by a Scheduled Bank in Pakistan in favor of the Employer valid for a period of 28 days beyond bid validity date

Sub-Clause 16.4 Delete the text of Sub-Clause 16.4 and substitute with the following:

The Bid Securities of the Bidders except the lowest three will be returned by the Employer within twenty eight (28) days from the opening of Price Bids, provided a Bidder requests for the return of its Bid Security, or upon the expiry of original validity of Bid Security or as extended, whichever is earlier.

Clause IB.17 **Alternate Proposals by Bidder**

The Clause is deleted in its entirety.

Clause IB.18 **Format and Signing of Bid**

Sub-Clause 18.4 Delete the text of Sub–Clause 18.4 and substitute with the following:

Each bidder shall prepare and submit the original and one copy of the documents comprising the Bid as described in Clause IB-12 of the Bidding Data and clearly marked them "**ORIGINAL**" and **COPY**. In the event of discrepancy between them, the original shall prevail.

Searchable PDF versions as well as Word, Excel etc. versions of the Bid are not Required.

Sub-Clause 18.5 Delete the text of Sub–Clause 18.5 and substitute with the following:

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The Bid shall be typed or written in indelible ink and shall be signed by a person or persons duly authorized to sign on behalf of the Bidder pursuant to Sub-Clause 12.1 hereof. All pages of the Bid shall be initialed and stamped by the person or persons signing the Bid. One (1) copy of Power of Attorney must be attached to the Bid submitted to the Employer if this Bid is signed / executed by a person other than the President, Partner or Owner of the Bidder's Company.

Clause IB.19 **Sealing and Marking of Bids**

Sub-Clause 19.1 Delete the text of Sub–Clause 19.1 and substitute with the following:

Each Bidder shall submit his Bid as under:

(a) The technical bid shall comprise of documents listed in IB-12.1 (A) and the price bid shall comprise of documents listed in IB-12.1 (B) which shall be placed in separate envelopes in accordance with IB-12.1.

(b) **ORIGINAL** and **COPY** of Bids comprising Volume-I, II, III-A, III-B & IV shall be separately sealed and put in two separate envelopes, sealed 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 Sub Clause IB.19.2 hereof.

Sub-Clause 19.2 (a) Employer's address for the purpose of Bid submission is as follows:

Project Director (NIISS)
Quaid-i-Azam University (QAU),
Islamabad

19.2 (b) Name & identification number of the Contract is as follows:

Name: "Civil Works Component of The PSDP Project Establishment of National Institute of Intelligence & Security Studies (NIISS) at Quaid-i-Azam University (QAU), Islamabad."

Identification Number : Not Applicable

Provide the following text on the larger outer envelope:

19.2 (c) **WARNING: Not to be opened before _____ *(time)* on _____ *(date).***
(The time and date shall be as provided in the Notice Inviting Bid)

Clause IB.20 **Deadline for Submission of Bids**

Sub-Clause 20.1(a) Time and date of Bid submission and Bid opening shall be as per the data provided in the Notice Inviting Bids.

Clause IB.23 **Bid Opening**

Delete the text of Sub-Clause 23 and substitute with the following:

Sub-Clause 23.1 The Employer will open the Technical Bids at the address, date and time specified in the Notice Inviting Bids in the presence of Bidders` designated

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representatives who choose to attend. The Price Bids will remain unopened and will be held in custody of the Employer until the specified time of their opening.

Sub-Clause 23.2 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.

Sub-Clause 23.3 Second, outer envelopes marked "SUBSTITUTION" shall be opened. The inner envelopes containing the Substitution Technical Bid and/or Substitution Price Bid shall be exchanged for the corresponding envelopes being substituted, which are to be returned to the Bidder unopened. Only the Substitution Technical Bid, if any, shall be opened, read out, and recorded. Substitution Price Bid will remain unopened in accordance with IB 23.1. 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.

Sub-Clause 23.4 Next, outer envelopes marked "MODIFICATION" shall be opened. No Technical Bid and/or Price Bid 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 Technical Bids. Only the Technical Bids, both Original as well as Modification, are to be opened, read out, and recorded at the opening. Price Bids, both Original and Modification, will remain unopened in accordance with IB 23.1. The Bidders' representatives who are present shall be requested to sign the record. The omission of a Bidder's signature on the record shall not invalidate the contents and effect of the record. A copy of the record shall be distributed to all Bidders.

Sub-Clause 23.5 Other envelopes holding the Technical Bids 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; and
(d) Any other details as the Employer may consider appropriate.

No Bid shall be rejected at the opening of Technical Bids except for late bids, in accordance with IB 21.1. Only Technical Bids read out and recorded at bid opening, shall be considered for evaluation.

Sub-Clause 23.6 Preliminary Examination of Technical Bids

(a) The Employer shall first examine qualification and experience Data as per Section Evaluation Criteria and Qualification Updating Forms submitted by the Bidder. The technical proposal examination of those bidders only shall be taken in hand who meet the minimum requirement as mentioned in Section Evaluation Criteria and Qualification Updating Forms. Only substantially responsive qualification shall be considered for further evaluation.

(b) The Employer shall examine the Technical Bid to confirm that all the documents have been provided, and to determine the completeness of each document submitted

Sub-Clause 23.7 The Employer shall confirm that all the documents and information have been provided for evaluation of Technical Bid as required under these bidding documents.

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Sub-Clause 23.8 At the end of the evaluation of the Technical Bids, the Employer will invite only those bidders who have submitted substantially responsive Technical Bids and who have been determined as being qualified for award to attend the opening of the Price Bids.

The date, time, and location of the opening of Price Bids will be advised in writing by the Employer. Bidders shall be given reasonable notice for the opening of Price Bids.

Sub-Clause 23.9 The Employer will notify Bidders in writing who have been rejected on the grounds of their Technical Bids being substantially non-responsive to the requirements of the Bidding Document and return their Price Bids unopened before inviting others, who are determined as being qualified, to attend the opening of Price Bids

Sub-Clause 23.10 The Employer shall conduct the opening of Price Bids of all Bidders who submitted substantially responsive Technical Bids, in the presence of Bidders` representatives who choose to attend at the address, date and time specified by the Employer. The Bidder's representatives who are present shall be requested to sign a register evidencing their attendance.

Sub-Clause 23.11 All envelopes containing Price Bids 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 Bid Prices, including any discounts and alternative offers; and
(d) Any other details as the Employer may consider appropriate.

Only Price Bids and discounts, read out and recorded during the opening of Price Bids shall be considered for evaluation. The Letter of Bid and the Summary Bill of Quantities are to be initialled by representative(s) of the Employer attending Bid opening. The Employer shall neither discuss the merits of any Bid nor reject any Bid at the time of opening of Price Bids.

Sub-Clause 23.12 The Employer shall prepare minutes of the Bid opening, including the information disclosed to those present in accordance with the Sub-Clause IB.23.1 & 23.10.

Clause 24 **Process to be Confidential**

Sub-Clause 24.1 In case of grievance, the address of Grievances Committee is:

……..
Quaid-i-Azam University (QAU),
Islamabad

Clause IB. 26 **Examination of Bids and Determination of Responsiveness**

Sub-Clause 26.3 Delete the text of Sub-Clause 26.3 and substitute with the following:

A substantially responsive bid is one which (i) meets the eligibility criteria; (ii) has been properly signed; (iii) is accompanied by the required Bid Security; Includes signed Integrity Pact where required as per clause IB.37 and (v) conforms to all the terms, conditions and specifications of the Bidding Documents, without material deviation or reservation. A material deviation or reservation is one (i) which affect in any substantial way the scope, quality or performance of the Works; (ii) which limits in any substantial way, inconsistent with the Bidding Documents, the Employer's rights or the

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bidder's obligations under the Contract; (iii) adoption/rectification whereof would affect unfairly the competitive position of other bidders presenting substantially responsive bids. Only substantially responsive bid shall be considered for further evaluation.

Clause IB-28 **Corrections of Arithmetic Errors**

Sub-Clause 28.1 Delete the text of Sub–Clause 28.1 and substitute with the following:

Bids determined to be substantially responsive will be checked by the Employer for any arithmetic errors. Errors will be corrected by the Employer as follows:

where there is a discrepancy between the quoted amount provided by the bidder in the summary of Estimates and in the Letter of Price Bid, the amount stated in the Form of Bid shall govern; and

For Scheduled Items:

(a) where there is a discrepancy between the Premium/amount in figures and in words mentioned in the summary of Estimates, the premium/amount in words shall govern; and

(b) where there is a discrepancy between the percentage premium and the total amount quoted by the Bidder by multiplying the percentage premium with the price put to Bid, the value provided as premium shall govern and total amount shall be corrected

For Non-Scheduled Items:

(a) where there is a discrepancy between the amounts in figures and in words, the amount in words will govern; and

(b) where there is a discrepancy between the unit rate and the line item total resulting from multiplying the unit rate by the quantity, the unit rate as quoted will govern, unless in the opinion of the Employer there is an obviously gross misplacement of the decimal point in the unit rate, in which case the line item total as quoted will govern and the unit rate will be corrected

Clause IB-29 **Evaluation and Comparison of Bids**

Sub-Clause 29.1 At the end of Sub-Clause 28.1 add the following:

In evaluating the Bids the Employer shall also examine the Construction Schedule (Schedule-C to Bid) and Method of Performing the Work (Schedule-D to Bid) submitted by the Bidder along with the Bid.

Clause IB.35 **Performance Security**

Sub-Clause 35.1 Delete the text of Sub–Clause 35.1 and substitute with the following:

The successful bidder shall obtain and provide to the Employer a Performance Security and an additional Performance Security (if applicable under IB.30 as stated in Letter of Acceptance) in the prescribed Form annexed to these Bidding Documents. The said Security shall be furnished to the Employer by the successful bidder within twenty-one (21) days after the receipt of Letter of Acceptance. The Performance Security shall be of an amount equal to ten percent (10%) of the Contract Price in the currency of the Contract and, at the option of the bidder, in the form of Bank Guarantee either from any Scheduled Bank in Pakistan or from a bank located outside Pakistan duly counter-guaranteed by a Scheduled Bank in Pakistan.

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Clause IB. 36 **Signing of Contract Agreement**

Sub-Clause 36.1 Delete the text of Sub–Clause 36.1 and substitute with the following:

The successful Bidder shall submit for approval by the Employer along with the Performance Security within the time period stipulated in clause IB-35.1 a draft copy of Contract Agreement as per the Form of Contract Agreement provided in the Bidding Documents, incorporating all agreements between the parties.

Sub-Clause 36.2 Delete the text of Sub–Clause 36.2 and substitute with the following:

The formal Agreement between the Employer and the successful Bidder shall be executed within 07 days from the date of furnishing of acceptable Performance Security by the successful Bidder from the Employer but not before acceptance by the Employer of the Performance Security as per Sub-Clause 35.1 hereof.

Clause IB. 37 **Integrity Pact**

Sub-Clause 37.1 Delete the text of Sub–Clause 37.1 and substitute with the following:

The successful Bidder shall sign and stamp the Integrity Pact provided at Schedule-J to Bid in the Bidding Documents for all Federal Government procurement contracts exceeding PKR ten million. Failure to provide such Integrity Pact shall make the Bidder non-responsive.

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LETTER OF TECHNICAL BID
AND
SCHEDULES TO BID

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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LETTER OF TECHNICAL BID AND SCHEDULE TO BID
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PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Letter of Technical Bid

Name of Contract: **"Civil Works Component of The PSDP Project Establishment of National Institute of Intelligence & Security Studies (NIISS) at Quaid-i-Azam University (QAU), Islamabad"**

To: **Project Director (NIISS)**
Quaid-i-Azam University (QAU),
Islamabad

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (IB) 9;

(b) We offer to execute and complete in conformity with the Bidding Documents the following Works:

Establishment of National Institute of Intelligence & Security Studies (NIISS) at Quaid-i-Azam University (QAU), Islamabad

(c) Our Bid consisting of the Technical Bid and the Price Bid shall be valid for a period of 120 days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(d) As security for due performance of the under takings and obligations of our bid, we submit here with a Bid security, in the amount specified in Bidding Data Sheet, which is valid (at least) 148 days.

(e) We are not participating, as a Bidder or as a subcontractor, in more than one bid in this bidding process, other than alternative offers submitted in accordance with IB16 (as applicable).

(f) We agree to permit Employer or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors. This permission is extended for verification of any information provided in our Technical Bid which comprises all documents enclosed herewith in accordance with IB.11.1 of the Bidding Data Sheet.

Name .....

In the capacity of .....

Signed .....

.....

Duly authorized to sign the Bid for and on behalf of .....

Date .....

.....

Address……

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SCHEDULES TO BID

SCHEDULE OF ADJUSTMENT DATA

SCHEDULE OF COST INDEXATION – LOCAL ITEMS

[*The formulae for price adjustment shall be of the following general type:*]

Pn= a + b Ln / Lo + c En/ Eo + d Mn/Mo + ...

where:

“Pn” is the adjustment multiplier to be applied to the estimated Contract value in the relevant currency of the work carried out in period “n”, this period being a month;

“a” is a fixed coefficient, stated in the relevant table of adjustment data, representing the non- adjustable portion in contractual payments;

“b”, “c”, “d”, ... are coefficients representing the estimated proportion of each cost element related to the execution of the Works as stated in the relevant table of adjustment data; such tabulated cost elements may be indicative of resources such as labour, equipment and materials;

“Ln”, “En”, “Mn”, are the current cost indices or reference prices for period “n”, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the date 28 days prior to the last day of the period (to which the particular Payment Certificate relates); and

“Lo”, “Eo”, “Mo”, are the base cost indices or reference prices, expressed in the relevant currency of payment, each of which is applicable to the relevant tabulated cost element on the Base Date i.e. prices prevalent 28 days prior to the latest day for submission of Bids.

The weightings (coefficients) for each of the factors of cost stated in the following table(s) of adjustment data shall only be adjusted if they have been rendered unreasonable, unbalanced or inapplicable, as a result of Variation(s).

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

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SCHEDULE OF ADJUSTMENT DATA

Table I. Local Currency (LC) For Bill Nos_____.

Cost Element	Description	Weightages	Applicable Price
(i)	(ii)	(iii)	(iv)
a	Fixed Portion	0.301	
b	Labour *(Labourer (un-skilled) per day, shall be taken as representative of all types of Labour (skilled/unskilled) deployed at site)*	0.150	Government of Pakistan (GP) Federal Bureau of Statistics (FBS) Monthly Statistical Bulletin.
c	Reinforcing Steel *(½" Ø round M.S. Bars per tonne shall be taken as representative of all types and diameters of Steel Reinforcement)*	0.369	- do -
d	Cement *(OPC Cement per bag shall be taken as representative of all types of cement used at site)*	0.097	- do -
e	Bricks	0.033	- do -
f	High Speed Diesel (HSD) *(HSD shall be taken as representative of all kind of fuels used in connection with the Contract)*	0.05	-do-
	Total	1.000	

Notes:

1) Prices for "(b)" to "(f)" shall be taken from the Government of Pakistan, Federal Bureau of Statistics. Monthly Statistical Bulletin. The base prices shall be those prevalent 28 days prior to the latest day for submission of Bids. Current date price of any element shall be those prevalent 28 days prior to the start of execution month to which a particular monthly statement is related.

2) 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.

3) The prices for the cost elements of (b) to (f) shall be used for the City where the Site is located. In case the Site is not listed in the monthly statistical Bulletin, the prices for the nearest City listed in the Bulletin shall be used.

4) 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.

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5) 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.

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Authorized Signature and official Seal: _____

Name: _____

Date_____

SCHEDULE OF ADJUSTMENT DATA

Table II. Foreign Currency (FC)

NOT USED

Authorized Signature and official Seal: _____

Name: _____

Date_____

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SCHEDULE OF ADJUSTMENT DATA

Table III. Foreign Currency Requirements

NOT USED

Authorized Signature and official Seal: _____

Name: _____

Date_____

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SCHEDULE OF ADJUSTMENT DATA

Table IV. Summary of Payment Currencies

All payments shall be made in Pakistani Rupees (PKR.)

Authorized Signature and official Seal: _____

Name: _____

Date_____

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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 – Civil Works Component of The PSDP Project Establishment of National Institute of Intelligence & Security Studies (NIISS) at Quaid-i-Azam University (QAU), Islamabad	Nine hundred ten (910)

The Bidder shall provide, the Construction Schedule in the bar chart (CPM) 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 may meet Employer's completion targets in days noted above and counted from the Commencement Date (Attach sheets as required for the specified form of Construction Schedule.)

Authorized Signature and official Seal: _____

Name: _____

Date: _____

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METHOD OF PERFORMING THE WORK

(to be filled and signed by the Bidder)

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

1. Organization Chart indicating head office and field office personnel involved in management and supervision, engineering, equipment maintenance and purchasing.

2. Mobilization, in Pakistan, the type of facilities including personnel accommodation, office accommodation, provision for maintenance and for storage, communications, security and other services to be used.

3. The method of executing the Works, the procedures for installation of equipment and machinery and transportation of equipment and materials to the site and providing all services including but not limited to supply of power, water, maintenance of facilities, safety and security and all what is required for completion of works in accordance with the Contract.

4. Quality control / Quality assurance measures to be adopted including procedures to be followed for carrying out all tests required under specifications.

5. The Bidder while preparing his methodology for performing and executing the works shall also consider the following:

a) The timely completion of the Project as per the time provided in Contract Data.

b) The Contractor while filling out the list of major equipment required at site, shall ensure that the equipment requirement is in consonance with the construction requirement.

c) The Contractor is not restricted to carry out the work in single shift. The Contractor should note that if he plans to execute the work in more than single shift than all costs related to the additional superintendence to be provided by the Engineer will be borne by the Contractor. Procedure for such additional costs will be worked out and finalized between the Contractor and Engineer with the consent of the Employer.

d) The portions of the Site shall be made available to the Contractor in coordination with other Contractors working at site. The Contractor shall prepare the work programme accordingly.

Authorized Signature and official Seal: _____

Name: _____

Date: _____

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LIST OF MAJOR EQUIPMENT

The Bidder will provide on Sheet E-2 of this schedule a list of all major equipment and related items, under separate heading for items owned, to be purchased or to be arranged on lease by him to carry out the Works. The information shall include make, type, capacity, and anticipated period of utilization for all equipment.

The Bidder shall provide adequate information to demonstrate clearly that it has the capability to meet the requirements for the key equipment as per site requirements and instructions of the Engineer.

The bidder while preparing his methodology for performing and executing the works shall consider the Major Equipment to be brought/installed/erected at site required to complete the Works in the specified Time Schedule.

Authorized Signature and official Seal: _____

Name: _____

Date: _____

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LIST OF MAJOR EQUIPMENT

(Owned, Purchased or Leased)

Owned Purchased or Leased	Description of Unit (Make, Model, Year)	Capacity HP Rating	Condition	Present Location or Source	Date of Delivery at Site	Period of Work on Project
1	2	3	4	5	6	7
a. Owned						
b. To be Purchased						
c. To be arranged on Lease						

Authorized Signature and official Seal: _____

Name: _____

Date: _____

Establishment of NIISS at QAU (Civil Component) - Islamabad

LIST OF MAJOR EQUIPMENT
Equipment details

Item of equipment		
Equipment information	Name of manufacturer	Model and power rating
	Capacity	Year of manufacture
Current status	Current location	
	Details of current commitments	
Source	Indicate source of the equipment ☐ Owned ☐ Rented ☐ Leased ☐ Specially manufactured	
The following information shall not be applicable 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	

[This Table shall be used for each item of Equipment separately]

Authorized Signature and official Seal: _____

Name: _____

Date: _____

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ORGANIZATIONAL CHART
FOR THE
SUPERVISORY STAFF AND LABOUR

MINIMUM MANDATORY STAFF REQUIREMENT:

The Contractor shall arrange the following staff at site immediately upon commencement of works:

Designation	Nos.	Minimum Qualification	Min. Work Experience
Project Manager / Construction Manager	01	B.Sc. Civil Engineer with valid Pakistan Engineering Council Registration	12 years
Site Engineer	01	B.Sc. Civil Engineer with valid Pakistan Engineering Council Registration	08 years
Associate Engineer	01	DAE (Civil)	08 years
Associate Engineer	01	DAE (E/M)	08 years
Quantity Surveyor	01	DAE (Civil)	08 years
Surveyor	01	Survey Certificate	08 years

Authorized Signature and official Seal: _____

Name: _____

Date: _____

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LIST OF SUBCONTRACTORS

(to be filled and signed by the Bidder)

The Bidder under PPRA Rule 42(f) “Direct Contracting with State Owned Entities”, shall accomplish the work exclusively through its own resources without involving private sector as a partner or in the form of a joint venture or as a sub-contractor;

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Authorized Signature and official Seal: _____

Name: _____

Date: _____

ESTIMATED PROGRESS PAYMENTS

Bidder's estimate of the value of work which would be executed by him during each of the periods stated below, based on his Programme of the Works and the Rates in the Bill of Quantities, expressed in thousands of Pakistani Rupees:

Months	% of Bided Price
(a)	(b)
1st quarter	
2nd quarter	
3rd quarter	
4th quarter	
5th quarter	
6th quarter	
7th quarter	
8th quarter	
9th quarter	
10th quarter till completion of project	
Total	100 %

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CONSTRUCTION CAMP AND HOUSING FACILITIES

(to be filled and signed by the Bidder)

The Bidder in accordance with Clause 6 of the Conditions of Contract shall provide a description of his construction camp's facilities and staff housing requirements.

The Bidder shall list or explain his plans for providing these facilities for the service of the Contract as follows:

1. Site Preparation (clearing, land preparation, etc.).
2. Provision of Services.
   a) Electrical power (expected power load, etc.).
   b) Water (required amount and system proposed).
   c) Sanitation (sewage disposal system, etc.)
3. Construction of Facilities
   a) Contractor's Office. Workshop and Work Areas (areas required and proposed layout, type of construction of buildings, etc.).
   b) Warehouses and Storage Areas (area required, type of construction and layout).
   c) Housing and Staff Facilities (Plans for housing for proposed staff, layout, type of construction, etc.).
4. Construction Equipment Assembly and Preparation (detailed plans for carrying out this activity).
5. Other Items Proposed (Security services, etc.)

Note:

The Contractor shall be responsible for pumps, electrical power, water and electrical distribution systems, and sewerage system including all fittings, pipes and other items necessary for servicing the Contractor's construction camp.

Authorized Signature and official Seal: _____

Name: _____

Date: _____

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INTEGRITY PACT

DECLARATION OF FEES, COMMISSION AND BROKERAGE, ETC. PAYABLE BY THE BIDDERS/CONTRACTORS OF GOODS, SERVICES & WORKS IN CONTRACTS WORTH PAK. RS. 10.00 MILLION OR MORE

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

…… [Name of Bidder/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 (GoP) or any administrative subdivision or agency thereof or any other entity owned or controlled by GoP through any corrupt business practice.

Without limiting the generality of the foregoing, [Name of Bidder/ Contractor] represents and warrants that it has fully declared the brokerage, commission, fees etc. paid or payable to anyone and not given or agreed to give and shall not give or agree to give to anyone within or outside Pakistan either directly or indirectly through any natural or juridical person, including its affiliate, agent, associate, broker, consultant, director, promoter, shareholder, sponsor or subsidiary, any commission, gratification, bribe, finder's fee or kickback, whether described as consultation feeor 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 Bidder/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, representation or warranty.

[Name of Bidder/Contractor] accepts full responsibility and strict liability for making any false declaration, not making full disclosure, misrepresenting facts or taking any action likely to defeat the purpose of this declaration, representation and warranty. It agrees that any contract, right, interest, privilege or other obligation or benefit obtained or procured as aforesaid shall, without prejudice to any other rights and remedies available to 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 Bidder/Contractor] agrees to indemnify GoP for any loss or damage incurred by it on account of its corrupt business practices and further pay compensation to GoP in an amount equivalent to ten time the sum of any commission, gratification, bribe, finder's fee or kickback given by [name of Bidder/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.

Name of Employer: ……
Signature: ……
[Seal]

Name of Bidder/Contractor: ……
Signature: ……
[Seal]

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LIST OF RECOMMENDED MANUFACTURERS

(to be signed by the Bidder)

Equipment and materials specified with brand names have been provided in order to establish a standard of performance and do not necessarily indicate a preference for a particular manufacturer or material.

The names of manufacturers given below are to indicate the level of quality and performance anticipated by the Engineer/ Employer. Other makes may be accepted provided that the quality and performance of such equipment, in the sole opinion of the Engineer, are at least equal to or better than the equipment/ product offered by the recommended manufacturer.

The acceptance of equipment/ materials offered by these manufacturers will be subject to compliance of offered models/materials with the specifications, capacity and/or performance requirements.

Onus lies with the Contractor for establishing the genuineness of any material/product for its make and origin.

S.NO.	ITEM	MANUFACTURER
(a)	**ARCHITECTURE/CIVIL**	
1	Paints	i Nippon Paints ii ICI Paints iii Berger Paints
2	Anti Termite Treatment	i Mirage ii Biflex iii Termidor
3	Construction Chemicals	i Sika ii FEB iii Ultra Chemical iv Faw Chem v Aquafin
4	Anchors for Concrete (Chemical and Mechanical)	i Hilti ii Spit iii Sika iv Fischer
5	PVC Water Stops	i Decora ii Sika iii ATS Synthetics
6	Wall Coatings	i Gritwall ii Rockshield iii Rockwall
7	Façade Tile Cladding	i Ultra Thin Rockslab (H-Verse Kale)

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S.NO.	ITEM	MANUFACTURER
8	Porcelain Tiles	i Master Tiles ii Orient Ceramcia Tiles iii Shabbir Tiles
9	Concrete Floor Tile & Pavers	i GrandWorks ii Concrete Wizard iii Envicrete iv Acmecrete
10	False Ceiling	i OWA (Germany) ii Daiken Coorporation (Japan)
11	Aluminium Composite Panels (ACP)	i Alucobond ii Reynobond iii Alubond
12	Epoxy Flooring	i ICI ii Jotun iii Faw Chem iv Burger v Sika
13	Hardware, Hinges and Locks	i Yale ii Mandelli
14	Fire Resistant Doors	i Haseen Habib Trading ii MK Traders
11	Aluminum	i Prime Aluminum ii Chawla Aluminum iii Alcon Aluminum iv Pakistan Cables
12	Glass	i Ghani Glass (Local) ii Tariq Glass (Local) iii Gunj Glass (Local) iv Saint-Gobain Glass (imported) v Cornwall Glass (Imported) vi Guardian Glass (Imported) vii Pelkington (Imported)
(b)	**PLUMBING**	
1	Sanitary Fixtures	i M/S Porta ii M/S Marachi iii M/S Empolo
2	Sanitary Fittings	i M/S Porta ii M/S Sonex iii M/S Faisal
3	Bath Accessories	i M/S Porta ii M/S Sonex iii M/S Faisal

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S.NO.	ITEM	MANUFACTURER
4	Galvanized Iron Pipes	i M/S International Industries Ltd. ii M/S Jamal Pipe Industries Pvt. Ltd. iii M/S Bashir Pipe Industries Pvt. Ltd.
5	Galvanized Iron Pipe Fittings	i M/S HE China ii M/S TG China
6	PPR Pipes & Fittings	i M/S Dadex (Polydex) ii M/S Beta Pipe iii M/S Nepro Pipe
7	uPVC Pipes & Fittings	i M/S Dadex (Nikasi, Flow line) ii M/S Beta Pipe iii M/S Nepro Pipe
8	Bronze/ Brass/ CI/ DI Valves	i M/S Scon ii M/S Kitz iii M/s Econosto
9	Cast Iron/Mild steel/Stainless steel-Pipes, Gratings, Covers, Traps, Drains	i M/S Sandan Engg. Pvt. Ltd (Teepu) ii M/S Super Alpine iii M/S Jaws
10	Electric Hand Dryer	i M/S Siemens ii M/S Zilver
11	Electric/Gas Water Heaters	i M/S Nasgas ii M/S Canon
(c)	**ELECTRICAL**	
1	DISTRIBUTION BOARDS AND MAIN AND SUB MAIN PANEL BOARDS AND SUB MAIN PANEL BOARDS	i POWER TECK SWITCHGEAR SERVICES ii TARIQ ELECTRIC iiI BILAL SWITCH GEAR iv SUN TECH SWITCH GEAR
2	CABLES AND WIRES	i PAKISTAN CABLES ii NEWAGE CABLES iii FAST CABLES iv AGE CABLES v GM CABLES
3	MCCBS AND MCBS ELCBS	i SCHNEIDER ii ABB iii TERASAIKI

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S.NO.	ITEM	MANUFACTURER
4	Wiring accessories (SWITCHES, SOCKETS)	i Schneider ii Legrand iv Philips iv Pakistan CABLES (Switches and sockets)
5	LIGHT FIXTURES	i PHILIPS(SIGNIFY) ii FUTURE TECHNOLOGY iii COARTS LIGHTING iv Britlight v LEDOES
6	DATA NETWORKING SYSTEM (PASSIVE COMPONENTS)	i 3M (Corning) ii Schneider iii Schneider
7	DATA NETWORKING SYSTEM (ACTIVE COMPONENTS)	i Cisco ii H3C iii Huawei
8	PVC CONDUITS, PIPES, DUCTS & ACCESSORIES	i SHAVYL ii DADEX iii ADAMJEE DURABUILT
9	LIGHTNING PROTECTION	i LOCAL BRAND BEST QUALITY AS APPROVED BY THE ENGINEER
10	CABLE TRAY	i MIBS ii SUN TECH SWITCH GEAR iii Bilal Switch Gear iv LINE MAN
11	FANS	i LAHORE FANS ii GFC FANS iii PAK FANS

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S.NO.	ITEM	MANUFACTURER
12	CCTV	i DAHWA ii HIK VISION
13	PUBLIC ADDRESS SYSTEM	i BOSCH ii TOA
14	AIR CONDITIONING	i GREE ii DIAKAN iii SAMSUNG

Authorized Signature and official Seal: _____

Name: _____

Date: _____

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

EVALUATION CRITERIA

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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EVALUATION CRITERIA

Qualification of Bidders shall be evaluated on the basis of mentioned criteria with **50% score** in each category regarding the Bidder's experience record, personnel capabilities, equipment capabilities and financial soundness in addition to fulfillment of mandatory requirements.

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 PEC in C-1, having CE-01, CE-09, CE-10 & EE-04 as codes of specialization.
ii. An affidavit to the effect of not being debarred / blacklisted by any organization / department, prepared within the current month of submission of Bids
iii. Information on any litigation or arbitration resulting from contracts completed or under execution by the Bidder. In case, the firm has never been involved in litigation, an affidavit to such effect should be provided.
iv. Registration with income tax department (Valid NTN).
v. Registration with Sales Tax Department (GST/PST).
vi. On Active Tax Payer's List at the time of submission of Bid.

B. Detailed Requirements:

The detailed qualification evaluation shall be carried out on the basis of the criteria for the different categories and minimum passing marks prescribed hereunder:

Sr. No.	Category	Weightage / Marks	Passing Marks (50%)
1.	Experience Record	40	20
2.	Personnel Capabilities	15	7.5
3.	Equipment Capabilities	15	7.5
4.	Financial Soundness:	30	15
	Total	**100**	**50**

B.1. Experience:

Points for experience will be given on the basis of the following criteria:

Sr. No.	Sub-Category	Maximum Marks	Marks Allocation
a)	Experience as constructor in execution of Building Works Projects completed during last ten (10) years.	24	• 12 marks will be awarded for each completed project having project cost ≥ Rs. 1000M up to maximum of 24 marks. • 08 marks will be awarded for each completed project having project cost from Rs. 800M to Rs. 999.99M up to maximum of 24 marks. • 06 marks will be awarded for each completed project having project cost from Rs. 600M to 799.99M up to maximum of 24 marks. • No marks will be awarded for project having project cost < Rs. 600M.

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Sr. No.	Sub-Category	Maximum Marks	Marks Allocation
b)	Experience as constructor for ongoing/in-hand Building Works Projects.	16	• 08 marks will be awarded for each in-hand project having project cost ≥ Rs. 1000M up to maximum of 16 marks. • 06 marks will be awarded for each in-hand project having project cost from Rs. 800M to Rs. 999.99M up to maximum of 16 marks. • 04 marks will be awarded for each in-hand project having project cost from Rs. 600M to Rs. 799.99M up to maximum of 16 marks. • No marks will be awarded for project having project cost < Rs. 600M.
	Total Marks Allocated	**40**	

Note:

i. The applicants must provide "Letter of Award" of in- hand projects and Taking Over/Completion Certificate of completed projects. No marks will be given to the projects for which above letter/certificate is not provided.

ii. Applicant shall provide complete information of the projects including scope of Constructor and cost of works etc.

iii. Proportionate marks on the basis of share in JV agreement will be awarded for projects executed / in-hand as Joint Venture (JV).

B.2. Personnel Capabilities:

Designation	Maximum Marks	Marks Allocation
Project Manager / Construction Manager (B.Sc. Civil Engineer registered with Pakistan Engineering Council)	5	• 5 marks will be awarded for B.Sc. Civil Engineer having at least 12 years relevant experience.
Site Engineer (B.Sc. Civil Engineer registered with Pakistan Engineering Council)	3	• 3 marks will be awarded for B.Sc. Civil Engineer having at least 08 years relevant experience.
Associate Engineer B-Tech / DAE Civil	2	• 2 marks will be awarded for Site Inspector having B-Tech / DAE Civil and at least 08 years relevant experience up to maximum of 3 marks.
Associate Engineer B-Tech / DAE (E/M)	2	• 2 marks will be awarded for Site Inspector having B-Tech / DAE (E/M) and at least 08 years relevant experience.

Designation	Maximum Marks	Marks Allocation
Quantity Surveyor B-Tech / DAE Civil	2	• 2 marks will be awarded for Quantity Surveyor having B-Tech / DAE Civil and at least 08 years relevant experience.
Surveyor Survey Certificate	1	• 1 mark will be awarded for each Surveyor having certificate and at least 08 years relevant experience .
Total Marks	**15**	

Note:

i. The applicant must provide verifiable proof of employment (i.e. appointment letters, latest salary slips) of the staff and attach detailed CVs & valid PEC Registration Certificates / Diploma / Certificates of the Engineer, DAEs staff.

B.3. Equipment Capabilities

Sr. No	Equipment	Minimum Required	Maximum Marks
1.	Batching Plant	1 No.	3
2.	Concrete Pump	1 No.	1
3.	Transit Mixer	3 No.	2
4.	Tower Crane	1 No.	2
5.	Concrete Mixer Machine	2 Nos.	1
6.	Excavator	2 No.	1
7.	Dewatering Pump (3HP)	1 No.	1
8.	Scaffolding	50,000 Rft	1
9.	Shuttering	30,000 Sft	1
10.	Tractor Trolley	3 Nos.	0.5
11.	Steel Cutting / Bending Machine	2 Nos.	0.5
12.	Generator Set (100 KVA)	2 Nos.	0.5
13.	Total Station	1 Nos.	0.5
	Total Marks Allocated		**15**

Note:

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 and will be made available, as and when required, for the Project.

B.4. Financial Capabilities

The Bidder shall submit copies of annual audit reports for the last three years duly certified by the Chartered Accounts, Bank Line of credit and must indicate the soundness of the Applicants financial position.

The minimum annual turnover during any of the last three (03) years shall be as under:

Annual Turn Over	Marks
i. Rs. 800 million to Rs. 1000 million	7.5
ii. Above Rs. 1000 million	15
Maximum Marks Allocated	**15**

The minimum amount of liquid assets (current year), and Attested Bank Line of Credit (original) (specific in the name of this project), net of other construction commitments shall be as under:

Liquid Assets / Bank Line of Credit	Marks
i. Rs. 100 million to Rs. 150 million	7.5
ii. Above Rs. 150 million	15
Maximum Marks Allocated	**15**

Authorized Signature and official Seal: _____

Name: _____

Date: _____

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FORMS

- BID SECURITY
- PERFORMANCE SECURITY
- LETTER OF ACCEPTANCE
- CONTRACT AGREEMENT
- DAB AGREEMENT
- MOBILIZATION ADVANCE GUARANTEE

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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FORMS

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PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

FORM OF BID SECURITY

Security Executed on _____
(Date)

Expiry on _____
(Date)

Name of Surety with Address: _____

_____

Name of Principal (Bidder) with Address _____

_____

Penal Sum of Security PKR_____(Pak Rupees _____
_____)

Bid Reference No. _____

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

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Bidder has submitted the accompanying Bid dated_____for _____
_____(*Particulars of Bid*) to the said Employer; and

(1) WHEREAS, the Employer has required as a condition for considering said Bid that the Bidder furnishes a Bid Security in the above said sum to the Employer, conditioned as under: that the Bid Security shall remain in force for a period fourteen (14) days beyond the Bid Validity date i.e., upto_____.

(2) that the Bid Securities of the Bidders except the lowest three will be returned by the Employer within twenty eight (28) days from the opening of Bids, provided a Bidder request for the return of its Bid Security, or on the expiry of original validity of Bid Security or as extended, whichever is earlier;

(3) that the Bid Security of the lowest three Bidders comprising the successful Bidder will be returned when the successful Bidder has furnished the required Performance Security; and

(4) that in the event of failure of the successful Bidder to furnish the required Performance Security, the entire said sum be paid immediately to the said Employer pursuant to IB.16 and IB.35 of the Instructions to Bidders for the successful Bidder's failure to perform.

NOW THEREFORE, if the successful Bidder shall, within the period specified therefor, on the prescribed form presented to him for signature enter into a formal Contract with the said Employer in accordance with his Bid as accepted and furnish within twenty one (21) days of his being requested to do so, a Performance Security with good and sufficient surety, as may be required, upon the form prescribed by the said Employer for the faithful performance and proper fulfilment of the said Contract or in the event of non-withdrawal of the said Bid within the time specified for its validity then this obligation shall be void and of no effect, but otherwise toremain in full force and effect.

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

PROVIDED ALSO THAT the Employer shall decide, whether the Principal (Bidder) has duly performed his obligations to sign the Contract Agreement and to furnish the requisite Performance Security within the time stated above, or has defaulted in fulfilling said requirements and the Surety shall pay without objection the said sum upon demand from the Employer forthwith and without any reference to the Principal (Bidder) or any other person.

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

SURETY
(Schedule Bank)

WITNESS:

Signature _____

1. _____

Name _____

_____

Title _____

Corporate Secretary (Seal)

Corporate Guarantor (Seal)

2. _____

_____

Name, Title & Address

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FORM OF PERFORMANCE SECURITY

Guarantee No._____
Executed on _____
Expiry date _____

[Letter by the Guarantor to the Employer]

Name of Guarantor with address: _____

_____

Name of Principal (Contractor) with address:_____

_____

Penal Sum of Security (*express in words and figures*) _____

_____

Letter of Acceptance No._____Dated _____

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

THE CONDITION OF THIS OBLIGATION IS SUCH, that whereas the Principal has accepted the Employer's above said Letter of Acceptance for_____

_____ (*Name of Contract*) for the _____

_____ (*Name of Project*).

NOW THEREFORE, if the Principal (Contractor) shall well and truly perform and fulfill all the undertakings, covenants, terms and conditions of the said Documents during the original terms of thesaid Documents and any extensions thereof that may be granted by the Employer, with or withoutnotice to the Guarantor, which notice is, hereby, waived and shall also well and truly perform and fulfill all the undertakings, covenants terms and conditions of the Contract and of any and all modifications of said Documents that may hereafter be made, notice of which modifications to theGuarantor being hereby waived, then, this obligation to be void; otherwise to remain in full force andvirtue till all requirements of Clause11, Defects After Taking Over, of Conditions of Contract are fulfilled.

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

We,_____ (the Guarantor), waiving all objections and defense under the Contract, do hereby irrevocably and independently guarantee to payto the Employer without delay upon the Employer's first written demand without cavil or arguments

and without requiring the Employer to prove or to show grounds or reasons for such demand any sumor sums up to the amount stated above, against the Employer's written declaration that the Principalhas refused or failed to perform the obligations under the Contract which payment will be effected bythe Guarantor to Employer’s designated Bank & Account Number.

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

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IN WITNESS WHEREOF, the above-bounden Guarantor has executed this Instrument under its sealon the date indicated above, the name and corporate seal of the Guarantor being hereto affixed andthese presents duly signed by its undersigned representative, pursuant to authority of its governingbody.

.

Guarantor
(Schedule Bank/ Insurance Company)

WITNESS:

Signature _____

1. _____

Name _____

_____
Corporate Secretary (Seal)

Title _____
Corporate Guarantor (Seal)

2. _____

_____
Name, Title & Address

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Letter of Acceptance

[Letterhead paper of the Employer]

NAME OF CONTRACT:_____ CONTRACT

NUMBER:_____

TO :_____

Date:_____

Your Reference:_____

Our Reference:_____

We thank you for your Bid dated _____ for the execution and completion of the Works comprising the above-named Contract and remedying of defects therein, all in conformity with the terms and conditions contained in the Contract.

We have pleasure in accepting your Bid for the Accepted Contract Amount of:

_____
[currency and amount in figures]

_____
[currency and amount in words]

In consideration of you properly and truly performing the Contract, we agree to pay you the Accepted Contract Amount or such other sums to which you may become entitled under the terms of the Contract, at such times and as prescribed by the Contract.

We acknowledge that this Letter of Acceptance creates a binding Contract between us, and we undertake to fulfil all our obligations and duties in accordance with the terms of this Contract.

Signature:_____

Signed by: _____

For and on behalf of:_____

Date:_____

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FORM OF CONTRACT AGREEMENT

THIS CONTRACT AGREEMENT (hereinafter called the "Agreement") made on the _____ day of _____ (month) 20____ between _____ _____(hereinafter called the "Employer") of the one part and_____(hereinafter called the "Contractor") of the other part.

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

NOW this Agreement witnessed as follows:

1. In this Agreement words and expressions shall have the same meanings as are respectively assigned to them in the Conditions of Contract hereinafter referred to.

2. The following documents, in the order of priority, after incorporating addenda, if any, except those parts relating to Instructions to Bidders shall be deemed to form and be read and construedas part of this Agreement:

   a) This Contract Agreement;
   b) The Letter of Acceptance;
   c) The Letter of Bid;
   d) The Particular Conditions Part A - Contract Data;
   e) The Particular Conditions Part B - Special Provisions;
   f) The General Conditions;
   g) The Specifications Part A - Specific Provisions;
   h) The Specifications Part B - Technical Provisions;
   i) The Drawings;
   j) The Completed Schedules to Bid including Schedule of Prices;
   k) the JV Undertaking (if the Contractor is a JV); and
   l) *[Employer to insert any other documents forming part of the Contract*]

   The addenda/corrigenda, if any, (Excluding part relating to Instructions to Bidders along with Bidding Data) shall be deemed to have been incorporated at the appropriate places in the "Documents forming the Contract".

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

4. The Employer hereby covenants to pay the Contractor, in consideration of the execution and completion of the Works as per provisions of the Contract, the Contract Price or such other sumas 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 Agreement to be executed on the day,month and year first before written in accordance with their respective laws.

.

Signature of Contactor	Signature of Employer
(Seal)	(Seal)
Signed, Sealed and Delivered in the presence of:	
Witness	Witness
(Name, Title and Address)	(Name, Title and Address)

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DAB AGREEMENT

[for a one-person DAB]

Name and details of Contract _____
Name and address of Employer _____
Name and address of Contractor _____
Name and address of Member _____

Whereas the Employer and the Contractor have entered into the Contract and desire jointly to appoint the Member to act as sole adjudicator who is also called the "DAB" to adjudicate a dispute which has arisen in relation to_____*

The Employer, Contractor and Member jointly agree as follows:

1. The conditions of this Dispute Adjudication Agreement comprise the "General Conditions of Dispute Adjudication Agreement", which is appended to the General Conditions of the "Conditions of Contract for Plant and Design-Build" First Edition 1999 published by the Fédération Internationale des Ingénieurs-Conseils (FIDIC), and the following provisions. In these provisions, which include amendments and additions to the General Conditions of Dispute Adjudication Agreement, words and expressions shall have the same meanings as are assigned to them in the General Conditions of Dispute Adjudication Agreement.

2. [*Details of amendments to the General Conditions of Dispute Adjudication Agreement, if any.]*

3. In accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement, the Member shall be paid a daily fee of_____per day.

4. In consideration of these fees and other payments to be made by the Employer and the Contractor in accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement, the Member undertakes to act as the DAB (as adjudicator) in accordance with this Dispute Adjudication Agreement.

5. The Employer and the Contractor jointly and severally undertake to pay the Member, in consideration of the carrying out of these services, in accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement.

6. This Dispute Adjudication Agreement shall be governed by the law of _____

SIGNED by: _____	SIGNED by: _____	SIGNED by: _____
for and on behalf of the Employer in the presence of	for and on behalf of the Contractor in the presence of	the Member in the presence of
Witness: _____	Witness: _____	Witness _____
Name: _____	Name: _____	Name: _____
Address: _____	Address: _____	Address: _____
Date: _____	Date: _____	Date: _____

*[*A brief description or name of dispute to be added.]*

[for each member of a three-person DAB]

Name and details of Contract _____
Name and address of Employer _____
Name and address of Contractor _____
Name and address of Member _____

Whereas the Employer and the Contractor have entered into the Contract and desire jointly to appoint the Member to act as one of the three persons who are jointly called the "DAB" [*and desire the Member to act as chairman of the DAB*] to adjudicate a dispute which has arisen in relation to _____*

The Employer, Contractor and Member jointly agree as follows:

1. The conditions of this Dispute Adjudication Agreement comprise the "General Conditions of Dispute Adjudication Agreement", which is appended to the General Conditions of the "Conditions of Contract for Plant and Design-Build" First Edition 1999 published by the Fédération Internationale des Ingénieurs-Conseils (FIDIC), and the following provisions. In these provisions, which include amendments and additions to the General Conditions of Dispute Adjudication Agreement, words and expressions shall have the same meanings as are assigned to them in the General Conditions of Dispute Adjudication Agreement.

2. [*Details of amendments to the General Conditions of Dispute Adjudication Agreement, if any]*

3. In accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement, the Member shall be paid a daily fee of _____ per day.

4. In consideration of these fees and other payments to be made by the Employer and the Contractor in accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement, the Member undertakes to serve, as described in this Dispute Adjudication Agreement, as one of the three persons who are jointly to act as the DAB.

5. The Employer and the Contractor jointly and severally undertake to pay the Member, in consideration of the carrying out of these services, in accordance with Clause 6 of the General Conditions of Dispute Adjudication Agreement.

6. This Dispute Adjudication Agreement shall be governed by the law of _____

SIGNED by: _____	SIGNED by: _____	SIGNED by: _____
for and on behalf of the Employer in the presence of	for and on behalf of the Contractor in the presence of	the Member in the presence of
Witness: _____	Witness: _____	Witness _____
Name: _____	Name: _____	Name: _____
Address: _____	Address: _____	Address: _____
Date: _____	Date: _____	Date: _____

*[*A brief description or name of dispute to be added.]*

FORM OF MOBILIZATION ADVANCE GUARANTEE/ BOND

Guarantee No._____Date _____

WHEREAS_____(hereinafter called the 'Employer')

has entered into a Contract for _____
(Particulars of Contract)
with_____(hereinafter called the "Contractor').

AND WHEREAS, the Employer has agreed to advance to the Contractor, at the Contractor's request, an amount of Pak Rupees_____(PKR_____) which amount shall be advanced to the Contractor as per provisions of the Contract.

AND WHEREAS, the Employer has asked the Contractor to furnish Guarantee to secure the mobilization advance for the performance of his obligations under the said Contract.

AND WHEREAS, _____

(hereinafter called the "Guarantor") at the request of the Contractor and in consideration of the Employer agreeing to make the above advance to the Contractor, has agreed to furnish the said Guarantee.

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

Notice in writing of any default, on the part of the Contractor, of which the Employer at his discretion of making decision, shall be given by the Employer to the Guarantor, and on such first written demand, payment shall be made by the Guarantor of all sums then due under this Guarantee without any reference to the Contractor and without any objection.

This Guarantee shall remain in force until the advance is fully adjusted against payments from the Interim Payment Certificates of the Contractor or until_____whichever is earlier.
(Date)

The Guarantor's liability under this Guarantee shall not in any case exceed the sum of PKR _____ (Pak Rupees _____ _____).

This 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

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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.

Guarantor
(*Scheduled Bank/ Insurance Company*)

WITNESS: Signature _____

1. _____ Name _____

_____ Title _____

Corporate Secretary (Seal) Corporate Guarantor (Seal)

2. _____

_____

Name, Title & Address

GENERAL CONDITIONS

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CONDITIONS OF CONTRACT

The Conditions of Contract comprise two parts:

(a) General Conditions
(b) Particular Conditions

General Conditions

These Conditions are the “General Conditions” which form part of the “FIDIC Conditions of Contractfor Construction for Building and Engineering Works Designed by the Employer Second Edition (2017 Red book, Reprinted 2022 with amendments)” published by:

International Federation of Consulting Engineers
(Fédération Internationale des Ingénieurs – Conseils) – (FIDIC)
World Trade Center II - Geneva Airport
P. O. Box 311
CH-1215 Geneva 15
Switzerland
Email: fidic@fidic.org, fidic.pub@fidic.org
Website: https://fidic.org/bookshop

The successful Bidder after award of Works shall have to provide two (02) copies of above said “General Conditions” for incorporation in the Contract.

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PARTICULAR CONDITIONS OF CONTRACT

PART-A: CONTRACT DATA
PART-B: SPECIAL PROVISIONS

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Particular Conditions

The Particular Conditions (PC) complement the General Conditions (GC) to specify dates, contractual requirements, and special circumstances related to the Works. The PC consists of two parts, Part A - Contract Data and Part B - Special Provisions. The provisions to be found in the Special Provisions (Particular Conditions - Part B) take precedence over the equivalent provisions found under the same Sub-Clause number(s) in the General Conditions, and the provisions of the Contract Data (Particular Conditions - Part A) take precedence over the Special Provisions (Particular Conditions - Part B).

Part A - Contract Data

Sub-Clause	Data to be Given	Data
1.1.27	Defects Notification Period (DNP):	365 days
1.1.31	Employer's name and address:	**Project Director** Quaid-i-Azam University (QAU), Islamabad
1.1.35	Engineer's name and address:	National Engineering Services Pakistan (Pvt.) Limited (NESPAK) NESPAK House, G-5/2, Islamabad Ph: 051-9221910-13 Fax: 051-9221914
1.1.73	Sections:	None
1.1.84	Time for Completion:	910 days for whole of the Works
1.3(a)(ii)	agreed methods of electronic transmission:	Not Used
1.3(d)	address of Employer for communications:	**Project Director** Quaid-i-Azam University (QAU), Islamabad
	address of Engineer for communications:	NESPAK House, G-5/2 Islamabad Ph: 051-9221910-13 Fax: 051-9221914
	address of Contractor for communications:	**To be inserted at the time of signing of the Contract**
1.4	Contract shall be governed by the law of:	Islamic Republic of Pakistan

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Sub-Clause	Data to be Given	Data
	ruling language:	English
	language for communications:	English
1.8	number of additional paper copies of Contractor's Documents:	Six (06)
2.1	after receiving the Letter of Acceptance, the Contractor shall be given right of access to all or part of the Site within:	Within 14 days of Signing of Contract Agreement.
2.4	Employer's financial arrangements	The Employer has sufficient funds of its own to cover the Cost of the entire Project.
3.2 (e)(ii)	Engineer's Duties and Authority	Nil
4.2	Performance Security (as percentage of the Accepted Contract Amount in Currencies) percent: currency:	 Ten percent (10%) Pakistani Rupees (PKR)
4.2.1	List of Insurance Companies	Any insurance company having at least AA rating from PACRA/VIS and acceptable to the Employer.
4.7.2	period for notification of errors in the items of reference	Twenty-eight (28) days
4.19	period of payment for temporary utilities	N.A
4.20	number of additional paper copies of progress reports	Three (03)
5.1(a)	maximum allowable accumulated value of work subcontracted (as a percentage of the Accepted Contract Amount)	Twenty five percent (25%)

Sub-Clause	Data to be Given	Data
5.1(b)	parts of the Works for which subcontracting is not permitted	None
6.5	Normal working hours on the Site	Eight (08) hours
8.3	number of additional paper copies of programmes	Three (03)
8.8 & 14.15(b)	Delay Damages payable for each day of delay	0.044% of the Accepted Contract Amount for delay in completion of whole of the Works
8.8	maximum amount of Delay Damages	Ten percent (10%) of the Accepted Contract Amount
8.14	Applicability of Incentives for Early Completion	Not Applicable
12.3	Percentage profit	Ten percent (10%)
13.4.(b) (ii)	percentage rate to be applied to Provisional Sums for overhead charges, profit & taxes	Twenty five percent (25%)
14.2	total Advance Payment	Fifteen percent (15%) of the Accepted Contract Amount excluding Provisional Sums payable in the currencies and proportions in which the Accepted Contract Amount is payable
14.2.1	List of Insurance Companies	Not Applicable
14.2.3	percentage deductions for the repayment of the Advance Payment	Deduction shall be made at the amortization rate of 20% of the value of the Works executed of each IPC as provided in paragraph (i) of Sub-Clause GCC 14.3, starting from 1st IPC against work done provided that the advance payment shall be completely repaid prior to the time when 90% of the Accepted Contract Amount less Provisional Sums has been certified for payment. It may be more than 20% in the last instalment to ensure full repayment.
14.3	period of payment	one month

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Sub-Clause	Data to be Given	Data
14.3(b)	number of additional paper copies of Statements	Four (04)
14.3 (iii)	percentage of retention	Seven percent (7%)
14.3 (iii)	limit of Retention Money (as a percentage of the Contract Price)	Five percent (5%)
14.5(b) (i)	Plant and Materials for payment when shipped	Not Applicable
14.5(c)(i)	Plant and Materials for payment when delivered to the Site	Not Applicable
14.6.2	minimum amount of Interim Payment Certificate (IPC)	Rupees forty Million (Rs. 40 million)
14.7(a)	period of payment of Advance Payment to the Contractor	14 days
14.7b(i)	period for the Employer to make interim payments to the Contractor under Sub-Clause 14.6 [*Interim Payment*]	14 days
14.7b(ii)	period for the Employer to make interim payments to the Contractor under Sub-Clause 14.13 [*Final Payment*]	28 days
14.7(c)	period for the Employer to make final payment to the Contractor	56 days
14.8	financing charges for delayed payment	Nil
14.11.1 (b)	number of additional paper copies of draft Final Statements	Four (04)
14.15	currencies of payment of Contract Price	Pakistani Rupees (PKR)
14.15(a)(i)	Proportions or amounts of Local and Foreign currencies	Local Currency: 100% Foreign Currency: Nil

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Sub-Clause	Data to be Given	Data
14.15(c)	currencies and proportions for payment of Delay Damages	Currency: PKR. Proportion: 100%
14.15(f)	rates of exchange	Nil
17.2(d)	forces of nature, the risks of which are allocated to the Contractor	Nil
19.1	permitted deductible limits: i) insurance required for the Works ii) insurance required for Goods iii) insurance required for liability for breach of professional duty iv) insurance required against liability for fitness for purpose (if any is required) v) insurance required for injury to persons and damage to property vi) insurance required for injuryto employees vii) other insurances required by Laws and by local practice	i) Ten percent (10%) of loss amount on each & every loss ii) Nil iii) Nil iv) Nil v) Nil vi) Nil vii) Nil
19.1	Periods for submission of insurance: a) evidence of insurance b) relevant policies	Not later than the Commencement Date Within twenty-eight (28) days from the Commencement Date
19.2.1(b)	additional amount to be insured (as a percentage of the replacement value)	15% of the replacement value (Accepted Contract Amount)
19.2.2	extent of insurance required for Goods amount of insurance required for Goods	From Ex-Works (i.e., works, factory, warehouse, etc.) to delivery at the Site. Full replacement value
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

Sub-Clause	Data to be Given	Data
19.2.3(b)	insurance required against liability for fitness for purpose	Yes
19.2.3	period of insurance required for liability for breach of professional duty	Until the date of issuance of Performance Certificate
19.2.4	amount of insurance required forinjury to persons and damage to property	Injury to person and Fatal case:In accordance with Workmen Compensation Act Damage to Property: Rupees one million (Rs. 1,000,000) per occurrence with number of occurrences unlimited.
19.2.6	other insurances required by Laws and by local practice	All insurances as applicable, to theextent of execution of the project, under Federal and Provincial laws of Islamic Republic of Pakistan.
21.1	time for appointment of the DAB	As and when required (Ad-hoc DAB)
21.1	the DAB shall comprise	Sole Member
21.1	List of proposed DAB Members - proposed by Employer - proposed by Contractor	*[to be inserted at the time of signing of the Contract].* one sole member to be appointed with mutual consent of both parties
21.2	Appointing entity (official) for DAB members	Chairman Pakistan Engineering Council (PEC) from the list of PEC approved arbitrators published at its website
21.6	Rules of Arbitration	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: **Islamabad**

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PART II - PARTICULAR CONDITIONS OF CONTRACT

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PARTICULAR CONDITIONS

Part B - Special Provisions

1.1 Definitions

1.1.22 "DAAB or Dispute Avoidance / Adjudication Board"

Delete the text of 1.1.22 and replace with the following:

" "**Dispute Adjudication Board**" or "**DAB**" means the person so named in the Contract, or appointed under Clause 21"

1.1.23 "DAAB Agreement"

Delete the text of 1.1.23 and replace with the following:

"**DAB Agreement"** means the Agreement signed or deemed to have been signed by both parties and the sole member of the DAB in accordance with Sub-Clause 21.1. [*Constitution of DAB*] or Sub-Clause 21.2 [*Failure to Appoint DAB Member(s)*], incorporating by reference the General Conditions of DAB Agreement contained in the Appendix of these General Conditions with such amendments as are agreed.

1.1.76 "Specification"

Following is added at the end:

"and consists of two parts i.e.,

i) "Part A - Specific Provisions"; and
ii) "Part B - Specifications
- 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 completed Letters of Technical & Price Bid;
(d) the Particular Conditions 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 completed Schedules to Bid (except Schedule-B to Bid)
(i) Bill of Quantities (Appendix-D to Bid)
(j) Drawings
(k) The Specification Part B - Technical Provisions
(l) any other documents forming part of the Contract.

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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

Delete the text and substitute with the following:

The Parties shall sign a Contract Agreement within 28 days after the Contractor receives the Letter of Acceptance. The costs of stamp duties and similar charges (if any) imposed by law in connection with entry into the Contract Agreement shall be borne by the Contractor. The Contractor shall prepare six (6) copies of the Contract Document (including all the volumes / documents listed in the Contract Agreement) along-with copies of all the bonds/Guarantees/Sureties, at his cost and shall submit the same to the Employer".

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 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".

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, at the option of the Contractor, issued in the prescribed form included in the Bidding Documents, by (a) a Scheduled Bank in Pakistan or (b) a foreign bank duly counter-guaranteed by a Scheduled Bank in Pakistan or (c) an Insurance Company listed in the Contract Data with minimum rating of AA by PACRA/VIS.

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."

The cost of complying with requirements of this Sub-Clause shall be borne by the Contractor.

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 6 copies, one reproducible and one electronic copy (provided the

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Engineer has made available to the Contractor editable form of the Drawings) of all Drawings amended to conform to the Works as built. In case the Engineer does not make available to the Contractor editable form of the Drawings, the Contractor shall furnish to the Engineer as-built data for incorporation in the Drawings. Upon receipt of PDF versions of the as-built drawings prepared by the Engineer, the Contractor shall furnish to the Engineer 6 copies and one reproducible of these Drawings.

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 3 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 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

5.1 Subcontractors

Delete the text and substitute with the following :

Contractor under PPRA Rule 42(f) "Direct Contracting with State Owned Entities" shall accomplish the work exclusively through its own resources without involving private sector as a partner or in the form of a joint venture or as a sub-contractor.

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5.2 Nominated Subcontractors

The Sub-Clause 5.2 is deleted in its entirety.

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

The Contractor may bring in to the Country any foreign personnel who are necessary for the execution of the Works to the extent allowed by the applicable Laws. The Contractor shall ensure that these personnel are provided with the required residence visas and work permits. The Employer will, if requested by the Contractor, use all

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reasonable endeavors in a timely and expeditious manner to assist the Contractor in obtaining any local, state, national, or government permission required for bringing in the Contractor's personnel.

The Contractor shall be responsible for the return of these personnel to the place where they were recruited or to their domicile. In the event of the death in the Country of any of these personnel or members of their families, the Contractor shall similarly be responsible for making the appropriate arrangements for their return or burial.

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.

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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 non discrimination 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:

“within 14 days, 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 used.

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, 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 Schedule of Prices after the Date of Completion.

12.2 Method of

The following paragraph is added at the end of the Sub-

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	Measurement	Clause: "Summary of measured quantity for payment shall be delineated item-wise under four heads namely; "Schedule of Prices Quantity", "Quantity Executed To-date", "Quantity Certified Previously" and "Net Quantity Executed under this Certificate".
12.3	**Valuation of the Works**	After sub-paragraph (c) delete the text of 5th paragraph "Each new rate…… …..relevant matters" and substitute with the following: "the valuation will be carried out on the basis of applicable item rates of Pak. PWD Schedule of Rates 2022 with the application of awarded premium / rebate. Failing above, 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 & profit, etc. to be allowed in such cases shall be twenty five percent (25%)."
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 DAB 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 DAB. The Contractor shall submit the DAB 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*]."

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14.2 Advance Payment

14.2.1 Advance Payment Guarantee

The entity issuing the Advance Payment Guarantee and its form shall be as under:

The Advance Payment Guarantee shall be in the form of Guarantee issued by (a) a Scheduled Bank in Pakistan or (b) a foreign bank duly counter-guaranteed by a Scheduled Bank in Pakistan.

14.2.2 Advance Payment Certificate

Add the following at the end:

"The Engineer shall issue an Advance Payment Certificate for the advance payment in following two equal parts:

(i) first part within 14 days after signing of the Agreement or the date of receipt of Engineer's Notice to Commence, whichever is earlier; and

(ii) second part within 42 days from the date of payment of the first part, subject to the satisfaction of the Engineer as to the state of mobilization of the Contractor, bringing/installing/erecting of essential equipment and mobilization of minimum mandatory staff to complete the requirement for the entire work, having fulfilled his obligation under the Contract agreement for provision of facilities for the Engineer such as Site office, transport etc. and his own facilities such as contractor's camp, storage yards, etc. and having completed at least 2% of the permanent works (to be assessed by the Engineer during this time period."

14.6 Issue of IPC

14.6.1 The IPC

In the first line of the 1st paragraph the words "28 days" are substituted by "14 days".

14.7 Payment

Delete '.' At the end of last paragraph and add the words "or through crossed cheque in favour of the Contractor."

14.8 Delayed Payment

In the first paragraph, third line, the words "compounded monthly" are deleted.

The text of 2nd paragraph is deleted and substituted with the following:

"The Employer shall pay to the Contractor compensation at the rate stated in the Contract Data."

15.2 Termination for Contractor' Default

15.2.1 Notice

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."

15.2.3 After Termination

The word "and" at the end of sub-paragraph (ii) of

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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

16.2.1 Notice

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 (c) is deleted and replaced with:

"(c) 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

(d) 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.

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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**	19.2.5 Injury to employees 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: 19.2.7 Insurance Company “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.
21.1	**Constitution of the DAAB**	Delete the text of Sub-Clause 21.1 in its entirety and replace with the following: Disputes shall be adjudicated by a DAB in accordance with Sub-Clause 21.4 [*Obtaining DAAB’s Decision*]. The Parties shall jointly appoint a DAB by the date 28 days after a Party gives notice to the other Party of its intention to refer a dispute to a DAB in accordance with Sub-Clause 21.4. The DAB shall comprise, as stated in the Contract Data, of one suitably qualified person ("the member"). The members shall be selected from those on the list on PEC Website, other than anyone who is unable or unwilling to accept appointment to the DAB. The agreement between the Parties and the sole member ("adjudicator") shall incorporate by reference the General Conditions of Dispute Adjudication Agreement contained in

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the Appendix to FIDIC Conditions of Contract for Plant Design-Build, First Edition 1999, with such amendments as are agreed between them.

The terms of the remuneration of the sole member shall be mutually agreed upon by the Parties when agreeing the terms of appointment. Each Party shall be responsible for paying one-half of this remuneration.

If at any time the Parties so agree, they may appoint a suitably qualified person to replace the member of the DAB. Unless the Parties agree otherwise, the appointment will come into effect if the member declines to act or is unable to act as a result of death, disability, resignation or termination of appointment. The replacement shall be appointed in the same manner as the replaced person was required to have been nominated or agreed upon, as described in this Sub-Clause.

The appointment of the member may be terminated by mutual agreement of both Parties, but not by the Employer or the Contractor acting alone. Unless otherwise agreed by both Parties, the appointment of the DAB (including the member) shall expire when the DAB has given its decision on the dispute referred to it under Sub- Clause 21.4 [*Obtaining DAAB's Decision*], unless other disputes have been referred to the DAB by that time under Sub-Clause 21.4, in which event the relevant date shall be when the DAB has also given decisions on those disputes.

21.3 Avoidance of Disputes

Delete the Sub-Clause 21.3 in its entirety.

21.4 Obtaining DAAB's Decision

In the 1st paragraph of Sub-Clause 21.4 after the words "if a dispute arises between the parties then, "add the following:

"after a DAB has been appointed";

Delete the words " (whether or not any informal discussions have been held under Sub-Clause 21.3 [*Avoidance of Disputes]*); .

.21.4.1 " Reference of a Dispute to the DAAB"

Delete Sub-Paragraph (a) of Sub-Clause 21.4.1.

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.

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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

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QUAID-I-AZAM UNIVERSITY(QAU), ISLAMABAD

CIVIL WORKS COMPONENT OF THE PSDP PROJECTS

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) QUAID-I-AZAM UNIVERSITY(QAU), ISLAMABAD

TECHNICAL BID

BIDDING DOCUMENTS VOLUME – II

SPECIFIC PROVISIONS
TECHNICAL SPECIFICATIONS

MAY, 2026

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD
NESPAK House, Sector G-5/2, Islamabad, Tel: 051-9221910-13, Fax: 051-9221914.

SPECIFICATIONS – SPECIFIC PROVISIONS

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PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

THE SPECIFICATIONS

PART A – SPECIFIC PROVISIONS

1. GENERAL

1.1 The Specifications Part A – 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 Specific Provisions.

2. DESCRIPTION OF PROJECT, WORKS INVOLVED AND SITE

Quaid-i-Azam University (QAU), Islamabad intends to Establish National Institute & Security Studies (NIISS).

The scope of works mainly comprises construction of building works and related ancillary works lying within the boundaries and 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.

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.

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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 an precautionary measures such as warning signs, warning lamps and barricades etc. to prevent accidents.

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.

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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 increase 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 responsibly 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.

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14. CONSTRUCTION AND 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 and 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

Manufacture’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.

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.

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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.

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.

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

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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 01 No.
b) Automatic Levels with tripods & staff 02 Nos.
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.

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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 Employer and 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 23.2 hereof.

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23.2 Construction Drawings, Supplementary Drawings

Upon commencement of the works and furnishing by the Contractor stake out survey plan and 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 23.1 and 23.2 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 22 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

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by the Engineer. Such drawings shall be submitted at least seven (7) days before they are required for use. If within a period of seven (7) 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,

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accurately and promptly as the work progresses. The Subcontractor(s) for plumbing, mechanical and electrical shall, at all times, keep on Site, a separate set of prints of the drawings (showing their parts of the Works) 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. 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 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 fire fighting 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.

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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.

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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 23.6.2 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.

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- 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 PHTOGRAPHS

30.1 During the continuance of the Contract, the Contractor shall submit monthly progress on forms as approved by the Engineer. Such weekly 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 week of construction, and continuing every week 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.

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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 under taken each day, noting special activities such a 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 297mm x 210mm and shall bear a printed description, a serial number and the date when taken.

The negatives/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 Engineer. 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/Engineer's Staff

The Contractor shall construct, provide, furnish and maintain for Engineer, a site office along with stabilized access road.

The Contractor shall provide internet connection for the Engineer at site up-to an average billing of Rs. 4,000/- per month, one (01) computer (Core I-7, minimum with 500 GB Hard disk, 8 Gb Ram, a DVD writer, 17" Flat Colour monitor, etc.), one flash drive of at-least 8 GB capacity each, an A3 size printer, stationery & pantry, a digital camera (12.5 pixel minimum), UPS, stabilizers, air conditioners, 6 cubic feet refrigerators, etc., and the site office shall be connected to the electrical system, potable water supply system and sewage disposal system.

The Contractor shall provide replacement of the equipment(s), if any of the above-mentioned equipment(s) 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 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.

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 (DLP Period) by the Engineer.

The site office along with all fittings, fixtures and gadgets shall become property of the Employer after the completion of the project and shall be handed over to the Employer along with list of all items given for the use of Engineer. The site office shall be removed /dismantled if directed by the Engineer/Employer. In such case, the area shall be developed in accordance with the drawings or to its natural state and as per the instructions of the Engineer.

No payment shall be made to the Contractor for the works involved under this Sub-Clause

35 Transport for The Engineer / Engineer's Staff

The Contractor shall provide, operate and maintain 01 No (1,000CC), brand new latest model, air-conditioned Car along with driver for exclusive use of the Engineer / Engineer's staff, to meet the transportation needs in connection with the project. The vehicle shall be registered in the name of Employer (NIISS) right from start of project.

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The Contractor shall furnish supply and provide, as may be necessary without specific direction of the Engineer / Engineer's staff, all fuels, lubricants, tyres and other supplies, all maintenance, repairs, comprehensive insurance cover and running costs and suitability qualified driver at all times for running of vehicle not exceeding 4500 km per month and will provide a substitute vehicle in case of any break down.

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/ Engineer's representative at no additional cost to the Employer.

The Contractor shall maintain the vehicles up to the Issuance of Taking-Over Certificate (DLP Period) by The Engineer. During the period of DLP, for the site visits of the Engineer / Engineer's staff, contractor shall provide pick n drop service.

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

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

37.6.1 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.

37.6.2 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.

37.6.3 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.

37.6.4 Work yards and Storage Areas

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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.

37.6.5 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.

37.6.6 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.

37.6.7 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

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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 bench-marks 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.

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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.

The cost of all materials, equipment, surveyors and labour required for surveys for the Works and quantity surveys required by this clause shall be deemed to be included in the rates and prices of the various items in the Bill of Quantities and no separate measurement and payment in their respect shall be made.

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44.3 Survey Instruments

The Contractor shall maintain at the Site the requisite surveying instruments in perfect working conditions to enable the Engineer's Representative to check levels and lines of the work at all times.

45. 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.

46. 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 confirm 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.

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SECTION - 2100

FORMWORK

1. SCOPE

2. APPLICABLE STANDARDS

3. SUBMITTALS

4. MATERIAL

5. DELIVERY AND STORAGE

6. EXECUTION

7. MEASUREMENT AND PAYMENT

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1. SCOPE

The work under this section of the Specifications consists of furnishing all plant, labour, equipment, appliances and materials and in performing all operations in any floor and at any height in connection with the supply and installation of formwork for the purpose of shuttering in concreting work, complete in strict accordance with this section of the specifications and the applicable drawings and subject to the terms and conditions of the Contract.

2. APPLICABLE STANDARDS

As per the requirements of Section 2300.

3. SUBMITTALS

As per the requirements of Section 2300.

4. MATERIALS

The Contractor shall use the following formwork materials for different purposes as stated below:

4.1 TIMBER

Form framing, sheathing and shoring.

4.2 PLYWOOD

Form sheathing and panels.

4.3 STEEL

- Heavy forms and false work
- Column and joint forms
- Permanent forms
- Welding of permanent forms

4.4 FORM TIES ANCHORS AND HANGERS

For securing formwork against placing loads and pressures.

4.5 COATINGS

To facilitate form removal.

4.6 STEEL JOISTS

For formwork support.

4.7 STEEL FRAME SHORING

For formwork support.

5. DELIVERY AND STORAGE

5.1 DELIVERY

The delivery of formwork materials shall be done in such a manner that damage can be prevented.

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5.2 STORAGE

Formwork should be stored, after cleaning and preparing for re-use if used before, in such a manner that access to all different materials is available.

Material which can be affected by weathering shall be stored in appropriate building or under covers and shade.

6. EXECUTION

6.1 WORKMANSHIP

6.1.1 Forms shall have sufficient strength to withstand the pressure resulting from placement and vibration of the concrete and shall have sufficient rigidity to maintain specified tolerances.

Where required details and locations of special forms to be used are set out on the drawings. The Engineer shall refuse any formwork in any part of the building, which has been constructed with a non-approved formwork. The Engineer shall refuse any concreting which will not be perfect or may not conform to the approved model.

6.1.2 Earth cuts shall not be used as forms for vertical surfaces of reinforced concrete work unless required as such or permitted by the Engineer.

6.1.3 Mud centering shall not be permitted without the prior approval of the Engineer.

6.1.4 a) Formwork shall be of wrought timber, steel, plywood, proprietary building boards and such special materials, as may be shown on the drawings or approved by the Engineer, which give the required finish to the surface of concrete. Wooden formwork shall be free from loose knots and shall be well seasoned.

b) The responsibility of the safe design of the formwork shall be entirely that of the Contractor.

c) No wooden props, bamboo, ballies, etc., shall be used as supports to beams or roofs and floors. Only steel pipe scaffoldings (tubular) to be used for all works.

d) No wooden formwork shall be allowed to be used in columns, roofs and floors and beams etc. All the form work shall be of steel as approved.

e) Only wooden planks of approved quality and thickness of 2 inches minimum on the sides of beams shall be allowed.

f) All the erected formwork shall be inspected and approved in all respects by the Engineer or his representative prior to concreting.

g) Where concrete will be exposed to view, special care shall be taken in the selection of the form material and the construction of the forms, to the end that the concrete will be smooth, uniform in texture, true in line and face and free from honeycombing and other projections. All sides and joints on the forms shall be flush (without lipping) and inconspicuous, wood used for such work shall be thoroughly cleaned before each reuse and shall be free from cracks, splinters, nails, or other defects effecting the appearance of the concrete.

6.1.5 The formwork shall conform to the shape, lines and dimensions as shown on the plans and be so constructed as to remain sufficiently rigid during the placing

and compacting of the concrete, and shall be sufficiently tight to prevent loss of liquid from the concrete.

The design and Engineering of the formwork, as well as its construction, shall be the responsibility of the Contractor. Where necessary, to maintain the specified tolerances, the formwork shall be cambered to compensate for anticipated deflections in the formwork due to the weight and pressure of the fresh concrete and due to construction loads.

The Contractor shall establish and maintain in an undisturbed conditioned until final completion and acceptance of the project, sufficient control points and benchmarks to be used as references for checking upon tolerances.

6.1.6 Forms for architectural concrete shall be designed to produce the required finish or finishes. Deflection of facing materials between studs as well as deflection of studs and walers shall be limited to 0.0025 times the span or as otherwise specified. Forms shall be designed to permit easy removal. Prying against the face of the concrete shall not be allowed. Only wooden wedges shall be used.

6.1.7 Where natural plywood-form-finish, grout-cleaned-finish, smooth-rubbed- finish, scrubbed-finish or sand-floated-finish is required, forms shall be smooth (faced with plywood, liner sheets, or pre-fabricated panels) and true to line, in order that the surfaces produced will require little dressing to arrive at true surfaces. Where any as-cast finish is required, no dressing shall be permitted in the finishing operation.

6.1.8 Where as-cast surfaces, including natural plywood-form-finish are specified, the panels of material against which concrete is cast shall be orderly in arrangement, with joints between panels planned in approved relation to openings, building corners, and other architectural features.

6.1.9 Where panels for as-cast surfaces are separated by recessed or otherwise emphasized joints, the structural design of the forms shall provide for locating form ties, where possible, within the joints so that patches of tie holes will not fall within the panel areas.

6.1.10 Forms shall not be re-used if there is any evidence of surface wear and tear or defect, which would impair the quality of the surface finish. Forms shall be thoroughly cleaned and properly coated with form oil before re-use.

6.1.11 The formwork shall be designed so that the soffits of slabs and sides of beams, columns and walls may be removed first, leaving the forms to the soffits of beams and their supports in position.

6.1.12 Forms shall be sufficiently tight to prevent loss of mortar from the concrete. Unless otherwise specified in the Contract Documents chamfer strips shall be placed in the corners of forms to produce beveled edges on permanently exposed surfaces. Interior corners on such surfaces and the edges of formed joints will not require beveling unless required by the Contract Documents.

6.1.13 Positive means such as wedges or jacks for accurate adjustment and for proper removal of shores and struts shall be provided and all settlement shall be monitored during concrete placing operation. Forms shall be securely braced against lateral deflections.

6.1.14 Where concreting of thin members is required to be carried out within formwork of considerable depth, temporary openings in the sides of the formwork shall be provided where necessary to facilitate the placing and consolidation of concrete. Small temporary openings shall also be provided at the bottom of the formwork

for columns, walls and deep beams to permit the cleaning out of debris and observation immediately before concrete is deposited.

6.1.15 Form ties shall be constructed so that the ends or end fasteners can be removed without causing appreciable spalling at the faces of the concrete. After the ends or end fasteners of form ties have been removed, the embedded portion of the ties shall terminate not less than 2 diameter or twice the minimum dimension of the tie from the formed faces of concrete to be permanently exposed to view except that in no case shall this distance be less than 3/4 inch. When the formed face of the concrete is not to be permanently exposed to view, form ties may be cut off flush with the formed surfaces. Precaution shall be taken not to rotate form ties.

Through bolts may be permitted provided that they are greased to allow for easy withdrawal and the holes subsequently made good. Through bolts are not to be used on water-retaining structures and basement walls.

6.1.16 At construction joints contact surface of the form sheathing for flush surfaces exposed to view shall overlap the hardened concrete in the previous placement by no less than 1 inch. The forms shall be held against the hardened concrete to prevent offsets or loss of mortar at the construction joint so as to maintain a true surface.

6.1.17 Wood forms for wall opening shall be constructed to facilitate loosening, if necessary to counteract swelling of the forms.

6.1.18 Wedges used for final adjustment of the forms prior to concrete placement shall be fastened in position after the final check.

6.1.19 Formwork shall be so anchored to shores or to other supporting surfaces or members that upward or lateral movement of any part of the formwork system during concrete placement will not occur.

6.1.20 Runways or planks for moving labour and equipment shall be provided with struts or legs and shall be supported directly on the formwork or upon the structural member without resting on the reinforcing steel.

6.1.21 All surfaces of forms and embedded materials shall be cleaned of any accumulated mortar or grout from previous concreting and of all other foreign material before placing fresh concrete.

6.1.22 Forms shall be sufficiently tight to prevent leakage of grout or cement paste. Board forms having joints opened by shrinkage of the wood shall be removed and replaced. Plywood and other wood surfaces not subject to shrinkage shall be sealed against absorption of moisture from the concrete by either:

(1) a field applied, approved form oil or sealer, or

(2) a factory applied non-absorptive liner.

When forms are coated to prevent bond with concrete, it shall be done prior to placing of the reinforcing steel. Excess coating material shall not be allowed to stand in puddles in the forms nor allowed to come in contact with the concrete against which fresh concrete will be placed. Care shall be taken that such approved composition is kept out of contact with the reinforcement. Where as-cast finishes are required, materials, which will impart a stain to the concrete, shall not be applied to the form surfaces. Where the finished surface is required to be painted, the material applied to form surfaces shall be compatible with the type of paint to be used.

6.1.23 For reinforced concrete, in no circumstances shall forms be struck until the concrete attains 75% of ultimate strength.

The strength referred to shall be that of concrete using the same cement and aggregates, with the same proportions, and cured under conditions of temperature and moisture similar to those obtaining in the work. Where possible, the formwork should be left for longer time, as it would assist the curing.

In normal circumstances (generally where temperatures are above 20° C and where ordinary cement is used, forms may be struck after expiry of the following periods.

Walls, columns and vertical sides of beams	48 hours or as may be decided by the Engineer.
Side of slab (shores of props left under).	6 days.
Beams soffits (shores or props left under).	12 days.
Removal of shores or props to slabs.	
1. Spanning upto 12 feet.	10 days.
2. Spanning over 12 feet.	16 days.
Removal of shores or props to beams.	
1. Spanning upto 18 feet.	18 days.
2. Spanning over 18 feet.	25 days.

For rapid hardening cement 3/7 of the above period will be sufficient in all cases except vertical sides of slabs, beams and columns, which should be retained for a minimum of 24 hours.

The number of shores or props, their sizes and disposition shall be such as to be able to safely carry the full dead load of the slab and beams, as the case may be.

Proper allowance shall be made for the decrease in rate of hardening of concrete in cold weather and the above minimum duration must be increased when the mean daily temperature is below 20° C.

6.1.24 When repair of surface defects or finishing is required at an early age, forms shall be removed as soon as the concrete has hardened sufficiently to resist damage from removal operations.

6.1.25 Top forms on sloping surfaces of concrete shall be removed as soon as the concrete has attained sufficient stiffness to prevent sagging. Any needed repairs or treatment required on such sloping surfaces shall be performed at once and be followed by the specified curing.

6.1.26 Wood forms for wall openings shall be loosened as soon as this can be accomplished without damage to the concrete.

6.1.27 All formwork shall be removed without such shock or vibration as would damage the reinforced concrete. Before the top plank and struts are removed, the concrete surface shall be exposed where necessary in order to ascertain that the concrete has sufficiently hardened. Proper precautions shall be taken to allow for the decrease in the rate of hardening that occurs with all cement in the cold weather.

6.1.28 When reshoring or repropping is permitted or required, the operations shall be planned in advance and shall be subject to approval. While reshoring is underway no live load shall be permitted on the new construction. In no case during reshoring shall concrete in beam, slab, columns or any other structural member be subjected to combined dead and construction loads in excess of the load permitted by the Engineer for the developed concrete strength at the time of reshoring.

Reshores shall be placed as soon as practicable after stripping operations are complete but in no case later than the end of working day on which stripping occurs.

Reshores shall be tightened to carry their required loads without overstressing the construction. Reshores shall remain in place at least until tests representative of the concrete being supported have reached the strength specified in sub-clause 6.1.23 hereof.

6.1.29 Floors supporting props or shores under newly placed concrete shall have their original supporting props or shores left in place or shall be reshored. The reshoring system shall have a capacity sufficient to resist the anticipated loads and in all cases shall have a capacity equal to at least one half the capacity of the shoring system above. The reshores shall be located directly under a shore position above unless other locations are permitted.

The reshoring or re-propping shall extend over a sufficient number of storeys to distribute the weight of newly placed concrete, forms, and construction live loads in such a manner that the design superimposed loads of the floors supporting shores or props are not exceeded.

6.1.30 It is generally desirable to give forms for reinforced concrete an upward camber to ensure that the beams or slabs (specially cantilever slabs) do not have a sag when they have taken up their deflection, but this should not be done unless permitted by the Engineer.

6.1.31 No loads, other than man and light plant required in connection with the actual work in hand, shall be allowed on suspended floors until 28 days after concreting where ordinary Portland Cement is used and 14 days when rapid hardening Portland Cement is used.

6.1.32 Prior to placing concrete, all forms shall be inspected and all debris and extraneous matter removed. The form oil or release agent shall not react with concrete to affect the strength nor shall it give any colour.

7. MEASUREMENT AND PAYMENT

No payment will be made for the works involved within the scope of this section of the specifications unless otherwise specifically stated in the Estimates or herein.

The cost thereof shall be deemed to have been included in the quoted unit rate of relevant items of the Estimates.

SECTION - 2200

REINFORCEMENT

1. SCOPE

The work under this section of specifications consists of furnishing, cutting, fabricating, bending and placing steel reinforcement and Welded wire fabric in any floor and at any height in concrete structures or elsewhere as shown on the drawings or as directed by the Engineer.

2. APPLICABLE STANDARDS

Latest editions of the following British and ASTM Standards are relevant to these specifications wherever applicable.

British Standards

BS 785	Hot rolled bars and hard drawn wire for the reinforcement of concrete.
BS 4449	Hot rolled steel bars for reinforcement of concrete
BS 4461	Cold worked steel bars for reinforcement of concrete.
BS 4466	Bending dimensions and scheduling of bars for the reinforcement of concrete.
BS 4483	Welded steel wire fabrics.

ASTM Standard

A 305	Minimum requirement for the deformations of deformed steel bars for concrete reinforcement.
A 615,706	Deformed billet steel bars for concrete reinforcement.
A 185	Welded steel wire fabric for concrete reinforcement.

In addition to the above, the latest editions of other Pakistan Standards, British standards, American Concrete Institute Standards, American Society for Testing and Materials Standards and other standards as may be specified by the Engineer for Special Material and construction are also relevant.

3. SUBMITTALS

3.1 Reinforcement shall be obtained only from manufacturers approved by the Engineer. Each consignment of reinforcement steel shall be accompanied by the manufacturer's certificate or shall refer to a previous certificate, if the consignment is from the same batch, showing that the reinforcement steel complies with the specified requirement. If such certificate is not made available or if the Engineer considers that the manufacturer's tests are inadequate, samples shall be taken for acceptance test from different consignments as the Engineer may direct and shall be tested at the contractor's cost. Should the result of such tests show that the sample does not meet with the specifications the whole consignment shall be rejected and removed from the site at the Contractor's cost.

3.2 BAR BENDING SCHEDULES

The Contractor shall prepare bar bending schedules of all the reinforcing steel bars and these bar bending schedules shall be submitted to the Engineer for his approval.

All detailing shall be done as per AC, standards AC1-315 & 318. The Contractor shall obtain approval of the bar bending schedules before starting actual bar bending works.

4. MATERIAL AND SIZE OF BARS

4.1 Reinforcement for concrete shall conform to the respective British, ASTM, or other Standards as specified in the Drawings and in the Contract Documents or as may be specified by the Engineer.

4.2 Unless otherwise specified, all plain reinforcing bars shall comply with the requirements of ASTM A615 for plain mild steel bars and shall have a minimum yield strength of 40 ksi.

4.3 Unless otherwise specified, all deformed reinforcing bars shall comply with the requirements of ASTM A615, 706 for deformed hot rolled new stock billet steel bars and shall have a minimum yield strength of 40 & 60 ksi and a maximum yield strength of 58 ksi & 78 ksi respectively; also ratio of ultimate strength to yield strength shall not be less than 1.25 as per requirements of ACI 318-06 chapter 21 reference for zone 3 & 4.

4.4 Reinforcement shall be free from all loose or flaky rust and mill scale, or coating, including ice, and any other substance that would reduce or destroy the bond. Reduced section steel reinforcement shall not be used.

4.5 Sec 4.4 the phosphorus content by Chemical composition test shall not exceed the limits as specified in ASTM A615/706.

5. DELIVERY AND STORAGE

5.1 DELIVERY

Steel reinforcement bars shall be kept in bundles firmly secured and tagged. Each bar or bundle of bars shall be identified by marks stamped on hot or cold or painted on or by any other means. The identifying marks shall contain the following information:

- Name of the producer or his trade.
- Standard to which the bars have been manufactured.
- The class type and strength.
- The diameter.
- The number of the test certificate.

5.2 STORAGE

The method of storage shall be approved by the Engineer. Reinforcing bars shall be stored in racks or platforms above the surface of ground and shall be protected free from scaling, rusting, oiling, coatings, damage, contamination and structural defects prior to placement in works. Bars of different diameters and grades of steel reinforcement shall be kept separately.

6. FABRICATING, BENDING & PLACING

6.1 Bars used for concrete reinforcement shall be fabricated in accordance with the dimensions shown in the bar-bending schedule approved by the Engineer.

6.2 The cutting tolerance for all bars shall be $\pm$ 1 inch.

6.3 Where an overall or an internal dimension of a bent bar is specified in the schedule, the bending tolerance, unless otherwise stated, shall be as in Table 1.

Table 1: Bending Tolerances

Dimensions of bent bars		Tolerance	
Over Feet	Upto & including feet	plus inch	minus inch
--	3	1/5	1/5
3	6	1/5	1/5
6		1/5	1

6.4 Reinforcement shall not be bent or straightened in a manner that will injure the material.

No bars shall be bent twice in the same place, nor shall they be straightened after bending.

Unless permitted by the Engineer, reinforcement shall not be bent after being partially embedded in hardened concrete.

Bars which depend for their strength on cold working shall not be heated for any reason.

6.5 Welding shall be permitted for bars only under suitable conditions and with suitable safeguards in accordance with BS 693, BS 1856, or AWS D12.1, provided the type of reinforcing bar has the required welding properties. Tack welding may be used to fix in position bars that cross each other, only with prior approval of the Engineer. Welding shall be done as in lectum structural steel & metal works.

6.6 No splice of reinforcement shall be made except as shown on the working drawings.

6.7 Reinforcement is to be accurately placed as shown in the drawings, and secured against displacement by using 18-20 gauge black annealed wire ties or suitable slips at intersections and supported from the formwork by using concrete, metal or plastic chairs and spacers or hangers of an approved pattern. Where concrete blocks are used for ensuring the cover, they shall be made of mortar not leaner than 1 part of cement to 2 parts of sand.

Where the concrete surface will be exposed to the weather in the finished structure, the portions of all accessories in contact with the formwork shall be galvanized or shall be made of plastic.

6.8 Concrete clear cover for reinforcing steel shall be as follows:

Structural Members		Minimum Cover (inches)
a)	Concrete cast against and Permanently exposed to earth	3
b)	Concrete exposed to earth or weather:	
	For reinforcing bars # 6 or larger	2
	For reinforcing bars less than # 6	1-1/2
c)	Concrete not exposed to weather or in contact with ground:	
	Slabs, Walls	3/4

Beams, Columns: (Primary Reinforcement)	1-1/2

6.9 Bars shall be placed to the following tolerances:

1.	Concrete cover to formed surfaces	± 1/4 inch
2.	Minimum spacing between bars	- 1/4 inch
3.	Top bars in slabs and beams	
	a. Members 8 inch deep or less	± 1/4 inch
	b. Members more than 8 inch but not over 2 feet deep	± 1/2 inch
	c. Members more than 2 feet deep	± 1 inch
4.	Crosswise of members: spaced evenly within	2 inch
5.	Lengthwise of members	± 2 inch

6.10 Bars may be moved as necessary to avoid interference with other reinforcing steel, conduits, or embedded items. If bars are moved more than one bar diameter or enough to exceed the above tolerances, the resulting arrangement of bars shall be subject to approval of Engineer.

6.11 Vertical bars in columns shall be offset at least one bar diameter at lapped splices. To ensure proper placement, templates shall be furnished for all column dowels.

6.12 Exposed reinforcement intended for bonding with future extensions is to be effectively protected from corrosion. Protection is also to be provided to reinforcement partly built into concrete where the exposed part is to be built into later concrete.

6.13 All reinforcement, at the time concrete is placed, shall be free of loose mile scale, loose rust mud, oil grease, or other materials that may adversely affect or reduce the bond.

6.14 No concreting is to be carried out until the reinforcement has been checked and approved by the Engineer.

7. MEASUREMENT & PAYMENT

7.1 General

Except otherwise specified herein or elsewhere in the Contract Documents, no measurement and payment will be made for the under mentioned specified works related to the relevant items of the Bills of Quantities. The cost thereof shall be deemed to have been included in the quoted unit rate of the respective items of the Bills of Quantities.

The rates quoted by the Contractor in the Bill of Quantities shall include work to be executed under these specification in any floor and at any height except where otherwise specifically stated in the relevant item of Bill of Quantities and the Contractor shall not be entitled to any claim or claim any compensation on this account.

Providing and installing cover blocks, chairs, supports, hooks, spacers, binding wires, and laps not shown on drawings including wastage and rolling margin. Laps shown on drawings shall be payable.

7.2 Mild Steel and Deformed Steel

7.2.1 Measurement :

Measurement for acceptably completed works of reinforcement according to bar bending schedules approved by the Engineer shall be made by weight.

Computed on the bases of table 2. The Contractor shall not claim for the difference in the actual weights of bars and their standard weights given in Table-2 below.

Nominal Bar Diameter (Inches)*	Bar No.	Weight Lbs/ft.
1/4"	-	0.167
3/8"	#3	0.376
1/2"	#4	0.668
5/8"	#5	1.043
3/4"	#6	1.502
7/8"	#7	2.044
1"	#8	2.670
1-1/8"	#9	3.400
1-1/4"	#10	4.303
1-3/8	#11	5.313

2204.60 Lbs = 1.00 tonne

* to the nearest 1/8"

7.2.2 Payment:

Payment will be made for acceptable measured quantity of reinforcement on the basis of unit rate per metric ton quoted in the Bill of Quantities and shall constitute full compensation for all the works related to the item.

The rate quoted include all lead/lift required for steel fabrication & placement at/in any floor and at any height as per drawings.

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SECTION 2300

PLAIN AND REINFORCED CONCRETE

1. SCOPE

2. APPLICABLE STANDARDS

3. SUBMITTALS

4. MATERIALS

5. DELIVERY, STORAGE AND HANDLING

6. EXECUTION

7. TEST OF CONCRETE QUALITY

8. FINISHING OF FORMED SURFACES

9. REPAIR OF SURFACE DEFECTS

10. CONCRETE CONSTRUCTION TOLERANCES

11. ACCEPTANCE OF STRUCTURE

12. MEASUREMENT & PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

1. SCOPE

The work under this section of the specification consists of furnishing all plant, labour, equipment, appliances and materials and in performing all operations in connection with the supply and installation of plain and reinforced concrete work complete in any floor and at any height as per drawings except where specifically stated in the relevant item of Estimates, in strict accordance with this section of the specifications and the applicable drawings, and subject to the terms and conditions of the Contract. The scope of this section of specification is covered with detailed specifications as laid down herein.

2. APPLICABLE STANDARDS

Latest editions of the following Pakistan, British and ASTM Standards are relevant to these specifications wherever applicable.

2.1 ASTM (AMERICAN SOCIETY FOR TESTING AND MATERIALS)

B 370	Copper sheet and strip for building construction.
C 33	Concrete Aggregates.
C 40	Organic impurities in sand for concrete.
C 87	Effect of organic impurities in fine aggregates on of mortar.
C 88	Soundness of aggregates.
C 94	Ready mixed Concrete.
C 109	Compressive strength of hydraulic cement mortars.
C 117	Material finer than No.200 (0.075mm) sieve.
C 123	Light-weight pieces in aggregates.
C 125	Concrete and concrete aggregates.
C 127	Specific gravity and absorption of coarse aggregate.
C 128	Specific gravity and absorption of fine aggregate.
C 131	Resistance to abrasion of small size coarse aggregates.
C 136	Sieve or screen analysis of fine and coarse aggregate.
C 142	Clay lumps and friable particles in aggregates.
C 143	Slump of Portland Cement Concrete.
C 144	Aggregate for masonry mortar.
C 150	Portland Cement.
C 156	Water retention by concrete curing material
C 171	Sheet material for curing concrete.
C 185	Air content or hydraulic cement mortar.
C 188	Density of hydraulic cement.
C 191	Time of setting of hydraulic cement by vicat needle.
C 260	Air entraining admixtures for concrete.
C 289	Potential reactivity of aggregate.
C 309	Liquid membrane-forming compounds for curing concrete.
C 330	Lightweight aggregates for structural concrete.
C 331	Lightweight aggregates for concrete masonry.
C 332	Lightweight aggregates for insulating concrete.
C 494	Chemical admixtures for concrete.
C 535	Resistance to abrasion of large size coarse aggregates.
C 567	Unit weight of structural lightweight concrete.
D 75	Aggregate sampling.
D 994	Preformed expansion joint filler for concrete.
D 1190	Concrete joint sealer (hot poured elastic type).
D 1751	Preformed expansion joint filler for concrete paving and structural construction.
D 1752	Preformed sponge rubber and cork expansion joint fillers for concrete paving and structural construction.
D 1850	Concrete joint sealer (cold application type).
E 11	Wire cloth sleeves for testing purposes.
E 96	Water vapor transmission of materials in sheet form.
E 154	Materials for use as vapor barrier under concrete slabs.
E 337	Relative humidity by wet and dry bulb psychrometer.

2.2 ACI (AMERICAN CONCRETE INSTITUTE)

211.1 Recommended practice for selecting proportions for normal and heavy weight concrete.
214 Recommended practice for evaluation of strength test result of concrete
301 Specifications for structural concrete for buildings.
304 Recommended practice for measuring, mixing, transporting and placing concrete.
305 Hot weather concreting.
308 Recommended practice for curing concrete.
309 Recommended practice for consolidation of concrete.
318 Building code requirements for reinforced concrete.
347 Recommended practice for concrete formwork.
512 Pre-cast structural concrete in building.
517 Low pressure steam curing.
533 Fabrication, handling and erection of pre-cast concrete wall panels.

2.3 BRITISH STANDARDS

BS 12	Portland cement, ordinary and rapid hardening.
BS 410	Test Sieves.
BS 812	Methods for the sampling and testing of mineral aggregates, sands and fillers.
BS 882	Coarse and fine aggregates from natural sources.
BS 1305	Batch Mixer.
BS 1881	Methods of testing and sampling concrete.
BS 3148	Tests for water for making concrete.
BS 3837	Expanded polystyrene boards.
BS 5328	Structural Concrete.,
BS 3869	Rigid expanded polyvinyl chloride for thermal insulation.
BS 3927	Phenolic foam materials for thermal insulation and building applications.
BS 4027	Sulphate-resisting Portland cement.
BS 8110	Structural use of concrete.
CP 114	Structural use of reinforced concrete in buildings.
CP 116	Structural use of precast concrete.
CP 5337	The structural use of concrete for retaining aqueous liquids.

In addition, the latest editions of other Pakistan and British Standards, American Concrete Institute Standards, American Society for Testing and Materials Standards and other Standards as may be specified by the Engineer for special Materials and Construction are also relevant.

3. SUBMITTALS

3.1 Suitable templates or instructions or both shall be provided for setting out items not placed in the forms. Embedded items and other materials for mechanical and electrical operations shall have been completed, inspected, tested and approved before concrete is placed.

3.2 For special concrete finish and for special methods of construction (e.g. slip forms) formwork shop drawings shall be designed and prepared by the Contractor, at his own cost. Approval of shop drawings as well as that of actual samples of concrete finish shall be obtained before work is commenced.

3.3 The Contractor shall supply to the Engineer at fortnightly intervals, test certificates with the appropriate standard in respect of the samples of cement from the work-site. These tests shall be carried out in a laboratory approved by the Engineer.

3.4 The grading of the coarse and fine aggregates shall be tested at least once for every 100 tons supplied, to ensure that the grading is uniform and same as that of the samples used in the preliminary tests.

3.5 Where doubt exists as to the suitability of the water, it shall be tested in accordance with BS 3148.

3.6 The Contractor shall provide Mix design by weight for each class of concrete.

Manufacture 12 test cubes for each 3 mix design batches (6 x 6 x 6) inches in accordance with the Mix design batching by weight and test 3 cubes each at 3,7,14 & 28 days intervals in the presence of Engineer's Representative and submit all relevant data and results of tests for approval of the Engineer. The Contractor shall obtain approval from the Engineer in writing for each Mix design before producing the actual concrete for the Works.

3.7 'Workability' of Concrete shall be determined by either the slump or compaction factor tests as directed by the Engineer and these shall be performed in accordance with the methods given ASTM C 143.

The slump or compaction factor for each class of concrete shall be determined during the preliminary Test mixes and the value obtained shall not be modified without the written consent of the Engineer.

3.8 Manufacturer's recommendations and instructions along with the sample of material shall be submitted to the Engineer for his approval.

3.9 The Contractor shall, at his own cost, make optimum mix design and testing for approval of the composition of Non Shrinking grout and Non Shrink second stage Concrete Grout, prior to Commencement of the work.

3.10 The Contractor shall be required to submit a sample of pre-cast unit for the approval of the Engineer; all pre-cast units shall strictly conform to the approved sample. The proposal for transporting and erecting pre-cast units in position shall also be submitted by the Contractor for the approval of the Engineer.

4. MATERIALS

4.1 Aggregates

4.1.1 The sources of supply of all fine and coarse aggregates shall be subject to the approval of the Engineer.

4.1.2 All fine and coarse aggregates shall be clean and free from clay, loam, silt and other deleterious matter. If required, the Engineer reserves the right to have them washed by the Contractor at no additional expense. Coarse and fine aggregates shall be delivered and stored separately at site. Aggregates shall not be stored on muddy ground or where they are likely to become dirty or contaminated.

4.1.3 Fine aggregate shall be hard coarse sand, crushed stone or gravel screenings and shall conform to requirements of PS 243 and/or BS 882 and/or ASTM C 33. Only fine aggregate of grading zones 1 to 3 (BS 882) shall be used.

4.1.4 Coarse aggregate shall be gravel or crush stone of hard, durable material free from laminated structure and conforming to PS 243 and/or BS 882 and/or ASTM C 33 graded as follows for use in mass concrete as in foundations:

Total Passing B.S. Sieve			**Percent by weight**
2 in.	(50.0 mm)	:	100
1.5 in.	(37.50 mm)	:	95-100

3/4 in.	(19.00 mm)	:	35-70
3/8 in.	(9.50 mm)	:	10-30
No. 4	(4.75 mm)	:	0-5

Coarse aggregate for all cast-in-place concrete other than mass concrete as for foundations shall be graded with the following limits:

Total Passing B.S. Sieve			**Percent by weight**
1.0 in.	(25.00 mm)	:	100
3/4 in.	(19.00 mm)	:	90-100
3/8 in.	(9.50 mm)	:	20-55
No. 4	(4.75 mm)	:	0-10
No. 8	(2.36 mm)	:	0-5

4.1.5 Wherever feasible, the nominal maximum size of aggregate for cast- in- place reinforced concrete slabs and other members shall be 3/4 inch. If there are difficulties in placing such concrete the maximum size may be restricted to 1/2 inch provided the requirements for strength are satisfied. The grading requirements of 1/2 inch or 3/8 inch down aggregate shall be agreed to with the Engineer as per relevant ASTM/BS standards.

4.1.6 The nominal maximum size of the aggregate for precast concrete shall not be larger than one fifth of the narrowest dimension between sides of forms, or one-third of the depth of slabs or three-fourths of the minimum clear distance between reinforcing bars or between bars and forms, whichever is least. In Precast columns the nominal maximum size of the aggregate shall be limited as above but shall not be larger than two-thirds of the minimum clear distance between bars.

4.1.7 Coarse aggregates in precast concrete of normal weight may be of one maximum size for all concrete placed in 1 day when quantities to be placed are too small to permit economical use of more than one mix design.

When a single mix design is so used, the maximum nominal size shall be as required for the most critical condition of concreting, in accordance with the requirements of clause (4.1.6) above.

4.1.8 For use in fireproof concrete, the aggregates shall be fire clay and semi-acidic fine ground. The use of broken fire clay bricks as coarse aggregate and waste of semi-acidic refractory particles as fine aggregate can be allowed.

4.2 CEMENT

4.2.1 The cement shall be fresh and of approved origin and manufacture. It shall be one of the following as may be specified by the Engineer.

- Ordinary or Rapid Hardening Portland cements complying with the requirements of PS 232 or BS 12 or ASTM C 150.

- Sulphate Resisting Portland/Cement complying with the requirements of PS 612 or BS 4027 or ASTM C 150.

4.2.2 Unless otherwise specified, ordinary Portland cement complying with the requirements of BS 12 shall be used.

4.2.3 For all fair faced concrete it will be necessary to use approved cement with a view to obtain light shade concrete as approved by the Engineer.

4.2.4 Only one brand of each type of cement shall be used for concrete in any individual member of the structure. Cement shall be used in the sequence of receipt of shipment, unless otherwise directed.

4.2.5 There shall be sufficient cement at site to ensure that each section of work is completed without interruption.

4.2.6 Cement reclaimed from cleaning of bags or from leaky containers shall not be used.

4.2.7 Cement shall be used as soon as possible after delivery and cement which the Engineer considers has become stale or unsuitable through absorption of moisture from the atmosphere or otherwise shall be rejected and removed immediately from the site at the Contractor's expense. Any cement in containers damaged so as to allow the contents to spill or permitting access of the atmosphere prior to opening of the container at the time of concrete mixing shall be rejected and removed immediately from the site at the Contractor's expense.

4.2.8 The mixing together of different types of cement will not be permitted.

4.3 WATER

Only clean water from the city supply, tube well installed at the site or from other sources approved by the Engineer shall be used. The Contractor shall supply sufficient water for all purposes, including mixing the concrete, curing and cleaning plant and tools. Where water can be shown to contain any sugar or an excess of acid, alkali or salt, the Engineer may refuse to permit its use.

In case of doubt, the Engineer may require that concrete mixed with water proposed to be used should not have a compressive strength lower than 90 percent of the strength of concrete mixed with distilled water.

4.4 ADDITIVE

All additives such as foaming and water proofing agents shall be from a manufacturer approved by the Engineer.

Air Entraining Admixtures shall conform to ASTM C 260. Other Admixtures shall conform to ASTM C 494.

4.5 NOMINAL CONCRETE MIXES

4.5.1 Proportions of Mix

a) Cement and aggregates:

Cement, fine aggregate and the coarse aggregate shall be weighed separately. The proportions of cement to fine aggregate and coarse aggregate shall be adjusted so as to provide the concrete of the required crushing strength when tested as set out in Table 1.

b) The Contractor shall regulate and arrange mixing of the ingredients for the designed mix of the concrete by weight batching. The cost of designing the mix shall be borne by the Contractor.

c) Water/Cement ratio:

The quantity of water used shall be just sufficient to produce dense concrete of adequate strength and workability for its purpose. For all

external work and foundations the water/cement ratio should not exceed 0.55 for concrete Class A, B and C.

d) Workability:

The workability shall be controlled by direct measurement of the water content, allowance being made for any water in the fine and coarse aggregates. The concrete shall be just sufficiently workable to be placed and compacted, without difficulty, by the available means.

Unless otherwise permitted or specified, the concrete shall be proportioned and produced to have a slump of 3 inch or less for consolidation by vibration. A tolerance of upto 1 inch above the indicated maximum shall be allowed for individual batches provided the average for all batches or the most recent 10 batches tested, which ever is fewer, does not exceed the maximum limit. Concrete of lower than usual slump may be used provided it is properly placed and consolidated.

4.5.2 Strength requirements for concrete

a) Concrete made with Portland cement shall comply with the strength requirements of Table 1, columns 5 & 7 (Works Test).

Table 1: Strength requirements for Portland concrete with aggregates complying with BS. 882.

Class of Concrete (kg)	Nominal Design Mix	Min Cement per Cu.ft of compacted concrete (lb.)	Cube strength at 28 days after mixing & pouring (psi)		Alternative Cube strength at 7 days after mixing & pouring (psi)		Maximum water consumption per 110 lb. bag of cement (gallon)
			Preliminary tests	Works tests	Preliminary tests	Works tests	
1	2	3	4	5	6	7	8
A	1:1:2	30.00	5800	4350	3875	2900	4.40
B	1:1-1/2:3	22.00	4900	3750	3300	2450	5.06
C	1:2:4	18.00	4000	3000	2700	2000	5.28
D	1:3:6	13.00	2000	1550	1350	1000	7.05
E	1:4:8	9.50	------	1000	------		7.27

Note: Conversion Factors. 1 psi = 006897 MPa 1 gal = 4.54 liter
1 lb. = 0.4537 Kg.
1cu.ft. = 0.028 cum.

b) The strengths given in Table 1 are based on the assumption that average temperature is 20 degree C. Where accurate records of temperature are kept, allowance may be made for change of temperature or the cubes may be tested at the equivalent maturity.

c) All structural concrete shall conform to BS 5328.

4.6 PVC WATER STOP/HYDROFOIL

All PVC water stops/hydrofoil shall be central bulb type from a manufacturer approved by the 'Engineer'. The specific gravity of PVC water stop/hydrofoil shall not be less than 1.37 and full stretch Break cut intensity when tested at normal temperature shall not be less than 1875 psi.

The material shall have a modulus of rigidity of 850 psi at +10° C and 10,500 psi. at 20° C.

4.7 NON-SHRINK GROUT:

Grout for placement under base and bearing plates of machinery and equipment, for grouting anchor bars and dowels and for similar uses shall be as follows:-

4.7.1 Composition

a) Non-shrink grout of less than 1-inch thickness shall consist of one part Portland cement and one part of clean sharp sand conforming to the requirements of these specifications and 1:22,000 to 1:15000 part of grained aluminum powder containing non-polishing agent.

b) Non-shrink grout of 1 inch or more in thickness shall be proportioned as above except that 1-1/2 parts of 3/8 inch to 1/4 inch pea gravel shall be added.

c) The above-specified composition may be varied if required by the Engineer.

d) Proportioning shall be done by weight.

e) Mixing water shall be proportioned so as to provide a flow able mixture without segregation or bleeding. Dry packing will not be permitted.

4.8 NON-SHRINK SECOND STAGE CONCRETE GROUT

Non-shrink second stage concrete grout shall be provided and placed in position where shown on the Drawings or as directed by the Engineer. Non-shrink concrete mix proportion shall be one part cement two parts coarse clean sand and four parts of coarse aggregates meeting the requirements of these specifications and 1:22,000 to 1:15000 part of grained aluminum powder containing non-polishing agent. Proportioning shall be done by weight.

The above-specified composition may be varied if required by the Engineer.

4.9 VAPOUR BARRIER

Vapour barrier shall be polyethylene building film, visqueen standard or approved equal. The film shall be 150 micron thick (100 gauge). The quality of material shall be approved by the Engineer prior to use in the works.

4.10 All materials for use in the expansion joints shall have prior approval of the Engineer before placing order for supply.

5. DELIVERY, STORAGE AND HANDLING

5.1 Except where it can be shown to the satisfaction of the Engineer that a supply of properly graded aggregate of uniform quality can be maintained over the period of the work, the grading of the aggregates shall be controlled by obtaining the 3/4" maximum nominal size, the different sizes being stocked in separate stock piles and recombined in the correct proportion for each batch at the batching plant. The materials shall be stockpiled for a period before use so as to drain nearly to constant moisture content (as long as site and other conditions permit, preferably for at least a day).

5.2 The Contractor shall provide and erect (at his cost) a suitable plain, dry, well ventilated, weatherproof and water proof shed of sufficient capacity to store the cement.

6. EXECUTION

6.1 CAST-IN-SITU CONCRETE WORK

6.1.1 Batching

a) All cement, including cement supplied in bulk, shall be batched by weight. A bag of cement may be taken as weighing 110 lb. with the prior approval of the Engineer.

b) Aggregates shall be batched by weight, due allowance being made for water content. Aggregates may be batched by volume through conversion of weigh batching, only with the prior permission of the Engineer. The apparatus for weight batching may be an integral part of the mixer or a separate unit of a type approved by the Engineer. It shall be accurate within 2% and shall be checked for accuracy at least once a week.

c) The quantity of additives i.e. foaming and water proofing agents etc. shall be as prescribed by the manufacturer or as directed by the Engineer.

d) Where the batching plant is of the type in which cement and aggregates are weighed in the same compartment, the cement shall be introduced into the compartment between two sizes of aggregates.

e) Each batch shall be so charged into the mixer that some water will enter in advance of the cement and aggregates. Water shall continue to flow for a period, which may extend to the end of the first 25 percent of the specified mixing time. Controls shall be provided to prevent batched ingredients from entering the mixer before the previous batch has been completely discharged.

6.1.2 Mixing

a) The concrete shall be mixed in an approved batch mixer conforming to the requirements of BS 1305. It shall be fitted with the manufacturer's plate stating the rates, capacity and the recommended number of revolutions per minute and shall be operated in accordance therewith. It shall be equipped with a suitable charging mechanism and an accurate water-measuring device. The mixer shall be capable of thoroughly combining the aggregates, cement and water into a uniform mass within the specified mixing time and of discharging the concrete without harmful segregation.

b) Mixing shall continue for the period recommended by the mixer manufacturer or until there is apparently a uniform distribution of the materials and the mass is uniform in colour, whichever period is longer. If it is desired to use a mixing period of less than 1-1/2 minutes, the Engineer's approval shall be obtained in writing.

c) Controls shall be provided to ensure that the batch cannot be discharged until the required mixing time has elapsed. At least three quarters of the required mixing time shall take place after the last of the mixing water has been added.

d) The interior of the mixer shall be free of accumulations that will interfere with mixing action. Mixing blades shall be replaced when they have lost 10 percent of their original height.

e) Concrete shall be mixed only in quantities for immediate use. Concrete which has set shall not be retempered, but shall be discarded.

6.1.3 Transporting

a) The concrete shall be transported from the place of mixing to the place of final deposit as rapidly as practicable by means, which will prevent segregation or loss of ingredients. All skip vehicles, or containers used for transporting the concrete shall be thoroughly cleaned.

b) During hot or cold weather, concrete shall be transported in deep containers, on account of their lower ratios of surface area to mass, which reduces the rate of loss of water, by evaporation during hot weather and loss of heat during cold weather.

6.1.4 Placing

a) Before placing of concrete, formwork shall have been completed; water shall have been removed; reinforcement shall have been secured in place; expansion joint material, anchors and other embedded items shall have been kept in position; and the entire preparation shall have been approved by the Engineer.

No concrete is to be placed into the foundation trenches until the ground to receive the same has been examined and approved by the Engineer for this purpose.

b) The actual sequence of construction proposed by the Contractor shall be subject to the Engineer's approval before construction starts on any part of the structure, and this sequence shall not be varied without the Engineer's approval.

c) The concrete after it has been mixed shall be placed as soon as it is practicable. Once the concrete has left the mixer, no more water shall be added, although the concrete may be mixed or agitated to help maintain workability. The concrete shall not be used if, through any cause, the workability of the mix at the time of placing is too low for it to be compacted fully and to an acceptable finish by whatever means available.

The time between mixing and placing should be reduced, if the mix is richer or the initial workability of the mix is lower than normal, or if a rapid hardening cement or an accelerator is used, or if the work is carried out at a high temperature or exposed to a drying atmosphere.

The Contractor shall ensure that the delay between mixing and placing including consolidation does not exceed 45 minutes under any circumstances. Any concrete which does not satisfy this requirement shall be rejected.

d) Concrete shall be deposited as nearly as possible in its final position to avoid segregation due to rehandling or flowing. In no circumstances may concrete be railed or made to flow along the forms by the use of vibrators.

e) The free fall of concrete shall not be allowed to exceed 6 feet. Where it is necessary for the concrete to be lowered more than this depth, it is not to be dropped into its final position, but shall be placed through pipes fed by a hopper. When a pipe is used for placing concrete the lower end shall be kept inside or close to the freshly deposited

concrete. The size of the pipe shall be not less than 9 inch in diameter.

f) The workmen carrying concrete to the site, and all other workmen moving about on the reinforcement before the concrete is placed, shall move only along runways or planks placed for the purpose and no person shall be allowed to walk on the reinforcement itself.

g) Prior to the laying of concrete on load bearing masonry walls, bearing plates and at other points, as may be directed by the Engineer, the surface will be brought to a true, hard and smooth level surface using cement sand mortar in the ratio of 1 volume of cement to 3 volumes of sand. Two layers of building paper weighing .082 lb./ft^2 will then be laid flat to separate the concrete from the surface on which it is to be laid.

h) Concrete shall be deposited continuously, or in layers of such thickness that no concrete will be deposited on concrete, which has hardened sufficiently to cause the formation of seams or planes of weakness within the section. If a section cannot be placed continuously, construction joints shall be located as shown in the Contract Documents or as approved by the Engineer. Placing shall be carried out at such a rate that the concrete which is being integrated with fresh concrete is still plastic. Concrete which has partially hardened shall not be deposited. Temporary spreaders in forms shall be removed when the concrete placing has reached an elevation rendering their services unnecessary. They may remain embedded in the concrete only if made of metal or concrete and if prior approval has been obtained.

i) Every Contractor whose work is related to the concrete or services or must be supported by it shall be given ample notice and opportunity to introduce and/or furnish embedded items before the concrete is placed.

6.1.5 Construction Joints

a) Construction Joints not shown on the drawings shall be so made and located as to least impair the strength of the structure and shall need prior approval of the Engineer. In general, they shall be located near the middle of the spans of slabs and beams unless a secondary beam intersects a main beam at this point, in which case the joint in the main beam shall be offset a distance equal to twice the width of the secondary beam. Joints in walls and columns shall be at the underside of floors, slabs or beams and at the top of footings or floor slabs. Beams, brackets, columns capitals, haunches and drop panels shall be placed at the same time as slabs. Joints shall be perpendicular to the main reinforcement.

b) All reinforcing steel shall be continued across joints. Keys and inclined dowels shall be provided as directed by the Engineer. Longitudinal keys at least 1-1/2 inches deep shall be provided in all joints in walls and between walls and slabs or footings.

c) When the work has to be resumed on a surface which has hardened, such surface shall be roughened in an approved manner which will expose the aggregate uniformly and will not leave laitance, loosened particles of aggregate or damaged concrete at the surface.

d) The hardened concrete of construction joints and of joints between footings and walls or columns, between walls or columns and beams

or floors they support, joints in un-exposed walls and all others not mentioned herein shall be dampened (but not saturated) immediately prior to placing of fresh concrete.

e) The hardened concrete of joints in exposed work, joints in the middle of beams, and slabs; and joints in work designed to contain liquids shall be dampened (but not saturated) and then thoroughly covered with a coat of cement grout similar in proportions to the mortar in the concrete. The grout shall be as thick as possible on vertical surfaces and at least 1/2 inch thick on horizontal surfaces. The fresh concrete shall be placed before the grout has attained initial set.

f) Where the concrete has not fully hardened, all laitance shall be removed by scrubbing the wet surface with wire or bristle, and brushed, care being taken to avoid dislodgment of particles of aggregate. The surface shall then be coated with neat cement grout. The first layer of concrete to be placed on this surface shall not exceed 6 inch in thickness, and shall be well rammed against old work, particular attention being paid to corners and closed spots.

g) Stop ends for movement joints or construction joints shall be made by splitting them along the lines of reinforcement passing through them, so that each portion can be positioned and removed separately without disturbance or shock to the reinforcement or the concrete. Stop ends made of expanded metal or similar material may only be left permanently in the concrete with prior written approval of the Engineer. Where such stop ends are used, no metal may be left permanently in the concrete closer to the surface of the concrete than the specified cover to the reinforcement.

6.1.6 Expansion Joints

Expansion joints shall be provided wherever indicated on the Drawings or as directed by the Engineer. In no case shall the reinforcement, corner protection angles, or other embedded items be permitted to extend continuously through any expansion joint.

All expansion joints shall be carefully placed so as not to be displaced during concreting. The method of placing the expansion joints shall be strictly in accordance with the Drawings and/or as directed by the Engineer.

6.1.7 Placing and Connection of Water-Stops

The water-stops and expansion joint material shall be positioned accurately and supported against displacement as shown on the drawings.

6.1.8 Electric Conduits and Pipes

a) Electric conduits and other pipes which are planned to be embedded shall not, with their fittings, displace more than four percent of the area of the cross section of a column on which stress is calculated or which is required for fire protection. Sleeves, conduits, or other pipes passing through floors, walls, or beams shall be of such size or in such location as not to impair unduly the strength of the construction; such sleeves, conduits, or pipes may be considered as replacing structurally in compression the displaced concrete, provided that they are not exposed to rusting or other deterioration, are of uncoated or galvanized iron or steel not thinner than standard steel pipe, have a nominal inside diameter not over 2 inch and are spaced not less than three diameters on centres. Except when plans of conduits and pipes are approved by the Engineer, embedded pipes and conduits other than those merely passing through, shall not be larger in outside diameter than one third

the thickness of the slab, wall, or beams in which they are embedded nor so located as to impair unduly the strength of the construction. Sleeve pipes, or conduits of any material not harmful to concrete and within the limitations of this section may be embedded in concrete with the approval of the Engineer provided they are not considered to replace the displaced concrete.

b) All sleeves, inserts, anchors, and embedded items required for adjoining work or for its support shall be placed prior to concreting. Voids in sleeves, inserts and anchor slots shall be filled temporarily with readily removable material to prevent the entry of concrete into the voids.

6.1.9 'Mass-concrete' shall be placed in layers approximately 18 inch thick. Vibrator heads shall extend into the previously placed layer.

6.1.10 Consolidation

a) All concrete shall be consolidated by vibration, spading, rodding or forking so that the concrete is thoroughly worked around the reinforcement, around embedded items and into corners of forms, eliminating all air or stone pockets which may cause honeycombing, pitting, or planes of weakness. Internal vibrators shall have a minimum frequency of 8000 vibrations per minute and sufficient amplitude to consolidate the concrete effectively. They shall be operated by competent workmen. Use of vibrators to transport within forms shall not be allowed. Vibrators shall be inserted and withdrawn at points approximately 18 inch apart. At each insertion, the duration shall be sufficient to consolidate the concrete but not excessive so as to cause segregation, generally from 5 to 15 sec. A spare Vibrator shall be kept on the job site during all concrete placing operations.

Where the concrete is to have an as-cast finish, a full surface of mortar shall be brought against the form by the vibration process, supplemented, if necessary, by spading to work the coarse aggregate back from the formed surface.

b) If there is any tendency for the mix to segregate during consolidation, particularly if this produces excessive laitance, the mix proportions shall be modified to effect an improvement in the quality of the concrete to the satisfaction of the Engineer and in conformity with the provisions of Clause 5.

c) Vibrator shall not be allowed to contact the formwork for exposed concrete surfaces.

d) Mechanical vibrators shall be of a type suited in the opinion of the Engineer to the particular conditions.

e) Over-vibration or vibration of very wet mixes is harmful and should be avoided.

6.1.11 Curing and Protection

a) Beginning immediately after placement, concrete shall be protected from premature drying, excessively hot or cold temperatures and mechanical injury and shall be maintained with minimum moisture loss at a relative constant temperature for the period necessary for hydration of the cement and hardening of the concrete. The materials and methods of curing shall be subject to approval of the Engineer.

b) For concrete surfaces not in contact with forms, one of the following procedures shall be applied immediately after completion of placement and finishing:

- Ponding or continuous sprinkling.

- Application of absorptive mats or fabric kept continuously wet.

- Application of waterproof sheet materials approved by the Engineer.

- Application of other moisture-retaining covering as approved.

- Application of a curing compound conforming to ASTM C 309.

The compound shall be applied in accordance with the recommendations of the manufacturer immediately after any water sheen, which may develop after finishing has disappeared from the concrete surface. It shall not be used on any surface against which additional concrete or other material is to be bonded unless it is proved that the curing compound will not prevent bond, or unless positive measures are taken to remove it completely from areas to receive bonded applications.

c) Moisture loss from surfaces placed against wooden forms or metal forms exposed to heating by the sun shall be minimized by keeping the forms wet until they can be safely removed. After form removal the concrete shall be cured until the end of the time prescribed for curing.

d) Curing in accordance with sub-clause ‘a’ & ‘b’ above shall be continued for at least 10 days in the case of all concrete except concrete with rapid-hardening Portland Cement for which the period shall be at least 3 days. Alternatively, if tests are made of cubes kept adjacent to the structure and cured by the same methods, moisture retention measures may be terminated when the average compressive strength has reached 70 percent of the minimum specified works cube strength. If one of the first four curing procedures of sub-clause ‘b’ is used initially, it may be replaced by one of the other procedures of that sub-clause any time after the concrete is one day old provided the concrete is not permitted to become surface dry during the transition.

e) When the mean daily outdoor temperature is less than 5 degree C (41 deg. F) temperature of the concrete shall be maintained between 10 and 20 degrees C (50 to 68 deg. F) for the required curing period of sub-clause‘d’.

When necessary, arrangements for heating, covering insulation or housing the concrete work shall be made in advance of placement and shall be adequate to maintain the required temperature without injury due to concentration of heat. Combustion heaters shall not be used during the first 24 hours unless precautions are taken to prevent exposure of the concrete to exhaust gasses, which contain carbon dioxide.

f) During hot weather when necessary, provision for wind-brakes, shading for spraying, sprinkling, ponding or wet covering with a light coloured material shall be made in advance of placement. Such protective measures shall be taken as quickly as concrete hardening and finishing operation will allow.

g) Changes in temperature of the air immediately adjacent to the concrete during and immediately following the curing period shall be kept as uniform as possible and shall not exceed 3 deg. C (37 deg. F) in any one hour or 10 degree C (50 deg. F)in any 24 hour period.

h) During the curing period, the concrete shall be protected from damaging mechanical disturbances, such as load stresses, heavy shock and excessive vibrations. All finished concrete surfaces shall be protected from damage by construction equipment, materials or methods by application of curing procedures, and by rain or running water. Self-supporting structures shall not be loaded in such a way as to over stress the concrete.

6.1.12 Application of Non-Shrink Grout

a) Concrete surfaces to receive non-shrinking grout shall be roughened, cleaned and dampened.

b) Form shall be provided to retain the grout until sufficiently hard to support itself.

c) Grout shall be poured in place and thoroughly rodded or washed to prevent the formation of voids.

d) After non-shrink grout has received its initial set, it shall be kept damp for 24 hours.

6.1.13 Placing of Vapour Barrier

Vapour barrier shall be laid in position wherever shown on the Drawings.

The material shall be supplied in rolls and laid by rolling over the prepared surface at the levels and position in the areas shown on the Drawings. Where joint is necessary at the side or end of a sheet, this shall be a double weld folded joint made by placing the edges together and folding over twice continuously taking the top edge prior to concreting. The Contractor shall protect the film sheets from damages during laying and subsequent operations and shall replace at his own cost all damaged film sheets to the satisfaction of the Engineer.

6.2 WORKS IN EXTREME WEATHER

6.2.1 Unless adequate protection is provided and approval is obtained from the Engineer, concrete shall not be placed during rain.

Rainwater shall not be allowed to increase the mixing water nor to damage the surface finish.

6.2.2 When the temperature of the surrounding air is expected to be below 5 deg. C during placing or within 24 hours thereafter, the temperature of the plastic concrete, as placed, shall be no lower than 13 deg. C for sections less than 12 inch in any dimension nor 10 deg. C for any other sections.

When necessary, concrete material should be heated before mixing and carefully protected after placing, in general, heating or mixing water alone to about 60 deg. C may be sufficient for this purpose. Dependence should not be placed on salt or other chemicals for the prevention of freezing. No frozen material or materials, containing ice shall be used. All concrete damaged by frost shall be removed. It is recommended that concrete exposed to the action of freezing weather should have entrained air and the water content of the mix should not exceed 5.5 gallon/bag of cement.

If water or aggregate is heated above 38 deg. C the water shall be combined with the aggregate in the mixer before cement is added. Cement shall not be mixed with water or with mixtures of water & aggregate having a temperature greater than 38 deg. C.

6.2..3 During hot weather, the temperature of the concrete as placed shall not be so high as to cause difficulty from loss of slump, flash set, or cold joints and should not exceed 32 deg. C. For massive concrete, this temperature should not exceed 21 degree C. When the temperature of the concrete exceeds 32 degree C, precautionary measures approved by the Engineer shall be put into effect. When the temperature of the steel is greater than 50 deg. C, steel forms and reinforcement shall be sprayed with water just prior to placing the concrete. The ingredients shall be cooled before mixing, or flaked ice or well crushed ice of a size that will melt completely during mixing may be substituted for all part of the mixing water if, due to high temperature, low slump, flash set or cold joints are encountered.

Other precautions recommended by ACI Standard 305-72 shall also be adopted.

6.3 PRE-CAST CONCRETE

Pre-cast concrete units shall be fair faced, cast to the sizes and dimensions as indicated on the Drawings. The concrete used for pre-cast units shall conform to the specifications laid down for cast in situ reinforced cement concrete unless otherwise required and directed by the Engineer.

Pre-casting platform of the size and at the location approved by the Engineer shall be constructed. The concrete in one pre-cast unit shall be placed in one operation, in accordance with the details shown on the Drawings.

The material and design of formwork and the method of pre-casting the units shall be approved by the Engineer. The erection/installation and removal of the pre-cast units from the pre-casting platform shall not be permitted until and unless they are properly cured to the satisfaction of the Engineer.

All pre-cast units shall be smoothly finished to the required lines, grades, angles, etc. Holes, grooves, pockets and hooks shall be provided as shown and/or as directed by the Engineer. The units shall be properly stacked on a platform without causing any cracks and damages. Curing of all the pre-cast units shall be done in accordance with the relevant BS code/approval of the Engineer.

6.3.1 Erecting Pre-cast Units

All the pre-cast units shall be transported and erected into position in a manner as approved by the Engineer.

6.3.2 Lifting Beams

The Contractor shall use lifting beams at his own cost for erecting pre-cast members where the Engineer so directs. Lifting beams shall be supplied and erected by the Contractor, at his own cost, at all points where lifting is necessary for maintaining the plant but is inaccessible to mobile cranes or, alternatively, covered by overhead traveling cranes. The Contractor, however, is to supply the trolleys and erect them on the lifting beams, and to test operation of installed equipment.

6.4 CEMENT CONCRETE PAVEMENTS

Full co-operation shall be given to trades like electrical, mechanical and other services. For all concrete work relevant specifications of this section shall apply.

6.4.1 Side Forms and Construction

Side forms shall be of steel or any other suitable material and of a design as approved by the Engineer.

In general, only materials and methods that have proved their acceptability by past performance will be considered. All form shall be constructed so that they can be removed without hammering or prying against the concrete.

Horizontal joints in the forms will not be permitted. Forms shall be thoroughly cleaned and oiled with linseed/mineral oil shall be given two coats of niter-cellulose lacquer each time they are used.

The forms shall be set on a thoroughly compacted base true to line and level and firmly secured in position by appropriate methods. Conformity with the alignment and levels shown on the Drawings shall be checked as and when required by the Engineer. Where necessary corrections shall be made immediately before placing the concrete; where any form has been disturbed it shall be reset and rechecked.
Pavements shall be constructed in panels of sizes as shown on the Drawings. The panels shall be laid alternately, the adjoining panels being concreted when the side forms are struck and the jointing materials placed, inspected and approved by the Engineer. Each panel is to be concreted in one operation and no interruptions shall be permitted during the operation. The concrete shall be tipped from the trolley slightly in advance of the working place and then shoveled into position. The spreading shall be carried out very carefully. Compaction shall be done by means of vibro-compactors of approved surface vibrators. If a vibro-compactor is used, if shall be operated on the concrete and will not be allowed to strike or displace the forms. The spreading and compacting of the successive layers shall proceed without interruptions and as quickly as practicable so as to ensure that the slab is monolithic throughout its depth.

The wearing surface shall be laid while the base concrete is still wet and screeded to line and level. When the initial set takes place the surface shall be troweled smooth with a steel trowel to provide a dense closed surface.

All the joints shall be carefully formed as shown on the Drawings or as directed by the Engineer. The joint filler together with performed groove shall provide complete separation of adjacent slabs. The joints shall all be sealed with bitumen as shown on the Drawings and as directed by the Engineer.

6.4.2 Protection and Curing

- General Requirements:

  Concrete shall be protected adequately from injurious action by sun, rain, flowing water and mechanical injury, and shall not be allowed to dry form the time it is placed until the expiry of the minimum curing periods specified hereinafter. Water curing shall be accomplished by keeping the surface of the concrete continuously wet by covering with water or with approved water saturated covering. Where wood forms are left in place for curing, they shall be kept sufficiently damp at all times to prevent openings at the joints and drying out of the concrete. All portions of the structure shall be kept moist for the full curing periods, specified hereinafter.

When liquid membrane curing compound is used the surface of the concrete shall be protected form traffic or other abrasive action, which may break the membrane, for the full period of curing. The membrane curing compound shall be colourless or light coloured and shall be approved by the Engineer and shall comply with ASTM Designation C 309.

- Curing Periods

The curing period shall be at least 10 days, or as directed by the Engineer.

- Removal of Forms

The Contractor shall exercise great care in avoiding damage to joints, arises, dowel bars etc., while removing the forms. Under no circumstances will the use of pry bars between the forms and pavement be permitted. Side forms shall not be removed until at least 40 hours have elapsed from the time of completing the concreting of the slab, which they contain. In no case shall forms be removed until the concrete has hardened sufficiently to permit removal without damage to the concrete. Concrete work shall be protected from injury resulting from the storage or movement of material during construction.

6.4.3 Finishing

All unformed surfaces shall be finished with a wood float except as otherwise specified. Visible vertical surfaces shall have all projections and irregularities removed. The entire surface shall be rubbed if required by the Engineer, with a No. 16 carborundum brick, or other abrasive until even, smooth and of uniform appearance, and shall be shed clean. Plastering of surface, application of cement or other coating will not be permitted.

All exposed corners shall be chamfered, 1"x 1" (2.5 cms x 2.5 cms) unless otherwise mentioned or shown on the plans or directed by the Engineer. Concrete surfaces which will be covered with other materials shall be screeded without floating.

6.4.4 Spreading, finishing and floating of concrete in pavements

- General Requirements

The striking off, compacting and floating of concrete shall be done by mechanical methods, if approved by the Engineer. Where the Engineer determines that it is impracticable to use mechanical methods, manual methods of spreading, finishing and floating may be used on pavement lines as indicated on the Drawings.

- Mechanical Methods

The concrete shall be spread uniformly between the forms, immediately after it is placed, by means of an approved spreading machine. The spreader shall be followed by an approved finishing machine equipped with two oscillating or reciprocating screeds. The spreading machine or the finishing machine shall be equipped with vibrating equipment that will vibrate the concrete for the full paving width. Internal vibrators shall be used adjacent to the longitudinal edge of the pavement. These vibrators shall be attached to the rear of the spreading machine or to the finishing machine. Vibrators shall not rest on view pavements or side forms or in contract with any dowel bars and the arrangement of power supply to the vibrators shall be such

that when the motion of machine is stopped, vibration shall cease. The rate of vibration shall be not less than 8000 vibrations per minute. The concrete shall be spread to full width before being struck off and compacted so that the surface will conform to the finished grade and cross-section as shown on the plans and at the same time leave sufficient material for the floating operation. The spreading & finishing machine shall move over the pavement as many times and at such intervals as may be required by the Engineer to ensure thorough compaction.

Except as otherwise specified, after the pavement has been struck off and compacted, if shall be finished with an approved longitudinal float. The Contractor may use a longitudinal float composed of one or more cutting and smoothing floats suspended from and guided by rigid frame. The frame shall be carried by four or more visible wheels riding on and constantly in contact with the forms.

The contractor may use a longitudinal float which works with a sawing motion, while held in a floating position parallel to the road centre line and passing gradually from one side of the pavement to the other. Movements ahead, along the centre line of the road, shall be in successive advances of not more than half the length of the float.

Instead of using other type of longitudinal float a single machine, which will affect satisfactory compaction, finishing and floating may be used. This machine may be towed by a spreading machine. This combination, finishing floating machine shall be equipped with screeds and vibrators as hereinafter specified for spreading and finishing machine. Floating shall be accomplished by means of a non-oscillating float held in a suspended position form the frame.

If any spreading, finishing and floating equipment is not maintained in full working order or if the equipment as used by the Contractor proves inadequate to obtain the results prescribed, such equipment shall be improved or satisfactory equipment substituted or added at the direction of the Engineer.

- Manual Methods

When striking-off and compacting by manual methods is permitted, the concrete shall be leveled and then struck-off to such an elevation that, when properly compacted, the surface will conform to the required grade and cross-section. The strike board shall be moved forward with a combined longitudinal and transverse motion, the manipulation being such that neither ends is raised from the side forms during the process. While striking off, a slight excess of concrete shall be kept in front of the cutting edge at all times. Prior to tamping, the concrete along the forms shall be thoroughly spaded or vibrated. The entire area of pavement shall be tamped or vibrated a manner that will ensure maximum compaction. The concrete shall be brought to the required grade and shape by the use of a tamper consisting of a heavy plank whose length exceeds the width of the pavement by 1 foot or by the use of a mechanical vibrating unit spanning the full width of the spread. The tamper shall be constructed with properly trussed roads to stiffen it and prevent sag and shall be shod with a heavy strip or metal for a tamping surface. The tamper shall be moved with a combined tamping and longitudinal motion, raising it form side form and dropping it so that the concrete will be thoroughly compacted and rammed into place. A small surplus material is compacted and rammed into front of the tamper or vibrating unit and tamping or vibrating shall continue until the

true cross-section is obtained and the mortar flushes slightly to the surface.

On grades in excess of 5 percent where hand methods are permitted, a little strike board shall follow at a speed of 25 ft to 50 ft per hour back of the heavy strike board, and shall be used in the same way, so as to remove waves caused by flow of concrete.

Where hand tamping is permitted, not less than two strike boards or tampers shall be used for production in excess of 350 Cu.ft. After the concrete has been compacted, it shall be smoothed with a wooden float where necessary, as directed by the Engineer.

- Longitudinal Floating

Manual floats shall be at least 12 ft. in length not less than 6 inches in width and shall be properly stiffened to prevent bending or warping. In using the float, it shall be held parallel to centre line of the pavement at all time and shall be moved laterally across the pavement from one side or edge to the other until all high areas are cut down and floated into depressions, leaving a surface that is smooth and true to grade. Batch transverse passage of the longitudinal manual float shall lap the proceeding passage by half.

- First Straight Edge Testing

Immediately following final floating the entire area of the pavement shall be tested with a 10-ft. (approx. 3. meters) straight edge. Any depressions found shall be immediately filled with fresh concrete which shall be struck off compacted and finished. High areas shall be worked down and refinished. The straight edge testing and refloating shall continue until the pavement has the required surface contour.

- Burlap (Coarse Canvas) Dragging

After the first straight edge testing and when most of the water sheet has disappeared from the surface and just before the concrete becomes non-plastic, the surface shall be dragged with a strip of burlap (coarse canvas) 3 ft. to 10 ft. wide and having a length 4 ft. more than the width of the slab. The burl of shall be dragged along the surface of the pavement in a longitudinal direction. Burlap shall be clean and kept free from coatings of hardened concrete. It shall be moist at the time of use.

- Second Straight Edge Testing

After the concrete has hardened sufficiently to permit walking on it, the surface of the pavement shall again be tested with a 10-ft. straight edge. Any portion of the pavement which shows a variation from the testing edge of more than 1/8 inch shall be corrected by cutting, or shall be removed and replaced at the expense of the Contractor.

6.4.5 Expansion and Contraction Joints

i. All the expansion and contraction joints shall be carefully formed as shown on the Drawings or as directed by the Engineer. As regards dowel bars and joint assemblies, such stakes, brackets or other devices shall be used, as necessary to keep the entire joint assembly in true vertical and horizontal position. The joint filler together with the preformed groove shall provide complete separation of adjacent slabs. The joints shall all be sealed with the specified non-extruding sealing

compound set in a 3/4 inch wide preformed chase as shown on the Drawings. The preformed chase shall be thoroughly cleaned of all dust, debris, stones or other hard material prior to its sealing. The riser of all joints shall be rounded to a radius as shown on the Drawings before the concrete hardens.

ii The joints sealing compound shall be hot poured bitumen or approved sealing compound for concrete pavements complying with BS-2499 for hot tropical climates and heavy duty industrial site subject to severe exposure. All joints are to be filled with flexell expansion joint filler, or an approved elastic, compressible, durable and rot-proof equivalent of sufficient rigidity to enable it to be satisfactorily installed in the joint and resist deformation during the passage of the concreting equipment. The filler is to be of the same thickness as the joint width. Holes to accommodate the dowel bars shall accurately be drilled or punched out. Where shown on the Drawings, dowel bars of required diameter shall be placed at the specified spacing. The bars shall be lubricated with an approved lubricant. One end of the dowel bar at expansion joints shall be provided with a closely fitting sleeve 3 inch long, consisting of bitumen coated plastic or other approved material to permit expansion. A loose plug 1 inch deep of approved compressible filling material shall be inserted into the sleeve as shown on the Drawings at the end of the bar. All the dowel bars shall be mild steel bars of the size shown on the Drawings and shall conform to the requirements as specified in the section 'Concrete.

iii Contraction joints shall be provided as shown on the Drawings.

The assembly and method of constructing the expansion joints/contraction joints shall be subject to the approval of the Engineer.

In general all PVC water stops/hydrofoil shall be placed in the centre of the structural member. Each piece of the water stop-hydrofoil shall be of maximum practicable length. An ordinary sharp knife saw or any other sharp tool can be used to cut the water stop. Joints at inter sections and at ends of pieces shall be made in the manner most appropriate to the material being used. Joints shall develop effective water tightness fully equal to that of the continuous water stop material and shall permanently retain their flexibility. For straight line connection-melting method of connection can be used by passing two water stops intended for connection against a heated iron or copper sheet. When they are melted, the two are combined.

After joining, the water stop should be allowed to cool.

For all other connections such as T-type or L-type, the welding method of joining should be used. Welding rod of same material as the water stop shall be used. The welding rod & the water stop shall be heated & melt at the same time, by means of heated air jetting from the hot jet gun.

7. TEST OF CONCRETE QUALITY

7.1 The Contractor shall provide samples of concrete for testing at the Engineer's direction. Proper facilities shall be provided for making and curing the test specimens. A competent person shall be employed by the Contractor whose first duty shall be to supervise all stages in the preparation and placing of the concrete. All test specimens shall be made and site tests carried out under his direct supervision.

7.2 Preliminary cube tests and works cube test shall be performed in accordance with the discretion of the Engineer. The standard of acceptance for preliminary and works tests shall be as given below.

7.3 The usual test for concrete with maximum size of aggregate upto 1-1/2 inch is the 6 inch cube tested in compression. Details of the testing are given in Part 8 of BS 1881.

7.4 For all grades of concrete, preliminary cube strength test with the mixes and materials to be used shall be performed in accordance with BS 1881 before the work is begun and subsequently whenever any change is to be made in the materials or in the proportions of materials to be used, or as required by the Engineer. The strengths shall comply with the standard of quality specified in accordance with Table 1 for preliminary tests. The cost of such testing shall be borne by the Contractor.

7.5 Test sample shall be taken at the mixer or as directed by the Engineer. The test specimens shall be cured in accordance with BS 1881.

Records shall be kept of all test cubes identifying the mix used the section of work for which the concrete was used and the date poured.

7.6 Five test cubes are to be tested for compressive strength as specified in BS 1881. These tests shall be carried out at site or in a laboratory approved by the Engineer. Two cubes shall be tested at the age of seven days and three at 28 days and the strengths determined are to comply with the standard of quality specified. The laboratory tests shall be carried out by an independent organization, such as Government Testing Laboratory or such other undertakings approved by the Engineer. The original test reports received from the above authorities should be submitted to the Engineer.

7.7 For all grades of concrete, the appropriate strength requirement shall be considered to be satisfied if none of the strengths of the cubes is below the specified cube strength or if the average strength of the three cubes is not less than the specified cube strength and the difference between the greatest and the least strength is not more than 20% of the average.

7.8 When the results of works cube tests show that the strength of any concrete is below the minimum specified, the Engineer may give instructions for the whole or part of the work concerned to be removed and replaced at the expense of the Contractor. The Contractor shall bear the cost of any other part of his, or any other contractor's work, which has to be removed and replaced as a result of the defective concrete. If any concrete is held to have failed, the Engineer may order the proportions of that class of concrete to be changed in order to provide the specified strength.

8. FINISHING OF FORMED SURFACES

8.1 GENERAL

8.1.1 After removal of forms, the surfaces of concrete shall be given one or more of the finishes specified below in locations designated by the Contract Documents.

8.1.2 When finishing is required to match a small sample furnished to the Contractor, the sample finish shall be reproduced on an area at least 100 Sq. ft. in an inconspicuous location designated by the Engineer before proceeding with the finish in the specified location.

8.1.3 Allowable deviations from plumb or level and from the alignment profile grades and dimensions are specified in clause 10. Tolerances for concrete construction and defined as tolerances that are to be distinguished from irregularities in finish as described herein. The finish requirements for concrete surfaces shall be as generally specified in this clause and as indicated on the Drawings. Finishing of concrete surfaces shall be performed only by workmen who are skilled in concrete finishes.

The Contractor shall keep the Engineer advised as to when finishing of concrete will be performed. Unless inspection is waived in each specific case, finishing of concrete shall be performed only in the presence of the Engineer. Concrete surfaces will be tested by the Engineer where necessary to determine whether surface irregularities are within the limits herein after specified. Surface irregularities are classified as abrupt or gradual.

Offsets caused by displaced or misplaced form sheeting or lining or sections, or otherwise defective form lumber will be considered as abrupt irregularities, and will be tested by direct measurements. All other irregularities will be considered as gradual irregularities, and will be tested by use of a template, consisting of a straight edge or the equivalent thereof for curved surfaces. The length of the template will be 6.5 ft. for testing of formed surfaces and 10 ft. for testing of unformed surfaces.

8.2 AS-CAST FINISHES

Unless otherwise specified or indicated on the Drawings the classes of finish shall apply as follows:

8.2.1 Rough form finish:

No selected form facing materials shall be specified for rough form finish surfaces. Tie holes and defects shall be patched. Fins exceeding 1/4" in height shall be chipped off or rubbed off. Otherwise, surfaces shall be left with the texture imparted by the forms.

8.2.2 Fair face finish:

Fair face finish applies to concrete formed surfaces, the appearance of which is considered by the Engineer to be of special importance, such as surfaces of structures prominently exposed to public inspection. Surfaces of concrete structures requiring fair face finish is shown in the Drawings. Surface irregularities, measured as described in sub-clause 8.2.1, 'Rough form finish', shall not exceed 1/4 inch for gradual irregularities and 1/8 inch for abrupt irregularities, except that abrupt irregularities will not be permitted at construction joints. Abrupt irregularities at construction joints and elsewhere in excess of 1/8 inch and gradual irregularities in excess of 1/4 inch shall be reduced by grinding so as to conform to the specified limits. Abrupt irregularities at construction joints shall be ground on level of 1 to 20 ratio of height to length.

Unless otherwise approved, repair of imperfections in formed concrete shall be completed within 24 hours after removal of forms. The form facing material shall produce a smooth, hard, uniform texture on the concrete. It may be plywood, temperated concrete-form-grade hardboard, metal, plastic paper, or other approved material capable of producing the desired fair face finish. The arrangement of the facing material shall be orderly and symmetrical, with the number of seams kept to the practical minimum. It shall be supported by studs or other backing capable of preventing excessive deflection. Material with raised grain, torn surfaces, worn edge, patches, dents, or other defects which will impair the texture of the concrete surface shall not be used. Tie holes and defects shall be patched. All fins shall be completely removed.

8.2.3 Architectural Finish Concrete:

Architectural finish to concrete formed surfaces as shown on the Drawings is required by the Engineer where the architectural appearance of surfaces of structures exposed to public view is of special consideration and importance.

The Contractor shall use approved special material for formwork and design the forms in conformity with the specified architectural patterns, textures and finishes in order to obtain first class architectural finish on formed concrete surface without any defect, irregularities, blemishes, imperfections and encrustation's.

- Samples:

  1. Submit to the Engineer a minimum of two units or portions of units of each precast item required. Each pair of samples when accepted will describe the allowable limits between which variations can be acceptable.

  2. Similar samples of in-situ concrete for approval by the Engineer submit two samples, 2 Sq. ft. of each type of exposed in-situ concrete. All in-situ samples will remain at the construction site.

- Sample approvals of precast & in-situ concrete:

  These samples will be reviewed and approved on the basis of colour, dimensional accuracy, and finish of surfaces and general appearance. The same requirements for sample approval will be required for both precast and in-situ concrete exposed surfaces.

- Forms

  The contractor must maintain the forms unusually tight and braces to prevent movement, mal-alignment and bleeding that will result in sand streaks, honeycomb, fins, stain or unsightly appearance.

  If wood forms are chosen to be used by the Contractor they shall be constructed of 3/4 inch minimum thickness plywood constructed in a fashion to allow many re-uses with all surfaces sealed with a polyurethane varnish.

  Edges, surfaces and corners of forms shall be sealed to prevent loss of any matrix or unequal absorption of water. Corners of wood forms shall be filled with suitable compound and all contact surfaces sealed with a polyurethane varnish.

  Re-use of forms shall be subject to approval by the Engineer.

- Curing:

  Curing shall be done in shade (out of direct sunlight) and shall be for a minimum period of 4 days.

- Finishing procedures:

  "Finishing procedures for filling air void in smooth finished concrete developed by a formed surface":

  While the concrete surface is still damp (not more than three days after removal of forms), apply a thin coat of medium consistency neat cement slurry by means of bristle brushes to provide a bonding coat within any pits or blemishes in the parent concrete; avoid coating large areas of the finished surface. Before slurry has dried or changed

colour, apply a dry (almost crumbly) grout comprised of one part cement, of the type and brand of cement used in the original concrete, to one and one-half parts clean masonry sand with a fineness modulus of approximately 2.25 and complying with the gradation requirements of the ASTM Specifications C 144. Mix proper amounts of white cement and colouring with the parent mortar to produce a satisfactory colour match with the parent concrete after hardening. Use samples previously prepared.

Apply the finishing grout uniformly with damp (neither dripping wet nor dry) pads of coarse burlap approximately 6 inch square used as a float. Scrub the grout well into the pits to provide a dense mortar in all the imperfections to be filled. Allow the mortar to partially harden, from one to two hours, depending upon the weather. Avoid direct hot sunlight. If the air is hot and dry, keep the concrete surface damp during this period using a fine fog spray. When the grout has hardened sufficiently so it can be scraped from the surface with the edge of a steel trowel without damaging the grout from the small pits of holes, cut off all that can be removed with a trowel without delay; next allow the surface to dry thoroughly and rub it vigorously with clean, dry burlap to completely remove any dried grout. No visible film of grout shall remain after this rubbing. Complete the entire cleaning and grouting operation for the grout to dry after it has been cut with the trowel, so it can be wiped off clean with the burlap.

On the day after the repair work, the concrete surfaces should again be wiped off clean with dry burlap to remove any inadvertent dust; leave no built-up surfaces on the parent surfaces. Employ, if possible, a used piece of burlap containing old hardened mortar to act as a mild abrasive. Use of fine abrasive stone if needed to remove any remaining built-up film without breaking through the surface film of the original concrete. Such scrubbing should be light and sufficient only to remove excess material without working up a lather of mortar or changing the texture of concrete.

Following the final bagging or stoning operation, provide a thorough wash down with stiff bristle brushes to remove all extraneous materials and spray the concrete surface with a fine fog spray periodically to maintain a continually damp condition for at least three days after application of the pit repair grout.

- Rust Stains:

  All rust stains are to be removed employing the following procedure:

  The rust stain shall be soaked for 10 minutes with a solution of 0.055 lb. of sodium citrate in 0.33 lb. water (brushing the solution at short intervals is satisfactory). Then the surface is sprinkled with crystals of sodium hydrosulfite and covered with a paste of Fuller's Earth and water. On a vertical surface, the paste is applied with a trowel, with the crystals first sprinkled on the paste so they will be in direct contact with the stain. The paste is allowed to dry for 10 minutes then scraped off and the treatment repeated if necessary.

- Repairing of Formed Surfaces:

  It is the intention of Specification to require form mixture of concrete and workmanship so that concrete surfaces, when exposed, will require no patching. Any concrete which is not formed as required and conforming to approved samples or for any reason is out of alignment or level or shows a defective surface, shall be removed from the job by

the Contractor at his expense unless the Engineer grants permission to repair the defective area. Permission to patch any such area shall not be considered a waiver of the Engineer's right to require a complete removal of defective work if the repair does not, in his opinion, satisfactorily restore the quality and appearance of the surface. The Engineer shall be the sole judge of acceptability of appearance.

8.3 FINISHES OF UNFORMED SURFACES

8.3.1 Monolithic Concrete Floor Finish

Where monolithic concrete floor finish is shown on the Drawings, placing shall proceed continuously for the full thickness of the course or RCC slab without change in concrete mix. Mixing water shall be the minimum required for proper placing, and will be as specified by the Engineer. After placing, floors, and other surfaces shall be floated with a wood float to a true surface and to elevation as shown on the Drawings. Where indicated on the Drawings, floor surfaces shall be steel trowel finished. Trowelling shall be the minimum amount consistent with maintaining a smooth dense surface, and shall not be done until the mortar has hardened sufficiently, to prevent excess fine material from being worked to the surface, and shall produce a dense uniform surface, free from blemishes and trowel marks.

Gradual surface irregularities shall not exceed 1/16 inch. The addition of water, dry cement, or dry cement mortar, to the surface of the concrete to facilitate finishing will not be permitted.

8.3.2 Equipment Foundations

Unless otherwise specified, exposed, surfaces of equipment foundations shall be given steel trowel finish to produce a surface similar to the specified concrete floor finish.

9. REPAIR OF SURFACE DEFECTS

9.1 GENERAL

9.1.1 Any concrete failing to meet the specified strength or not formed as shown on drawings, concrete out of alignment, concrete with surfaces beyond required tolerances or with defective surfaces which cannot be properly repaired or patched in the opinion of the Engineer shall be removed at Contractor's cost. The Engineer may reject any defective concrete and order it to be cut out in part or in whole and replaced at the Contractor's expense.

9.1.2 All ties and bolt holes and all repairable defective areas shall be patched immediately after form removal.

9.2 REPAIR OF DEFECTIVE AREAS

9.2.1 All honeycombed and other defective concrete shall be removed down to sound concrete. The area to be patched and an area at least 6 inch wide surrounding it shall be dampened to prevent absorption of water from the patching mortar. A bonding grout shall be prepared using a mix of approximately 1 part cement to 1 part fine sand passing No.25 BS Sieve and shall then be well brushed into the surface.

9.2.2 The patching mixture shall be made of the same material and of approximately the same proportions as used for the concrete, except that the coarse aggregate shall be omitted and the mortar shall consist of not more than 1 part cement to 2-1/2 parts sand by damp loose volume. White Portland cement

shall be substituted for a part of the gray Portland cement on exposed concrete in order to produce a colour matching the colour of the surrounding concrete, as determined by a trial patch.

9.2.3 The quantity of mixing water shall be no more than necessary for handling and placing. The patching mortar shall be mixed in advance and allowed to stand with frequent manipulation with a trowel, without addition of water, until it has reached the stiffest consistency that will permit placing.

9.2.4 After surface water has evaporated from the area to be patched, the bond coat shall be well brushed into the surface. When the bond coat begins to loose the water sheen, the premixed patching mortar shall be applied. The mortar shall be thoroughly consolidated into place and struck off so as to leave the patch slightly higher than the surrounding surface. To permit initial shrinkage, it shall be left undisturbed for at least 1 hour before being finally finished. The patched area shall be kept damp for 7 days. Metal tools shall not be used in finishing a patch in a formed wall, which will be exposed.

9.2.5 Where as-cast finishes are specified, the quantity of patched area shall be strictly limited. The combined total of patched areas in as-cast surfaces shall not exceed 2 sq.ft. in each 1000 sq.ft. of as-cast surface. This is in addition to form tie patches, if the project design permits ties to fall within as-cast areas.

9.2.6 Any patches in as-cast architectural concrete shall be indistinguishable from surrounding surfaces. The mix formula for patching mortar shall be determined by trial to obtain a good colour match with the concrete when both patch and concrete are cured and dry. After initial set, surfaces of patches shall be dressed manually to obtain the same texture as surrounding surfaces.

9.2.7 Patches in architectural concrete surfaces shall be cured for 7 days. Patches shall be protected from premature drying to the same extent as the body of the concrete.

9.3 TIE AND BOLT HOLES

After being cleaned and thoroughly dampened, the tie and bolt holes shall be filled solid with patching mortar. If architectural appearance requires, these holes may be filled partially creating the desired round clear holes pattern on surfaces exposed to view.

9.4 PROPRIETARY MATERIALS

If permitted or required by the Engineer, proprietary compounds for adhesion or as patching ingredients may be used in lieu of or in addition to the foregoing patching procedures. Such compounds shall be used in accordance with the manufacturer's recommendations with prior approval of the Engineer.

10. CONCRETE CONSTRUCTION TOLERANCES

Where tolerances are not stated in the specifications or drawings for any individual structure or feature thereof, maximum permissible deviations from established lines, grades and dimensions shall conform to the following. The Contractor is expected to set and maintain concrete forms so as to ensure complete work within tolerance limits. These allowable tolerances shall not relieve the Contractor of this responsibility for correct fitting of indicated materials. These tolerances are not cumulative.

10.1 Variation from the plumb (or the specified batter for inclined walls.)

10.1.1 In the lines and surfaces of columns, piers, walls and in arrises:

In any 10 feet of length or height	1/4 inch

In any storey or 20 feet length	3/8 inch
Maximum for the entire length or height.	1 inch

10.1.2 For exposed corner columns, control joint grooves and other conspicuous lines.

In any bay or 20 feet maximum	1/4 inch
Maximum for the entire length or height	1/2 inch

10.2 Variation from the level or from the grades indicated on the drawings.

10.2.1 In floors, ceilings, beams soffits and in arrises measured before removal of supporting shores.

In any 10 feet of length	1/4 inch
In any bay or in any 20 feet length	3/8 inch
Maximum for the entire length	3/4 inch

10.2.2 For exposed lintels, sills, parapets, horizontal grooves and other conspicuous lines.

In any bay or 20 feet length	1/4 inch
Maximum for the entire length	1/2 inch

10.3 Variation of the linear building lines from established position in plan and related position of columns, walls and partitions.

In any bay or 20 feet of length	1/2 inch
Maximum for the entire length	1 inch

10.4 Variation in the sizes and locations of sleeves, floor openings and wall openings. ±1/4 inch

10.5 Variation in cross-sectional dimensions of columns and beams and in the thickness of slabs and walls.

Minus	1/4 inch
Plus	1/2 inch

10.6 Footings

10.6.1 Variation in dimensions in plan

Minus	1/2 inch
Plus (plus variation applied to concrete only, not to reinforcing bars or dowels).	2 inch

10.6.2 Misplacement or eccentricity

2 percent of the footing width in the direction of misplacement but not more

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	than (applies to concrete only, not to reinforcing bars or dowels).	2 inch

10.6.3 Thickness

Decrease in specified thickness	5%
Increase in specified thickness	No limit

10.7 Variation in Steps

10.7.1 In a flight of stairs

Rise	± 1/8 inch
Tread	± 1/4 inch

10.7.2 In consecutive steps

Rise	± 1/16 inch
Tread	± 1/8 inch

10.8 Tolerances for Pre-cast concrete construction

Forms must be true to size and dimensions of concrete members shown on the plans and be so constructed that the dimensions of the finished products will be within the following limits at the time of placement of these units in the structure, unless otherwise noted on structural-architectural drawings:

10.8.1	Overall dimensions of members	1/16 inch per 10 feet
10.8.2	Cross-sectional dimensions	
	Sections less than 3 inch.	1/16 inch
	Sections over 3 inch and less than 18 inch.	1/8 inch
	Sections over 18 inch.	1/4 inch
10.8.3	Deviations from straight line in long sections.	
	Not more than	1/8 inch per 10 feet.
10.8.4	Deviation from specified camber	± 1/16 inch per 10 feet span.
	Maximum differential between adjacent units in erected position	1/4 inch.

11. ACCEPTANCE OF STRUCTURE

11.1 GENERAL

11.1.1 Completed concrete work which meets all applicable requirements will be accepted subject to the other terms of the Contract Documents.

11.1.2 Completed concrete work which fails to meet one or more of the requirements and which has been repaired to bring it into compliance will be accepted subject to the other terms of the Contract Documents.

11.1.3 Completed concrete work which fails to meet one or more of the requirements and which cannot be brought into compliance may be accepted or rejected as provided in these Specifications or in the Contract Documents. In this event, modifications may be required to assure that remaining work complies with the requirements.

11.2 DIMENSIONAL TOLERANCES

11.2.1 Formed surfaces resulting in concrete outlines smaller than permitted by the tolerances of clause 10 shall be considered potentially deficient in strength and subject to the provisions of sub clause 11.4.

11.2.2 Formed surfaces resulting in concrete outlines larger than permitted by the tolerances of clause 10 may be rejected and the excess material shall be subject to removal. If removal of the excess material is permitted, it shall be accomplished in such a manner as to maintain the strength of the section and to meet all other applicable requirements of function and appearance. Permission is required if excess material is to be removed in accordance with this clause.

11.2.3 Concrete members cast in the wrong location may be rejected if the strength, appearance or function of the structure is adversely affected or if misplaced items interfere with other construction.

11.2.4 Inaccurately formed concrete surfaces exceeding the limits of Clause 10 or of Clause 6.1.6 of Section 'Formwork' and which are exposed to view, may be rejected and shall be repaired or removed and replaced if required.

11.3 APPEARANCE

11.3.1 Architectural concrete with surface defects exceeding the limitations of Sub-clause 6.1.6 of the Section, 'Formwork' shall be removed and replaced.

11.3.2 Other concrete exposed to view with defects which adversely affect the appearance of the specified finish may be repaired only by approved methods.

11.3.3 Concrete not exposed to view is not subject to rejection for defective appearance.

11.4 STRENGTH OF STRUCTURE

11.4.1 The strength of the structure in place will be considered potentially deficient if it fails to comply with any requirements, which control the strength of the structure, including but not necessarily limited to the following conditions.

- Concrete strength requirements not considered to be satisfied in accordance with Clause 6 hereof.

- Reinforcing steel size, quantity, strength, position or arrangement at variance with the requirements as listed under specification of 'Reinforcement' or in the Contract Documents.

- Concrete which differs from the required dimensions or location in such a manner as to reduce the strength.
- Curing less than that specified.

- Inadequate protection of concrete from extremes of temperature during early stages of hardening and strength development.

- Mechanical injury, construction fires, accidents of premature removal of formwork likely to result in deficient strength.

- Poor workmanship likely to result in deficient strength.

11.4.2 Structural analysis and/or additional testing may be required when the strength of the structure is considered potentially deficient.

11.4.3 Core tests may be required when the strength of the concrete in place is considered potentially deficient.

11.4.4 If core tests are inconclusive or impractical to obtain or if structural analysis does not confirm the safety of the structure, load tests may be required and their result evaluated in accordance with British Standard BS 8110 or ACI Standard 318.

11.4.5 Concrete work judged inadequate by structural analysis or by results of a load test shall be reinforced with additional construction if so directed by the Engineer or shall be replaced, at the Contractor's expense.

11.4.6 The Contractor shall pay all costs incurred in providing the additional testing and/or analysis required by this section.

11.4.7 The Employer will pay all costs of additional testing and/or analysis which are made at his request and which is not required by these Specifications, or by the Contract Documents.

12. MEASUREMENT AND PAYMENT

12.1 GENERAL

Except otherwise specified herein or else where in the Contract Documents, no separate measurement and payment will be made for all the works related to the relevant Estimates items. The cost thereof shall be deemed to have been included in the quoted unit rate of the respective items of the Estimates.

The rates quoted by the Contractor in the Estimates shall include work to be executed under these specification in any floor and at any height except where otherwise specifically stated in the relevant item of Estimates and the Contractor shall not be entitled to any claim or claim any compensation on this account. Some of the works related to relevant items which shall neither be measured nor paid separately are:

12.1.1 Providing, fixing, striking, etc. of formwork.

12.1.2 Providing, placing and fixing of anchor bolts or any other embedded parts.

12.1.3 Providing and installing all type of joints in concrete structure, including expansion joints.

12.1.4 Providing and fixing water stoppers.

12.2 PLAIN AND REINFORCED CONCRETE

12.2.1 Measurement

Concrete shall be measured as executed but no deduction shall be made for the following:

- Volume of any steel embedded in the concrete.

- Volume occupied by water pipes, conduits etc. not exceeding 10 square inches each in cross-sectional area.

- Voids not exceeding 1 square feet in work given in square feet. If any void exceeds 1 square feet, total void shall be deducted.

Voids, which are not to be deducted as specified above, refer only to openings or vent which are wholly within the boundaries of measured areas. Openings or vents which are at the boundaries of measured areas shall always be subject to deductions irrespective of size.

Concrete work shall be classified and measured separately as listed under items of Estimates.

Junction between straight and curved works shall in all cases be deemed to be included with the work in which they occur.

Measurement of walls shall be taken between attached columns piers or pilaster. The thickness of attached columns, piers or pilaster shall be taken as the combined thickness of the wall and the columns, piers or pilaster.

Attached or isolated columns, piers, pilaster, and the like (except where caused by openings) having a length on plan not exceeding four times the thickness shall be classified as columns. Those having a length over four times the thickness and are caused by openings in wall shall be classified as walls.

Columns shall be measured from the top of footing/footing beams or floor surfaces to the underside of beams or slabs as the case maybe. Where the width of beams is less than the width of columns, the extra width at the junction shall be included in the beams.

The depth of the beams shall be measured from bottom of the slab to the bottom of the beams except in case of inverted beams where it shall be measured from top of slab to the top of beam. The cross-section of the beam shall be the actual cross-section below or above the slab.

Measurement of acceptably completed works of plain and reinforced cement concrete will be made on the basis of number of cubic feet of concrete placed and compacted in position within the neat lines of the structure as shown on the Drawings or as directed by the Engineer.

12.2.2 Payment

Payment will be made for the acceptable measured quantity of plain and reinforced cement concrete on the basis of unit rate per cubic feet quoted in the Estimates and shall constitute full compensation for all the works related to the item.

12.3 VAPOUR BARRIER

12.3.1 Measurement

Measurement of acceptably completed works of vapour barrier will be made on the basis of number of square feet provided and placed in position as shown on the Drawings or as directed by the Engineer.

12.3.2 Payment

Payment will be made for the acceptable measured quantity of vapour barrier on the basis of unit rate per square feet quoted in the Estimates and shall constitute full compensation for all the works related to the item.

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SECTION - 3000

STRUCTURAL STEEL WORKS

1. SCOPE

2. APPLICABLE STANDARDS

3. SUBMITTALS

4. MATERIAL

5. CONNECTIONS

6. EXECUTION

7. INSPECTION AND TESTS

8. MISCELLANEOUS STEEL WORKS

9. MEASUREMENT AND PAYMENT

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1. SCOPE

The work covered by this section, consists of supply of all material, labour, plant, equipment and appliances including welding, bolts, nuts, washers, anchor bolts, embedded parts etc, fabrication, erection and painting in accordance with the specifications and as per drawings and as directed by the Engineer.

2. APPLICABLE STANDARDS

Latest edition of the following standards are relevant to these specifications wherever applicable:

AISC	Code of standard practice
AISC	Specifications for Design, Fabrication and Erection of Structural Steel for Buildings.
AISC	Specifications for structural joints using ASTM A325 or A490 Bolts.
ASTM	Specifications for materials
AISC/ SSPC	Guide to shop painting of structural steel
AWS	Specifications for welding of steel structures
BS 449	Use of structural steel in Buildings

3. SUBMITTALS

Design drawings shall be prepared by the Engineer and supplied to the Contractor. These shall contain main dimensions, sizes of members, typical details of joints.

Workshop drawings shall then be prepared by the Contractor from the design drawings supplied and submitted to the Engineer for approval.

4. MATERIAL

Except otherwise stated in the drawings, the material specifications shall conform to the following. Wherever necessary the Contractor may use equivalent alternative material subject to approval of the Engineer.

4.1 STRUCTURAL STEEL

Structural steel for structures shall conform to the requirements of ASTM A-36 or equivalent

4.2 STEEL FORGING

Steel forging shall conform to the requirements of ASTM A235.

4.3 STEEL CASTING

Steel casting shall conform to the requirements of ASTM A27.

4.4 WELDING

Welding Electrodes for manual shielded metal arc welding shall conform to AWS A 5.1 latest edition or the A 5.5 latest edition. Equivalent locally manufactured electrodes may be used subject to the approval of the Engineer.

4.5 COMMON BOLTS, ANCHOR BOLTS, NUTS AND WASHERS

Common Bolts, Anchor Bolts, Nuts and Washers Bolts and Nuts shall conform to the requirements of ASTM A 307.

4.6 HIGH STRENGTH BOLTS

High strength carbon steel bolts including nuts and washers shall conform to the requirements of ASTM A325 latest editions and of AISI B18.2

4.7 WASHERS

Cut Washers: Shall be of structural grade steel and shall conform to the dimension of the manufacturer's regular standard for plain washers for the size of bolts used.

4.8 CAST IRON

Shall conform to the requirements of latest edition of ASTM A 48.

5. CONNECTIONS

5.1 DESIGN OF CONNECTION

All connections shall be designed and detailed for forces shown on the drawings, if any or 50% of the effective capacity of the member, whichever is greater.

Shop connections may be welded or bolted. Field connections shall be bolted unless noted otherwise on design drawings.

5.2 INSTALLATION OF BOLTS

High strength bolts shall be installed in accordance with AISC “Specifications for Structural Joints using ASTM A 325 or A 490 bolts”.

5.3 MINIMUM SPACING OF BOLTS

The distance between centers of boltholes shall not be less than 3d, where d is the diameter of the bolt in inches.

5.4 MINIMUM EDGE DISTANCE

The minimum edge distance i.e. center of standard hole to edge of connected part shall be as given in the table below:

NOMONAL BOLT DIAMETER (INCHES)	AT SHEARED EDGES (INCHES)	AT ROLLED EDGES OR PLATES, SHAPES OR GAS CUT EDGES (INCHES)
1 / 2	1.5 TIMES THE DIAMETER OF BOLTS	3 / 4
5 / 8		7 / 8
3 / 4		1
7 / 8		1 – 1 / 8
1		1 – 1 / 4

5.6 ALLOWABLE STRESSES

Allowable design stresses for structural steel members and their connections, including temporary bracings and shorings shall be in accordance with AISC Specifications.

6. EXECUTION

6.1 FABRICATION

The Contractor shall notify the Engineer about any problems or doubts/errors discovered in the drawings for clarification/rectification well in time to prevent any fabrication errors. Fabrication shall not be commenced until approval has been obtained from the Engineer.

6.1.1 Straightening of Material

Rolled material, before being worked upon must be straightened within tolerances by ASTM specifications A6 Straightening, necessarily shall be done by mechanical means or by the application of a limited amount of localized heat. The temperature of heated areas, as measured by approved methods, shall not exceed 1100°F for A 514 steel or 1200°F for other steels.

6.1.2 Cutting

As far as possible cutting must be done by shearing, Oxygen cutting shall be done where shear cutting is not possible and shall preferably be done by Machine. All edges shall be free from gauges, notches or burs. If necessary the same shall be removed by grinding.

6.1.3 Holes Punching Drilling.

Holes shall be punched where thickness of the material is not greater than the diameter of bolt + 1/8". Where the thickness of the material is greater the holes shall either be drilled or sub-punched and reamed to size. The die for all sub-punched holes and the drill to all sub-drilled holes shall be at least 1/16" smaller than the nominal diameter of the rivet or bolt. Holes for A514 steel plates over 1/2" thick shall be drilled.

6.1.4 Welding

a) General:

The execution and inspection of welding will be done in accordance with the provisions of the American welding society code for welding in Building construction, D1.0. No welding for piping/electrical supports shall be made transversely to any tension flanges of trusses, beams or columns.

b) Automatic sub-merged Arc Welding:

For all built-up members, i.e. sections fabricated from plates and flat bars or compound rolled sections, plate and box girders, where long continuous, welding is to be done, should be executed by Automatic submerged Arc Welding process in accordance with relevant AWS specifications.

c) Maximum and minimum size and lengths of fillet welds shall be in accordance with AISC specifications.

Surface to be welded shall be free from loose scale, slag, rust, grease, paint or any other foreign matter except mill scale, which withstands vigorous wire brushing.

d) Tolerances

- A variation of l mm is permissible in the over all length of members with both ends finished for Contact bearing. The bearing surfaces prepared to a common plane by milling.
- Members without end finished for contact bearing which are to be framed to other steel parts of the structure shall have a variation from detailed length not greater than 1/8" for length over 30 feet and not greater than 1/16” for length.
- Members with ends finished for contact bearing shall have a variation 1/32” in the over all length.

6.2 TEST ASSEMBLY

6.2.1 After fabrication and before galvanization or painting, test assembly of complete Structural Components shall be done on the shop floor as directed by the Engineer.

6.2.2 Each test assembly will be inspected by the Engineer and will be dismantled only after his approval in writing

6.3 SURFACE PREPARATION/PAINTING

6.3.1 Surface Preparation

a) All structural steel material i.e. rolled steel sections, plates, pipes, flat bars, chequered plates shall be cleaned free from loose scale, rust, burrs slag, etc. by means of sand blasting.

6.3.2 Painting

a) Immediately after surface preparation all material shall be given one prime coat of rust preventive paint.

b) After fabrication one shop coat of prime paint and then one coat of enamel paint shall be applied.

c) One final coat of enamel paint shall be applied after erection of all components.

d) The type of primer and enamel paints to be applied shall be as specified on the drawings and the thickness of the paint shall be in accordance with the specifications of the paint manufacturer.

e) All other requirements for the specified paint system shall be in accordance with the paint manufacturer's specification / recommendations.

f) The Contractor shall use the best quality of the type of paint specified and shall get the same approved by the Engineer.

g) Steel work/Surfaces not to be painted

i) Steel work to be encased / embedded in concrete or surface in contact with concrete or grout shall not be painted, but shall be given a cement wash after sand blasting.

ii) Machined finished surfaces shall not be painted but shall be coated with rust preventive compound, (approved by the

Engineer) immediately after finishing. Such surfaces shall also be protected with wooden pads or other suitable means for transportation. Unassembled pins, keys, and bolt thread shall be greased and wrapped with moisture resistant paper.

iii) Contact surfaces of connections using high strength bolts in friction type connections shall not be painted. Such surfaces of all components after fabrication shall be cleaned free of all paints, grease, burrs slag by means of sand blasting. No coating whatsoever shall be applied to these surfaces. The surface roughness for high strength friction grip bolts is a very important factor and the components therefore will not be erected unless approved by the Engineer.

6.4 ERECTION

6.4.1 Bracing

The structure shall be carried up true and plumb within the limits defined in the AISC code of standard practice. Temporary bracing shall be introduced wherever necessary to take care of all loads of which the structure may be subjected including the equipment and the operation of the same. Such bracings shall be left in place as long as required for safety.

6.4.2 Alignment

Bolts tightening as specified by ASTM A 325 shall not be done at site during erection until the structure has been fully aligned and leveled.

6.4.3 Joints using High Strength Bolts

All structural joints using high strength bolts shall be executed and inspected in accordance with “AISC Specification for structural joints using ASTN A 325 or A 490 bolts”.

6.4.4 Stubs

Stubbs of trusses before being embedded in concrete shall be erected in position timely aligned using stub setting templates.

7. INSPECTION AND TESTS

7.1 Manufacturer's Work Test Certificate for all material used shall be furnished by the contractor for Engineer's scrutiny and approval.

7.2 Rolling tolerance of all shapes and profile according to AISC shall be in accordance with the provisions of the American Society for Testing and Materials Designation A.6. The Contractor shall check these before being worked upon and these shall be rejected if found not within limits.

7.3 The Contractor shall arrange for analysis and test of all material rolled locally at a testing laboratory selected by the Engineer.

7.4 Inspection of Welding.

The inspection of welding shall be performed in accordance with the American Welding Society specifications, as directed by the Engineer.

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7.5 Rejection

Materials or workmanship not in reasonable conformance with the provisions of these specifications shall be rejected at any time during the progress of the work or the completion and erection at site.

8. MISCELLANEOUS STEEL WORKS

8.1 General

The work covered shall include furnishing, fabricating, installing and painting miscellaneous steel work including the following:

- Steel doors and steel louvered doors
- G.I. Flashings
- Steel pipe handrail
- Steel embedded plates anchor bolts and other miscellaneous items

The Contractor shall submit shop drawings for each item showing in sufficient detail the material, its fabrication, surface preparation and other relevant information so as to conform to the applicable requirements of relevant clauses of these specifications for Engineers Approval. After the approval of drawing the Contractor shall erect a mock-up sample showing exactly the finished item as it will be fabricated/erected. Only after the approval of the mock-up sample the Contractor shall start the fabrication of items to be installed in place. Any proposed deviation due to field conditions and availability of local material shall be submitted to the Engineer for approval.

9. MEASUREMENT & PAYMENT

9.1 General

Except otherwise specified herein or elsewhere in the Contract Documents, no measurement and payment will be made for the under mentioned specified works related to the relevant items of the Bill of Quantities. The cost there of shall be deemed to have been included in the quoted unit rate of the respective items of the Bill of Quantities.

The rates quoted by the Contractor in the Bill of Quantities shall include works to be executed under these specifications in any floor and at any height.

9.1.1 Nuts, bolts, screw, rivets, heads, fillets, welds welding rods, locks, rollers, rolling tracks, pivot hinges, etc.

9.1.2 Anti-corrosive prime coat.

9.1.3 Cleaning with sand blasting.

9.1.4 Painting.

9.1.5 Embedding/fixing of steel pipe hand rail in concrete work and wooden covering.

9.1.6 All hardware in steel doors, locks, hold fasts, etc.

9.1.7 All metal embedded parts, metal fittings and fixtures required for the operational process.

9.1.8 Sealant for GI Flashing as specified.

9.1.9 Glazing in steel door/windows including seals and gaskets and providing/fabricating louvers.

9.2 Steel Doors

9.2.1 Measurement

Measurement of acceptably completed works of respective types of Steel Doors will be made on the basis of net actual area in square feet fabricated and installed in position as shown on the Drawings or as directed by the Engineer. Net area will be measured in accordance with plastered masonry opening in between jambs and plastered head and bottom of shutter.

9.2.2 Payment

Payment will be made for acceptable measured quantity of respective types of Steel Doors on the basis of unit rate per square feet quoted in the Bill of Quantities against respective item and shall constitute full compensation for all the works including all hardware & fittings like locks, tower bolts, push plates etc. as per details mentioned in Volume IV of Tender & Contract Document related to the item.

9.3 Steel Handrail

9.3.1 Measurement

Measurement of acceptably completed works of respective types of Steel Hand railing will be made on the basis of actual length in feet fabricated & installed in position as shown the drawings or as directed by the Engineer.

9.3.2 Payment

Payment will be made for acceptable measured quantity of respective types of Steel Hand railing on the basis of unit rate per feet quoted in the Bills of Quantities and shall constitute full compensation for all the works related to the item.

9.4 G.I Flashing

9.4.1 Measurement

Measurement of acceptably completed works of G.I. flashing will be made on the basis of actual length in feet fabricated & installed in position as shown the drawings or as directed by the Engineer.

9.42 Payment

Payment will be made for acceptable measured quantity of G.I. flashing on the basis of unit rate per feet quoted in the Bills of Quantities and shall constitute full compensation for all the works related to the item.

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SECTION - 6411

WATER PROOFING/EXPANSION JOINT FILLING AND BUILTUP ROOFING

1. SCOPE

2. SUBMITTALS

3. MATERIAL

4. DELIVERY, STORAGE AND HANDLING

5. EXECUTION

6. MEASUREMENT AND PAYMENT

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1. SCOPE

The work under this section of the Specifications consists of furnishing all plant, labour, equipment, appliances and materials and in performing all operations in any floor and at any height in connection with installation of insulation, water-proofing & &and built-up roofing, including water proof treatment to foundations and basement structures complete in strict accordance with this section of the specifications and the applicable drawings and subject to the terms and conditions of the Contract.

2. SUBMITTAL

2.1 Shop Drawings: Shop drawings shall be submitted showing layout and all the details for construction.

2.2 Samples of all materials proposed for use under this section, shall be submitted to the Engineer for approval.

3. MATERIALS

3.1 Bitumen shall be 80/100 grade and Special Industrial Bitumen (SIB) HYCARB A-10 of National Petrocarbon Ltd.

3.2 Polyethylene building film visqueen standard or approved equal. The film shall be 500 SWG (minimum) thick.

3.3 Cement and aggregates shall be in accordance with specifications for "Plain and reinforced concrete".

3.4 Brick tiles shall conform to specifications for "Brick Masonry" and concrete chequered tiles shall conform to relevant specifications provided in Section-6600.

3.5 Sealant to be used in expansion joints and flashings shall be 2 part polysulphide or approved equivalent.

3.6 2mm thick Bituminous Torch On Membrane.

3.7 Puddled earth shall be composed of stiff clay to which an equal amount of chopped rice husk/bhoosa shall be added.

4. DELIVERY STORAGE AND HANDLING

Materials shall be protected from damage during loading shipment delivery and storage. Non-staining materials shall be used for blocking and packing.

5. EXECUTION

5.1 PREPARATORY WORK

5.1.1 All scuppers and roof drains shall be placed and metal flashing flanges etc. shall be provided in time to be installed along with the roofing assembly.

5.1.2 All surfaces, to be treated shall be dust free and dry. Application of roof finishes shall not start unless the preparatory work has been inspected and approved by the Engineer.

5.2 APPLICATION

5.2.1 Roofing shall not be applied during rain or while surfaces are damp, it shall be applied only to surfaces that are clean and dry.

5.2.2 3” thick average concrete (1:2:4) screed shall be laid in slope.

5.2.3 PVC Geo-membrane sheet shall be laid in position wherever shown in drawings. Where joint is necessary at the side or end of the sheet, this shall be in strict compliance to recommendations furnished by the manufacturer. The Contractor shall protect the sheets from damages during laying and subsequent operation and shall replace at his own cost all damaged sheets to the satisfaction of the Engineer.

5.2.4 2mm thick Bituminous Torch On Membrane shall be laid in position wherever shown in drawings or specified herein. Where joint is necessary at the side or end of the sheet, this shall be a double weld folded joint made by placing the edges together and folding over twice continuously taking the top edge prior to the application of mud plaster. The Contractor shall protect the Membrane from damages during laying and subsequent operation and shall replace at his own cost all damaged sheets to the satisfaction of the Engineer..

5.2.5 The clay containing sand not less than 5% shall be reduced to fine powder and mixed with water in a pit adding fibrous material such as chopped rice husk/bhusa in the proportion of 60 to 70 lb/ 20 Cft. of clay. The mixture will be allowed to mature for 7 days during which period it will be worked up from time to time so as to make it into a homogeneous mass. It will then be thoroughly mixed to the required consistency of mortar and applied to the required slopes.

5.2.6 Brick tile of approved size shall be laid, grouted and pointed flush in cement mortar. The top surface shall be smooth and accurately leveled in accordance with the specified slope. No broken or cracked tiles shall be used.

5.3 WATER PROOFING & BUILT UP ROOFING

5.3.1 Over Roofs.

The water proofing treatment to reinforced cement concrete roof slabs shall be done in the following manner as indicated on the drawings or as directed by the Engineer.

a) 3” thick average concrete (1:2:4) screed laid in slope.

b) 2mm thick Bituminous Torch On Membrane.

c) 2 layers of Polyethylene sheet 500 SWG (Minimum) thick properly lapped and joints sealed.

d) 2nd layer of polyethylene sheet lapped and joints sealed.

e) 4" thick average (2" thick min) puddled earth (mud plaster) laid in slope.

f) 1-1/2” thick brick tiles set in 1:2 cement sand mortar and pointed in 1:2 cement sand grout / 1-1/2” thick 12” x 12” precast PCC pigmented tiles set in 1:3 cement sand mortar and pointed in 1:2 cement sand grout.

5.4 WATER PROOFING TREATMENT IN FOUNDATION SUB-STRUCTURES, UNDER FLOORS.

a) Bitumen Painting

All concrete surfaces directly in contact with earth shall be bitumen painted shall be thoroughly cleaned of any accretion, dust, dirt etc. by scraping, wire brushing or as directed by the Engineer. The surface shall be primed with a coat or asphalt oil used at the rate of not less than 1 gallon /100 square feet. Two coats of hot bitumen paint shall be applied at the rate of 20 lbs/100 Sft. each coat. The first coat shall be allowed to dry for about 6 hours before applying the second coat. During operation of painting great care shall be taken to avoid air bubbles. The manufacturers shall be taken to avoid air bubbles. The manufacturer's instructions and Engineer's directions shall be followed.

5.5 EXPANSION JOINT FILLING

Before filling of expansion joint the surface shall be thoroughly cleaned and filling/ packing material removed upto a depth of 2”. Backer rod then shall be inserted throughout the length of joint and pressed in. The joint then shall be sealed with 2 part polysulphide sealant or approved equivalent sealant material.

5.6 CURING

Tiles after laying, grouting and flush pointing shall be kept wet throughout for at least 7 days.

6. MEASUREMENT AND PAYMENT

6.1 General

Except otherwise specified herein or elsewhere in the Contract Documents, no measurement and payment will be made for the under mentioned specified works related to the relevant items of the Bills of Quantities. The cost thereof shall be deemed to have been included in the quoted unit rate of the respective items of the Bills of Quantities.

The rates quoted by the Contractor in the Bill of Quantities shall include work to be executed under these specification in any floor and at any height except where otherwise specifically stated in the relevant item of Bill of Quantities and the Contractor shall not be entitled to any claim or claim any compensation on this account.

6.1.1 All preparatory work, scrapping, scratching, cleaning, cant strips, gravel strips, etc.

6.1.2 Formwork

6.1.3 Bituminous Torch On Membrane.

6.1.4 Coats of bitumen.

6.1.5 Polyethylene sheet including laps/overlaps.

6.1.6 Class 'C' cement concrete cant strip, brick or concrete tiles.

6.2 Water Proofing & Built-up Roofing

6.2.1 Measurement

Measurement of acceptably completed works respective type of water proofing & built-up roofing over will be made on the basis of net actual area in square feet provided and installed in position as shown on the Drawings or as directed by the Engineer.

6.2.2 Payment

Payment will be made for acceptable measured quantity of respective type of water proofing & built-up roofing on the basis of unit rate per square feet quoted in the Bills of Quantities and shall constitute full compensation for all the works related to the item.

6.3 Bitumen Painting/Coating

6.3.1 Measurement

Measurement of acceptably completed works of bitumen painting/coating will be made on the basis of net actual area in square feet provided and applied in position as shown on the Drawings or as directed by the Engineer. Area receiving painting/coating shall only be measured once, irrespective of the number of coats applied.

6.3.2 Payment

Payment will be made for acceptable measured quantity of bitumen painting/coating on the basis of unit rate per square feet quoted in the Bills of Quantities. The unit rate shall include all cost of surface preparation and shall constitute full compensation for all the works related to the item.

SECTION - 6600

FLOOR AND WALL FINISHES

1. **SCOPE**
2. **SUBMITTALS**
3. **MATERIAL**
4. **EXECUTION**
5. **MEASUREMENT AND PAYMENT**

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

1. SCOPE

The work under this section of the Specification consists of furnishing all plant, labour, equipment, appliances and materials and performing all operations in any floor and at any height in connection with the installation of cement concrete floors and floor finishes including bases, skirting and external surface treatments, complete in strict accordance with this section of the specifications and the applicable drawings and subject to the terms and conditions of the Contract.

2. MATERIAL

2.1 Cement

Cement shall be ordinary Portland cement conforming to B.S. 12 or PS 232.

2.2 Sand

All fine sand shall be obtained from sources approved by the Engineer. The grading shall conform to B.S 882 Grading Zone 1 and 2 of which the gradation limits are as follows:

Percentage (by weight) passing

B.S. Sieve	Grading Zone 1	Grading Zone 2
3/8" (9.53 mm)	100	100
3/16" (4.765 mm)	90-100	90-100
No. 7	60-95	75-100
No. 14	30-70	55-90
No. 25	15-34	35-59
No. 52	5-20	8-30
No. 100	0-10	0-10

2.3 Coarse Aggregate

Coarse aggregate shall be crushed or uncrushed gravel or crushed stone, angular or rounded in shape and shall have granular, crystalline or smooth surface free from friable, flaky and laminated pieces, mica and shale. It shall not contain matters injurious to concrete. All coarse aggregate shall conform to BSS NO.882 and shall be graded as follows:

B.S. Sieve	% Passing by weight
1" (25.40 mm)	100
3/4" (19.05 mm)	90-100
3/8" (9.53 mm)	20-55
3/16"(4.765 mm)	0-10

The aggregate shall be stored on properly constructed paving or as directed by the Engineer.

There shall be a physical partition between the stockpiles of coarse and fine aggregate. If required aggregates shall be washed and screened to the satisfaction of the Engineer. Sieve analysis of all the aggregates to be used in the works shall be carried out as and when required by the Engineer. All aggregate shall be subject to the approval of the Engineer.

Any aggregates not found to be of the specified/approved standard shall be rejected by the Engineer and all such rejected material shall be removed from site with-out delay.

Floors, sub-base or base constructed with rejected aggregates shall be dismantled and rebuilt at the expense of the Contractor.

2.4 Stone Ballast

Stone ballast to be used as soling shall comprise of strong, hard, durable stone of approved size. The stone shall be obtained from approved quary and shall be sound, free from laminations and weak cleavages and shall conform to specifications of "Stone Soling".

2.5 Water

Water used for mixing concrete, curing or any other operation of the works specified herein shall be fresh, clean and free from organic or inorganic matters in solutions or in suspension. Only water of the approved quality shall be used for all constructional purposes:

2.6 Porcelain tiles

Porcelain tiles shall be imported and from an approved manufacturer. The tiles shall be of sizes as specified on the drawings and shall conform to BS 1281 as per samples.

2.7 Cleaning Compound

The compound used for all cleaning of terrazzo shall be an approved neutral chemical cleaner free from acid and alkali or any other material that will affect the colour or otherwise damage the terrazzo and shall not affect the conductivity of terrazzo floors.

2.8 Cement Concrete Tile/ Pavers (Pigmented)

Cement Concrete tiles shall be of approved shade, shape and size, chequered, mechanically vibrated and compressed type conforming to PS-531, as shown on the drawings and approved by the Engineer. Only tiles by the name of Grand Stone manufactured by Grand Work or approved equivalent shall be used. Wherever specified on the drawings concrete pavers manufactured by Tuff tiles pvt. Or approved equivalent shall be used.

2.9 Terrazzo Tiles

Terrazzo tiles shall be first grade, mechanically compressed type conforming to PS-531. Tiles shall be 12” x 12“ and shall be 1” in thickness (minimum) with a minimum terrazzo topping of ½” thickness composed of 1:2 cement marble chips of approved size and colour. The base of the tile shall be in 1:2:4 cement concrete.

2.10 Ceramic Tiles

Ceramic tiles shall be local, premium quality, plain white/coloured or printed or textured from one of the approved manufacturer. The tiles shall be of sizes as specified on the drawings and shall conform to BS 1281 as per samples.

2.9 Division Strips

Division strips shall be of marble as approved by the Engineer. Standard division strips for floor finishes shall be not less than 5mm (3/16") in thickness and shall not be less than 1-3/4” in depth.

2.10 Marble Chips

Marble chips shall have an abrassive hardness of not less than 16, as determined by the test of wear resistance in National Bureau of Standards Reports MBS 98. Size shall vary from No. zero to 8.

2.11 Preservative Material

Preservative treatment for terrazzo floor shall produce a water-proof finish which will not be impaired by immersion in water at room temperature for a period of 2-1/2 hours, approximately 18 hours after the floor is finished by buffing, as specified. The preservative material shall not discolour the terrazzo nor leave a tacky or sticky finished film on the surface after buffing.

3. CEMENT CONCRETE FLOORING

The materials for C.C flooring shall be same as already specified under clause 3, "Materials".

3.1 Composition of Concrete

Concrete shall be composed of Portland Cement, sand, coarse, aggregate and water, all well mixed and brought to the proper consistency. The Contractor shall mix the ingredients as indicated on the Drawings. The proportions of the various ingredients shall be determined from time to time during the progress of the work and tests shall be made of samples of the aggregates and the resulting concrete. The mix proportions and appropriate water-cement ratio will be determined on the basis of the production of concrete having required workability, density, impermeability, durability and required strength.

3.2 Mixing Concrete

The concrete ingredients shall be mixed in a batch mixer for not less than 1-1/2 minutes after all ingredients, except the full amount of water, are in the mixer. The Engineer reserves the right to increase the mixing time when the charging and mixing operations fail to produce a concrete batch in which the ingredients are uniformly distributed and the consistency is not uniform. The concrete shall be uniform in composition and consistency from batch to batch except when changes in composition or consistency are required. Water shall be added prior to, during and following the mixer charge. Excessive over-mixing requiring addition of water to preserve the required concrete consistency will not be permitted. The concrete ingredients shall be mixed by volumetric measurement in purpose made boxes approved by the Engineer.

3.3 Construction

The base course of the floor shall comprise of stone ballast of 2 inches (approx: 50 mm) mesh size. The base course shall be thoroughly compacted by suitable power rammers to the total consolidated thickness as shown on the Drawings and as approved by the Engineer. The interstices shall be filled with smaller size stones. The base course shall be blinded with sand and the whole surface watered. Over the well compacted base course, a layer of concrete of the required grade and thickness shall be laid, in panels of the sizes as indicated on the Drawing and as approved by the Engineer.

After the C.C bed has been cured, as directed by the Engineer, it shall be roughened and well watered before floor finishing is laid. The floor finish shall comprise of cement concrete of required grade and shall be laid in panels to the required thickness as shown on the Drawings or as directed by the Engineer. The concrete after laying will be thoroughly rammed and mortar worked up to the top and smoothed with a steel trowel.

The edge of each section into which the floor is divided should be defined by wooden screeds of the approved width and of a depth equal to the depth of the floor concrete.

Freshly placed concrete floor and completed floor portions as finished shall be protected to prevent loss of water by covering with damp hessian, water proof paper, damp sand or other approved material, and shall be kept constantly damp for a period of four days or longer after concreting as directed by the Engineer. The concrete shall be allowed to dry out slowly over a period of three days after wet curing is completed.

The expansion joints shall be filled in with hot bitumen, of the approved grade, as directed by the engineer.

5. INSTALLATION OF TILE FLOORING

When setting out the tiles, care shall be taken to establish the correct elevation for the floor. A gauge rod shall be used, indicating the overall measurement of a given number of tiles with specified joint width to reduce cutting.

After the floor has been machine finished, it should be covered with white, non-staining sand or rags to protect it while other work is being done. After removal, the floor shall be thoroughly scrubbed.

5.1 General

The base shall be prepared by laying cement concrete of specified grade and of thickness as shown on the drawings, or specified in the Bill of Quantities.

The curing period of the setting bed shall be as directed by the Engineer. As large an area of setting bed shall be spread at one time as can be covered with tiles before the mortar has set. Surplus mortar shall be removed. The thickness of setting bed in any space shall not be less than 1/2".

Floor and wall surfaces to receive the tiles shall be thoroughly cleaned of all dirt, dust, oil and other objectionable matters. Tiles shall be laid out from the centre line of each space in an outward direction and the pattern should be made symmetrical with a minimum number of cut tiles as directed by the engineer.

Joints between the tiles shall be of uniform width. Tiles shall be cut with a suitable cutting tool and rough edges shall be rubbed smooth. Tiles shall be laid to the straight edges.

5.2 Ceramic

The ceramic tiles shall be laid to the required lines, levels and grades over a setting bed of cement sand mortar comprising of one part of cement and 4 parts of sand by volume and the joints filled with neat white or grey cement including vertical and horizontal covers. The tile floor shall be kept wet for at least 72 hours and no traffic should be allowed on the tiles during curing period.

5.3 Cement Concrete Tiles

The cement concrete tiles shall be laid to the required lines, levels and grades over a setting bed of cement sand mortar comprising of 1 part of cement and 4 parts of sand by volume.

The sides shall be buttered with cement mortar and adjacent tiles laid in the same manner in the required pattern, with a thin joint in proper level and line. The joints shall then be thoroughly cleaned with wire brush and pointed with neat cement of the same colour as the tile.

Care shall be taken to see that full tiles are used as far as possible. Where this is not possible, the edge tiles shall be meatly cut with an electric saw and the edges rubbed smooth. In case of patterned tiles, the tiles shall be laid in such a way that the pattern ends symmetrically on two sides.

Cement concrete tiles shall be cured for 7 days with water and then thoroughly cleaned and dried. Notwithstanding anything written above, the manufacturer's printed instructions regarding laying shall be strictly followed.

5.4 Concrete Pavers

Concrete pavers shall be laid in-accordance with the instructions of the manufacturer over a cushion of sand. The pavers will be laid as per the instructions of the Engineer.

5.5 Marble Tops

Pre-polished marble top 1” thick or as mentioned in drawings or as instructed by the Engineer of approved quality, colour & shade to be laid in approved pattern set in 1:2 cement sand mortar base including bull-nozing & chamfering of edges and making holes for wash basin and apron .

6. MEASUREMENT AND PAYMENT

6.1 General

Except otherwise specified herein or elsewhere in the Contract Documents, no measurement and payment will be made for the under-mentioned specified works related to the relevant items of the Estimate.

The cost thereof shall be deemed to have been included in the quoted unit rate of the respective items of the Estimate.

6.1.1 Loss and wastage of material due to consolidation, erosion and settlement.

6.1.2 All type of joints (expansion, contraction and construction joint etc.).

6.1.3 Class 'C' cement concrete screed base and 1:4 cement sand mortar under floor.

6.1.4 Rough plaster base under skirting / dado.

6.1.5 Finishing/grinding, washing & polishing works of ceramic, concrete, terrazzo tile, terrazzo and marble tiles in floors and skirting/ dado.

6.1.6 Marble strips in terrazzo floors

6.1.7 1:2 and 1:4 cement sand rough cast plaster.

6.1.8 Sand cushion under concrete pavers

6.1.9 Adhesives used in the laying of PVC flooring.

6.1.10 Pigmented grouting.

6.1.11 Cleaning of tiles after installation.

6.1.12 Bull-nozing, chamfering of edges of marble tops including base mortar and making holes for wash basin including all necessary fixing accessories.

6.2 Cement Concrete Floor

6.2.1 Measurement

Measurement of acceptably completed works of cement concrete floor steel trowelled finish will be made on the basis of net actual area in square foot laid in position as shown on the Drawings or as directed by the Engineer.

6.2.2 Payment

Payment will be made for acceptable measured quantity of cement concrete floor steel trowelled finish on the basis of unit rate per square foot/meter quoted in the Estimate and shall constitute full compensation for all the works related to the item.

6.3 Ceramic/ Marble Tile/ Terrazzo Tile Floor

6.3.1 Measurement

Measurement of acceptably completed works of ceramic/ marble/ terrazzo tile in floor will be made on the basis of net actual area in square foot of floor laid in position as shown on the drawing or as directed by the Engineer.

6.3.2 Payment

Payment will be made for acceptable measured quantity of ceramic/ marble/ terrazzo tile floor on the basis of unit rate per square foot/meter quoted in the Estimate and shall constitute full compensation for all the works related to the item.

6.4 Ceramic/ Marble Tile/ Terrazzo in Dado and Skirting

6.4.1 Measurement

Measurement of acceptably completed works of ceramic/ marble tile/ Terrazzo in dado/skirting will be made on the basis of net actual area in square foot of dado/skirting laid in position as shown on the Drawing or as directed by the Engineer.

6.4.2 Payment

Payment will be made for acceptable measured quantity of ceramic/ marble tile in dado/skirting on the basis of unit rate per square foot quoted in the Estimate. The unit rate shall include all cost of cement, sand, mortar and shall constitute full compensation for all the works related to the items.

6.5 Cement Concrete Tile Floor/Pavers

6.5.1 Measurement

Measurement of acceptably completed works of cement concrete tile in floor will be made on the basis of net actual area in square foot of floor laid in position as shown on the Drawing or as directed by the Engineer.

6.5.2 Payment

Payment will be made for acceptable measured quantity of cement concrete tile in floor on the basis of unit rate per square foot/meter quoted in the Estimate and shall constitute full compensation for all the works related to the item.

SECTION - 5100

PLUMBING

1. SCOPE

2. APPLICABLE STANDARDS

3. SUBMITTALS AND SHOP DRAWINGS

4. MATERIAL AND EQUIPMENT

5. EXECUTION

6. TESTING AND COMMISSIONING

7. MEASUREMENT AND PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

1. 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 include plumbing works as follows:

I) Cold and Hot Water Supply

ii) Building Drainage

iii) 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. 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. 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. 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)

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.

UPVC Pipes

The material shall substantially consist of 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.

PIPES

a. 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.
b. As per BS4514/5255, sanitary pipes and fittings shall be class “A” wall thickness 3.2mm.

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 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 Bathtub

Bathtub 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 0C & + 20 0C.

4.5.11 WATER FILTERS

Water filters shall be installed on wall near the water coolers. They shall be of . 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 liting 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 Robershaw (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 automative 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. 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 form 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 priemer 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 pipework and water to be borne by it. The intervals between pipe supports shall not exceed the following :

Maximum interval between supports (metres)

Nominal Dia mm	Steel pipes	
	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 from 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 hands.

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°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°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 or 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°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:-

1. Fixed Point
2. 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. The 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 support points in cm.

Pipe diameter	***Temperature in ºC***		
	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, site, 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 atleast (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 the 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	PIPEWORKS Horizontal ($10xd_e$)	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. 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. 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 ***

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

SECTION - 5150

FIRE PROTECTION

1. SCOPE OF WORK

2. APPLICABLE STANDARDS

3. SUBMITTALS

4. FIRE PROTECTION EQUIPMENTS

5. CLEAN AGENT FIRE EXTINGUISHING SYSTEM

6. PORTABLE FIRE EXTINGUISHERS

7. INSTALLATION AND TESTING OF PIPES

8. MEASUREMENT AND PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

SECTION - 5150

FIRE PROTECTION

1. SCOPE OF WORK

The work to be done under this section of the Specifications includes furnishing all plant, labour, equipment, appliances and materials and in performing all operations required in connection with the supply and installation of pipes and fittings for firefighting systems, portable fire extinguishers, fire hose rack cabinets and fire hydrants as shown on the Drawings, as specified herein and/or as directed by the Engineer.

2. APPLICABLE STANDARDS

Fire Fighting System shall conform to NFPA (National Fire Protection Association) of USA and/or Fire Safety provision-2016 Building Code of Pakistan.

3. SUBMITTALS

The contractor shall submit technical brochures and samples of all the items mentioned in the Specifications from approved manufactures or as directed by the Engineer

4. FIRE PROTECTION EQUIPMENTS

4.1 PIPES AND FITTINGS

Fire fighting pipes & fittings shall conform to ASTM A53/A53M steel line pipe “Steel Black and Hot dipped, Zinc Coated, Welded and Seamless Welded and Seamless Wrought Steel Pipe”. Joints shall be welded as specified in the applicable standards. Factory-Made Wrought Steel Butt-welding fittings shall conform to ANSI/ASME B16.9 and Butt-welding End shall be ASME B16.25 or any other standard specified in NFPA. Where the pipe flanges and flanged fittings are used, the applicable standard shall be ASME B16.5 or any other standard specified in NFPA.

4.2 FIRE HOSE CABINET

Closets and cabinets used to contain fire hose shall be of a size to allow the installation of necessary equipment at hose stations and designed so they do not interfere with prompt use of hose connection, the hose and other equipment at the time of fire. Fire Hose Cabinet shall consist of rubber hose/reel of specified diameter and length as shown on the applicable drawings and as directed. The hose shall have polished brass valve nozzle at one end. The reel shall turn full 180 degrees. Hose and reel shall be placed in a steel fire box with glazed steel door. The door shall open full 180 degrees and shall be provided with locking arrangement. The locking arrangement will be such that the cabinet can be opened either by breaking the front glass and turning the handle from inside or with key from outside without breaking the front glass. Where “break glass” type protective cover for latching device is provided, the device provided to break the glass panel shall be attached in the immediate area of the break glass panel and shall be arranged so that device cannot be used to break the other glass panels in the cabinet door. The glass shall be 5 mm thick and cabinet shall be made of at least 18 gauge sheet.

The exposed front face of fire hose cabinet shall be painted with signal red enamel paint over a prime coat of anti-corrosive paint. Instructions for opening of fire hose cabinets and operation of hose reel shall be inscribed in signal red on the inside face of the glass such that the instructions can be read from outside. The hose shall be rated for a working pressure of 16 kg/cm^2 and test pressure of 25 kg/cm^2.

4.3 EXTERNAL FIRE HYDRANTS/PILLAR HYDRANTS WITH HYDRANT CABINETS

Above grade wet barrel fire hydrant shall be cast iron or steel and shall conform to BS EN 671. It shall have 2 Nos. dia 2-1/2" (65mm) outlets suitable for connection of instantaneous coupling hose. It shall have one suitable inlet connection of diameter 100mm for fire department pumper if specified in BOQ item. It shall be suitable for working pressure of 1.5 times the system working pressure.

The outlets shall be provided with protective standard caps of galvanized steel and attached to the standpipe by chains. The hydrants shall be coated internally and externally with black bituminous coating.

Each hydrant shall be provided with two 100 feet (30 meter) of 2-1/2" (65mm) diameter rubber lined hose instantaneous coupling and nozzles, all housed within a steel cabinet beside the hydrant.

Valve pits shall be of adequate size and readily/easily accessible for inspection, operation, testing, maintenance and removal of equipment contained therein. They shall be constructed and arranged so as to property protect the installed equipment from any ground movement and accumulation of water. The valve pits shall be precast concrete with reinforcement. Crushed stone or gravel shall be used for the floor of the pit. The pit covers shall be able to withstand the heaviest vehicle, which are using the roadside to be specified.

4.4 FIRE SPRINKLERS

The fire sprinklers have K-factor of 5.6. Sprinklers shall be located, spaced and positioned in accordance with the requirements of NFPA-13, as per drawing and/or as per manufacturer's recommendation. Sprinklers shall be positioned to provide protection of the area consistent with the overall objectives of NFPA-13 by controlling the positioning and allowable area of coverage for each sprinkler. The sprinkler shall be FM/UL listed having maximum working pressure 175 psi (12.1 bars) and hydrostatic test pressure of 350psi (25 bars).

4.5 TEMPERATURE RATING, CLASSIFICATIONS, COLOR CODING & PAINTING OF FIRE SPRINKLERS

Sprinklers shall only be painted as per manufacturer's recommendation or as per NFPA Standard.

Maximum Ceiling Temp		**Temperature Rating**		**Temperature Classification**	**Color Code**	**Glass Bulb Color**
ºF	**ºC**	**ºF**	**ºC**			
100	38	135-170	57-77	Ordinary	Uncolored or Black	Orange or Red
150	66	175-225	79-107	Intermediate	White	Yellow or Green
225	107	250-300	121-149	High	Blue	Blue
300	149	325-375	163-191	Extra High	Red	Purple
375	191	400-475	204-246	Very Extra High	Green	Black
475	246	500-575	260-302	Ultra High	Orange	Black
625	329	650	343	Ultra High	Orange	Black

4.6 STOCK OF SPARE SPRINKLERS

A supply of spare sprinklers shall be maintained on the premises so that any sprinkler that have operated or been damaged in any way can be promptly replaced. The stock of spare sprinklers shall include all types and ratings installed as per NFPA standard and shall be as follows:

1) Not less than 06 sprinklers for protected facilities having under 300 sprinklers.
2) Not less than 12 sprinklers for protected facilities having 300 -1000 sprinklers.
3) Not less than 24 sprinklers for protected facilities having over 1000 sprinklers.

One sprinkler wrench as specified by sprinkler manufacturer shall be provided in the cabinet for each type of sprinkler installed to be used for the removal and installation of sprinklers in the system. A list of sprinklers installed in the property shall be posted in the sprinkler cabinet. The list includes the following:

- Sprinkler identification Number (SIN) if equipped or the manufacturer, model, K-factor, deflector type, thermal sensitivity and pressure rating.
- General description
- Quantity of each type, to be contained in the cabinet
- Issue or revision date of the list.

4.7 FLOOR CONTROL VALVE ASSEMBLY (FCVA)

The FCVA is provided at every zone of sprinkler network as shown on drawing. This assembly consists of butterfly valve with supervisory switch, pressure reducing valve, pressure gauge, check valve, flow switch with clamping accessories and drain valve. The drain valve is utilized for the flow control, inspection, testing and draining of sections of wet pipe automatic sprinkler system. This system with an integral sight glass assembly provides a simplified means for water flow alarm and draining of feed drains. This drain is provided with shut off valve, dual orifice valve and sight glass assembly. All sprinkler pipe and fittings shall be installed so that the system can be drained.

4.8 ALARM CHECK VALVES

Alarm check valves shall be equipped to give clear positive audible alarm at any water flow through the sprinkler system equal to or greater than that from a single automatic sprinkler. It shall be suitable for vertical/horizontal installations as per system requirement or as directed by the Engineer and for the variable pressure of water supply.

Alarm check valves shall be of flanged type designed to withstand up to working pressure of 250 psi. It shall have cast iron body and clapper hinge, bronze clapper assembly, pilot valve assembly and other moving parts.

The alarm check valve assembly shall consist of the following:

- Alarm checks Valve, with trimmings for variable pressure, open drain, Vertical installation.
- Ø 2 inches main drain valve.
- System pressure guage.
- Supply pressure guage.
- Bypass check valve.
- Alarm control and test valve.
- Retainer chamber.
- Water motor alarm gong.
- Pressure operated alarm switch to actuate a bell

Alarm check valve shall be connected to the main control panel. The control panel shall have auto, manual and off selector switch. If the selector switch is in either off or manual position, an alarm signal should be sent to the main Fire Control and fire alarm panel.

4.9 VALVES

All valves of Fire-fighting systems shall be as per standards and of specified pressure ratings.

4.10 PRESSURE REGULATING VALVE

Pressure regulating valve shall be as per standards and of specified pressure ratings. Approved pressure gauge shall be installed on both upstream and downstream sides of every pressure regulating valve device.

4.11 AIR RELEASE VALVES

These shall be designed to meet the following conditions:

- Expulsion of air during charging of the pipeline,
- Admit air during emptying of the pipeline to avoid the occurrence of negative pressure,
- Expulsion of air accumulated at summit points along the pipeline under normal operating conditions.

Air release valves shall be air cum vacuum release type to meet all the three conditions stated above and it shall be suitable for the liquid for which it is used. Valves body and cover shall be of Cast iron / malleable iron. Float and valve seat shall be of stainless steel. Valve ends shall be screwed or flanged as shown on the drawings. Threads shall be to B.S. 21 and flanges shall be drilled to B.S. 4504 Part 1. Air release valve shall be provided at all high points to ensure adequate venting of the piping system.

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5. CLEAN AGENT FIRE EXTINGUISHING SYSTEM

5.1 DISCHARGE NOZZLE

Discharge nozzle shall be listed for intended use. Listing criteria shall include flow characteristics, area coverage, height limits and minimum pressure, as per NFPA standards or as per manufacturer's recommendation. Discharge nozzle shall be permanently marked to identify the manufacturer as well as the type and size of orifice. Nozzles shall be installed so as to free of any obstruction that could interfere with proper distribution of discharge agent.

5.2 DETECTION, ACTUATION, ALARM AND CONTROL SYSTEM

The clean agent shall be controlled by listed clean agent releasing control panel. That is listed for monitoring the associated initiating device, meet the listed compatibility requirement for actuation of the system releasing device and controls the system notification appliances. Alarm system shall also be connected with the control panel of the system. The clean agent suppression system releasing control panel shall not be dependent upon or affected by the operation or failure of protected premises building fire alarm panel. Automatic detection, automatic actuation, alarm and control system shall be installed as per NFPA standards or as per manufacturer's recommendation.

5.3 OPERATING DEVICES

All devices shall be located, installed or suitably protected so that they are not subject to mechanical, chemical or any other damage that would render them inoperative. A means of manual release of the system shall be accomplished by mechanical manual release or by electrical manual release when control system monitors the low-battery signal.

5.4 STORAGE CONTAINER ARRANGEMENT

Storage containers and accessories shall be located and arranged so that inspection, testing, recharging and other maintenance activities are facilitated and interruption of protection is held to minimum. Storage containers shall be installed and secured according to manufacturer's recommendation or as per NFPA standards or listed installation manual.

6. PORTABLE FIRE EXTINGUISHERS

Portable fire extinguishers shall be maintained in fully charged and operable condition and shall be kept in their designed places at all times when they are not been used. Fire extinguishers having grossed weight not exceeding 40lbs (18.14 kg) shall be installed so that the top of extinguisher is not more than 5feet (1.53m) above the floor. Fire extinguishers having the gross weight greater than 40lbs (except wheeled types) shall be installed so that the top of extinguisher is not more than 3.5 feet (1.07m) above the floor. In no case shall the clearance between the hand portable fire extinguisher and floor be less than 4inch (102mm).

6.1 MATERIALS AND EQUIPMENT

Portable fire extinguishers shall contain specified quantities and types of extinguishing agents. Extinguishers shall be classified according to type of extinguishing agents and the Class of fire types for which it is intended to be used. The extinguisher container/vessel shall be of anticorrosive material or otherwise lined internally with corrosion-resistant material. The outside surfaces of the container/ vessel shall be painted with at least two coats of anti-corrosive paint.

The extinguisher container shall be designed as pressure vessel and shall conform to all the applicable standards of ASME pressure vessel codes.

The container shall be fitted with spring-loaded pressure safety valve. The valve shall be set to blow off at 90% of container test pressure.

6.2 CODES AND STANDARDS

Portable fire extinguishers shall conform to NFPA-10 (National Fire Protection Association) of U.S.A. or F.O.C. (Fire Offices Committee) of U.K. and B.S. 5423 or Fire Safety Provision 2016, Building Code of Pakistan.

6.3 LABEL VISIBILITY

Fire extinguishers shall be installed so that the fire extinguishers operating instructions faced outward. Portable Fire extinguishers shall be painted with colour code according to NFPA Standard specifications. On the body of the extinguishers shall be marked/imprinted the following information.

(a) Instructions on how to use the extinguisher.

(b) Name of the extinguishing agent.

(c) Weight/volume of the extinguishing agent.

(d) Gross weight of the extinguisher.

(e) Filling pressure of the extinguishing agent.

(f) Classes of fires for which the extinguishing agents may be effectively used.

(g) Name of the manufacturer and the year of manufacture.

6.4 INSPECTION FREQUENCY

Fire extinguishers shall be inspected at least once per calendar month. Fire extinguisher shall be inspected daily or weekly when conditions exist that indicate the need for more frequent inspections.

6.5 EXTINGUISHERS MAINTENANCE

Maintenance shall be done by manufacturer's service manual and thorough examination of mechanical parts, extinguishing agents, expelling means and physical condition. The extinguishers shall be subjected to maintenance at interval not more than one year. However the maintenance of type of extinguishers shall be at an interval specified in the applicable standards.

6.6 TYPES OF EXTINGUISHERS

6.6.1 Dry Chemical Extinguisher

Dry chemical extinguisher shall contain specified quantities of dry powder chemical. The type of dry powder shall be suitable for the intended use. The extinguisher shall have knob or lever operated valve, a short length of hose and a nozzle at the end of the hose. A siphon/dip tube shall extend from the valve to the bottom of the container. The valve shall have safety pin to prevent accidental release of the extinguishing agent. The discharge pressure shall be obtained from pressurized carbon dioxide cartage attached to the body of the extinguisher. The operation of the knob or lever shall pierce the cartage to obtain the expellant pressures. When operated the discharge time of 6 kg dry powder extinguisher shall not be less than 14 seconds and max range of throw shall be not less than 5-8 meter.

6.6.2 Foam Extinguisher

Foam extinguisher shall contain specified quantities of premixed foam of 1 liter of water, the extinguisher shall be pressurized with nitrogen. The extinguisher shall have a short length of hose and a valved nozzle. The valve shall have safety pin to prevent accidental release of the extinguishing agent. The extinguishers shall be self-expellant. In no case antifreeze additive shall be used.

When operated, the throw for 9 liters foam extinguisher shall not be less than 6 meters. The discharge time shall not be less than 40 seconds.

6.6.3 Wet Chemical Fire Extinguisher

Wet chemical fire extinguishers are recommended to extinguish Class-K fires. The extinguishing agent can be comprised of, but is not limited to, solution of water and potassium acetate, potassium carbonate, potassium citrate or a combination of these chemicals. The liquid agent typically has a pH of 9.0 or less. On class K fire, the agent forms a foam blanket to prevent re-ignition.

The extinguisher shall have knob or lever operated valve, a short length of hose and a nozzle at the end of the hose. The valve shall have safety pin to prevent accidental release of the extinguishing agent.

6.7 INSTALLATION OF EXTINGUISHERS

Portable fire extinguishers shall be installed at one meter height above finished floor.

Where only extinguishers are installed they shall be fixed to wall or column with painted steel clamps or stored in steel or concrete fire extinguisher cabinets as shown on the applicable drawings or as directed by the Engineer. Where clamped to the wall/column the clamp shall be such that extinguisher can be conveniently fixed and removed without loss of time.

Where stored in cabinets, the cabinets shall be of steel or concrete with glazed steel door painted with at least two coats of anti-corrosive signal red enamel paint over a prime coat of red oxide paint. The

locking arrangement will be such that the door can be opened from inside by breaking the glass and from outside with key.

System should be tested and commissioned as per NFPA requirement or any other applicable standard.

7. INSTALLATION AND TESTING OF PIPES

7.1 GENERAL REQUIREMENTS

The Contractor shall submit to the Engineer for approval of the following information regarding the specified/proposed items of pipes and fittings.

i. Name and address of the manufacturers
ii. Country of origin, make and model
iii. Dimensions and wall thicknesses of pipes and fittings
iv. Material and thicknesses of coating and lining
v. Factory test certificate from the manufacturers (MTC)
vi. Warranty if so provided by the manufacturers
vii. Method of jointing, testing and commissioning

Every pipe shall be tested at the manufacturer's works to specified hydraulic test pressure. The test pressure shall be maintained for sufficiently long time for proof and inspection. Each pipe and fitting shall be permanently marked or engraved giving the following information:

(i) Make and Nominal diameter
(ii) Class, Duty or Service (Pressure) Rating
(iii) Standards according to which the pipes and fittings have been manufactured.

Unless otherwise specified diameters of pipes and fittings shall be nominal. Actual inside and outside diameters and tolerances in diameters of pipes and fittings shall be according to the specified standards. Unless otherwise specified, service ratings of pipes and fittings shall not be less than the maximum pressure to which they will be subjected to.

Unless otherwise specified, wall thicknesses of the pipes shall be according to the class, schedule or duty of the pipes. The wall thicknesses shall be measured at locations excluding the jointing ends. The tolerances in wall thicknesses shall be according to the specified standards. Wall thicknesses of fittings shall not be less than those of corresponding pipes to which they are joined together. Unless otherwise approved by the Engineer, pipes and fittings, jointing materials such as rubber rings, gaskets, nuts & bolts and jointing compound etc. shall be of the same manufacturers as those of the pipes and fittings.

7.2 TRANSPORTATION, HANDLING AND STORAGE

The Contractor shall be responsible for proper transportation, handling (loading and unloading) and storage of pipes and fittings as per the manufacturer's recommendations and direction of the Engineer.

Crane, rope or nylon slings, lifting beams with flattened hook scissor-dog shall be used for loading and unloading of pipes fittings. Hooks and dogs shaft be well padded to prevent the pipe being damaged and shall be fitted-with locking device. Steadying ropes essential.

Pipes and fittings damaged during transportation, handling or storage of lowering shall be rejected and replaced at the Contractor's expense storage of gaskets and jointing compound shall be under shade to prevent damage by sunlight and extreme heat.

7.3 INSPECTION

Pipes and fittings shall be visually inspected for any evidence damage or hair cracks. The turned ends

of pipes and fittings shall be inspected for any local irregularities, which could affect the water tightness of the joint. Damaged pipes and fittings shall be rejected and replaced at the Contractor's expense.

7.4 LAYING OF PIPES

7.4.1 Above Ground (Unburied)

Before installation, the interior of pipes and fittings shall be thoroughly cleaned of all rust, dirt and foreign materials. Pipe and fittings shall be installed to lines and grades as shown on the drawings and/or as directed by the Engineer.

Pipe joints shall be welded unless otherwise specified and/or directed by the Engineer except for jointing valves and appurtenances and where welding is not possible. Welding shall be done by qualified and licensed welders using electric arc welding process. The welding shall develop full strength of the adjoining steel. Defective joints and joints not developing full strength shall be rejected at the risk and cost of the Contractor.

Pipes and fittings shall be properly supported by galvanized steel clamps, brackets and hangers, etc. Supports shall permit unrestrained expansion and contraction. Clamps, brackets and hangers etc. shall be designed to take the weight of pipe, weight of water, seismic and wind loads.

Thrust anchors shall be provided at all changes in the pipe diameters and directions and at all branches and dead ends. Thrust anchors shall be designed to resist maximum thrust forces resulting from the worst possible combination of working/static/test pressures, transient/water hammer pressure, and thermal expansion/contraction, seismic and wind loads.

The Contractor shall submit to the Engineer for approval shop drawings of the pipes supports and thrust anchors. The supports and anchors shall be used only after approval by the Engineer. Approval by the Engineer shall however, not relieve the Contactor from any of his contractual responsibility regarding safety requirements of the supports and anchors.

Pipes passing through floors, ceilings, roof, walls and columns in non-water retaining structures above ground or water table shall be encased in black steel pipe sleeve. The annular space between the pipes and the pipe sleeves shall not be less than one inch. The annular space shall be filled with approved packing material and sealed at both ends with approved fire rated sealant.

Pipes passing through water retaining structures above or below ground and non-water retaining structures below water table shall be provided with leak proof puddle flange. The flange diameter shall be larger than the outside diameter of the pipe by at least 4" for pipe diameters 6" and smaller and by at least 6" for pipe diameters larger than 6".

After installation, pipes, fittings, pipe supports and thrust anchors shall be painted with two coats of red oxide or zinc chromate primer and two coat of synthetic enamel paint of approved quality.

7.4.2 Below Ground (Buried)

Before installation, the interior of pipes and fittings shall be thoroughly cleaned of all rust, dirt and foreign materials. Pipes and fittings shall be laid to alignments and grades as shown on the drawings and/or as directed by the Engineer. Pipes and fittings shall be lowered into the trench in a manner approved by the Engineer. All care shall be taken to avoid abrasion of the pipes and fittings.

The pipes shall be laid on specified bedding material. Before laying bedding material shall be approved by the Engineer. Recesses shall be excavated in the bottom and sides of the trench to accommodate joints, fittings and specials. After laying of pipe and fittings, the recesses shall be filled with specified bedding material and thoroughly compacted manually. Pipes and fittings

alignments, that have the grades or joint disturbed or dislocated after laying shall be removed and re-laid to the entire satisfaction of the Engineer.

Backfilling shall be carried out with the specified materials and in the specified sequence. Backfill shall be laid in layers and compacted to 95% of AASHTO modified density. The thickness of each compacted layer shall not exceed 6". Hand tools shall be used for compaction of backfill/bedding material around the pipe and fittings. Mechanical methods may be used for compaction of backfill 12" over/above crown the pipeline.

When laying is not in progress, the open ends of the pipeline shall be closed with a temporary plug as approved by Engineer. Small changes in direction may be made by deflecting the last laid pipe after the joint has been made. If the alignment requires deflection in excess of the manufacturer's recommended limits, bends shall be used. Concrete thrust blocks shall be provided at all changes in the pipe diameters and directions and at all branches and dead ends.

After installation, pipe and fittings shall be applied with two coats of bituminous paint and wrapped with soaked bitumen hessian cloth. Alternatively pipe and fittings shall be double wrapped with bituminized tape.

7.5 JOINTING OF PIPES & FITTINGS

Welding shall be permitted as a mean of jointing pipes and fittings. The welding process shall be performed in accordance to NFPA-51B. Welding shall not be performed where there is impingement of rain, snow, sleet or high wind on the welded area of pipe product. Torch cutting and welding shall not be permitted as a means of modifying or repairing Fire-fighting system.

Weld between pipes and welded outlet fitting shall be permitted to be attached by full penetration welds, partial penetration groove welds or fillet welds. The minimum throat thickness shall not be less than the thickness of pipe, thickness of welded fitting or 3/16 inch (4.5mm) whichever is least. Circumferential butt joints shall be cut, beveled and fit so that full penetration shall be achieved. Face welds on the internal face of flange shall be permitted as a water seal in addition to hub weld.

When welding is performed, the following shall be applied: Holes in piping for outlets shall be cut to the full inside diameter of fittings prior to welding. Discs shall be retrieved. Openings cut into piping shall be smooth bore and all internal slag and welding residue shall be removed. The fittings shall not penetrate the internal diameter of piping. Steel plated shall not be welded to the ends of piping or fittings. Fittings shall not be modified. Nuts, clips, eye rods, angle brackets or other fasteners shall not be welded to pipe or fittings. Completed welds shall be free from cracks, incomplete fusion,surface porosity. Completed Circumferential butt weld reinforcement shall not exceed 3/32in (2mm).

7.6 TESTING

After laying each section of pipeline as convenient to the contractor or as necessary in the Engineer's opinion, shall be tested for hydrostatic pressure. Field hydrostatic test pressure shall not be less than 1-1/2 times the maximum pressure to which the system will be subjected to.

Before testing, pipe section shall be cleaned and their ends shall be closed with blank flanges, plugs or caps. The closed ends shall be anchored against thrust forces. Valve air vent outlet shall be installed at the upper end of the pipe section and valve water inlet fitting shall be installed at the lower end of the section. Pressure gauge certified from any approved laboratory shall be installed at both lower and upper ends of the pipe section. An isolating ball valve shall be fitted between the pipe section and the gauges.

Sufficient backfill material shall be placed over the center section of each pipe (leaving the joints exposed) to allow inspection of the pipe joints under the test pressure. All permanent anchors shall be in positions and shall have developed adequate strength before the testing begins. The pipe section under test shall be filled with water from the inlet fitting, taking care that all air is displaced through the vent outlet.

After filling, the pipeline shall be left under small pressure for 24 hours as directed by the Engineer in order to wet the pipe and the pipe joints. After the wetting period, additional water shall be introduced into the pipe section until the test pressure is achieved when the pipe section shall be closed.

The test pressure shall be maintained for at least two hours or for a period as directed by the Engineer. Pressure gauges shall be read at maximum intervals of 15 minutes during the test period.

If the pressure measurements are not made at the lowest point of the section, an allowance shall be made for the static head between the lowest point and the point of measurement to ensure that the specified works test pressure is not exceeded at the lowest point.

If a drop in pressure occurs, additional quantity of water shall be introduced into the pipe section in order to re-establish the test pressure. The additional quantity of water introduced into the pipe section shall be accurately measured.

During the test period all joints shall be inspected. If any abnormal movement, distortion, squirm or leakage is detected, the test pressure shall be relieved immediately and the defects shall be rectified in consultation and with the approval of the Engineer. After rectification of the defects, the pipe section shall be re-tested.

The test will be considered to have passed, if the quantity of water required to be added the test pressure does not exceed 100 liters per day, per meter of diameter and per kilometer of pipeline for each 30 meters head of test pressure.

7.7 FLUSHING AND COMMISSIONING

After installation and testing pipelines shall be flushed with water until all dust, dirt, scales and extraneous matters are removed from the inside of the pipeline. During flushing all valves and appurtenances shall be closed and open several times.

After successful completion of testing and flushing duly approved by the Engineer, pipelines shall be commissioned. All valves and appurtenances shall be set at proper openings and all parameters shall be set at specified or manufacturers' recommended values.

7.8 PIPEWORK SUPPORTS

All pipe work supports shall be of mild steel rolled sections and shall be painted with two coats of approved rich metallic zinc primer. Straps, rods and hangers shall be of mild steel when used for galvanized steel pipes.

Straps shall be provided on all pipe supports. Straps 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 allowing the pipe to slide axially.

Horizontal pipe work along 'walls shall be supported on channel frames securely fixed to the column. All pipes shall be arranged to slide on the pipe supports and straps shall be provided to form a rigid guide.

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

Pipe work supports shall be so designed and installed as to allow free movement due to expansion and contraction. Supports shall be anchor to steel or reinforced concrete column, wall, beam or slab.

Each support shall be able to carry independently its all the operational loads of pipe work and water.

All pipes shall be individually supported. Pipes shall not hang from other pipes. Points at which pipes pass through walls, floors, connections to plan equipment and heat emitters, etc. do not constitute points of supports for the pipes.

Provide suitable and substantial hangers and supports for all piping. As a minimum for metallic pressure piping, support schedule shall be as follows:

Pipe Size	Maximum hanger spacing (feet)	Rod Sizes (inches)
1 inch and smaller	6	3/8
1-1/4 inch to 2 inch	8	3/8
2-1/2 inch to 4 inch	10	3/8
5 inch and larger	12	1/2

8. MEASUREMENT AND PAYMENT

8.1 MEASUREMENT

Measurement of acceptable completed works of every component of fire-fighting system will be made on the basis of material/equipment provided and installed in accordance with the above specifications and applicable drawings.

8.2 PAYMENT

Payment for acceptable measured quantities of every component of fire-fighting system will be made on the basis of unit rate of material/equipment quoted in the Bill of Quantities and shall constitute full compensation for all the works related to the item.

*** End of Section 5150 ***

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

SECTION – 5216

WATER SUPPLY PIPES, PIPE LAYING AND APPURTENANCES

1. SCOPE
2. MATERIALS
3. SUBMITTALS
4. EXECUTION
5. TESTING
6. MEASUREMENT & PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

1. SCOPE

The work covered by this Section of the specification consists in furnishing all plant, labour, equipment, appliances and materials and in performing all operations in connection with water supply lines and appurtenances in strict accordance with this section of the specifications and the applicable Drawings.

2. MATERIALS

Material shall conform to the respective specifications and other requirements specified hereinafter and shall be new and unused.

2.1 CAST IRON PIPES AND FITTINGS

Cast iron pipes and fittings shall comply with ISO 13-1978 (E) or B.S. 78 for spigot and socket vertically cast pipes, B.S.1211 for spigot and socket spun iron pipes and B.S. 2035 for flanged pipes.

2.2 ASBESTOS CEMENT PIPES, FITTINGS AND SPECIALS

These shall conform to International Organization for Standardization Recommendation R160 "Asbestos Cement Pressure Pipe and joints" or British Standard Specification 486 "Asbestos Cement Pressure Pipe" or to Pakistan standard specification No. PS. 428 : 1984 of the class capable of withstanding a 400 ft. head test pressure. Short lengths of pipe machined overall shall be used at fittings for tying in.

The fittings and specials for asbestos cement pipes shall be cast-iron conforming to British Standard Specification 78: PART 2 Fittings: "Cast Iron Spigot and Socket Fittings", Class AV, except that the fittings and specials shall have the shapes, dimensions and tolerance required to fit the asbestos-cement pipes. Fittings and specials for asbestos-cement pipe shall be supplied by the manufacturer of the asbestos-cement pipe.

Rubber ring shall conform to Pakistan standard specification No. PS. 1915: 1987.

2.3 GALVANIZED IRON PIPES AND FITTINGS

The galvanized iron pipes shall strictly conform to B.S. 1387 Specifications for "Steel Tubes and Tubulars suitable for screwing to B.S. 21 pipe threads" and shall be of medium grade. All screwed pipes and sockets shall conform B.S. 1740. A complete and uniform adherent coating of zinc white will be provided for galvanized iron pipes and fittings.

2.4 M.S PIPE

All mild steel pipes shall conform to ASTM designation A53, schedule 40 "standard specification for welded and stainless steel pipe". All pipes shall be internally cement mortars lined and externally bituminous coated.

M.S. short pieces shall be flanged at both ends. The flanges shall conform to B.S. 4504, part 3 (PN 16). M.S. pipe pieces shall be externally protected by applying two coats of red oxides (of approved quality) and bituminous coating (grade 10/20) at the rate of 0.4 lb/Sq.ft.

2.5 SLUICE (GATE) VALVE

Valves shall be wedge gate valves conforming to British Standard Specification 5163. Ends of valves shall be suitable for the type of pipe to which the valves will be connected.

2.6 CHECK VALVES

Check valve shall comply with the requirements of BS 5153 latest revision for pressure rating of 16 bar. The valve shall be of swing type and shall be of quick acting single door type.

2.7 FIRE HYDRANTS

The metal of the fire hydrant shall conform to B.S. 750 and shall be of screw down streamline pattern. The body shall be best quality, closed grain, grey cast iron with spindle of manganese bronze having tensile strength of not less than 11.0 tons per square inch machined from solid rolled bars, the seating valves and other parts shall be of best quality gun metal with Brinell Hardness No. 80. The direction of closing shall be by clockwise rotation and outlet shall have screwed joint for accommodation 2 1/2" dia hose connection. Inlet flanges of hydrant shall be suitable for jointing with flanges of hydrant bends and tees. All fire hydrants shall be coated with three coats of solution from an approved manufacturer to give a uniform protective coating on cast iron.

3. SUBMITTALS

As soon as practicable but within 30 days after receipt of notice to proceed and before any materials or equipment are purchased, the Contractor shall submit for approval by the Engineer a complete schedule, in triplicate, of materials and equipment to be incorporated in the work, together with the names and addresses of the manufacturers and their catalogue cuts, diagrams, drawings, and such other descriptive data as may be required by the Engineer. No consideration will be given to partial lists submitted from time to time. Approval of materials and equipment under deviations from the specifications shall not be granted unless the attention of the Engineer has

been directed to the specific deviations. Laboratory results and certifications, specified or otherwise required, shall be submitted prior to delivery of the material and equipment to site.

4. EXECUTION

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.

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.

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.

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 for Asbestos Cement Pipe unless other- wise 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 setforth, as approved.

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 relaid. Pipe shall not be laid in water shall be kept out of the trench until the materials in the joints have hardened or until chaulking or jaunting 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.

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.

4.7 SETTING OF FIRE HYDRANTS, VALVES AND SURFACE BOXES

Fire hydrants shall be located and installed, as shown. Hydrants shall be set plumb and in accordance with the manufacturer's instructions.

Valves and surface boxes shall be installed as shown or directed, and shall be set plumb. Surface shall be centered on the stems or operators. Concrete, concrete pipe, brick, brick ballast used in chambers shall conform to the relevant clause of the Specification. Where feasible, valves or operators shall be located outside the area of roads and streets. Earth fill shall be carefully tamped around each

valve box to the satisfaction of Engineer on all sides of the box, or to the undisturbed trench face if less than 4 ft.

Hydrants and valves shall have the interiors cleaned of all foreign matter before installation. Surface boxes shall be lighted and the hydrant or valve shall be inspected in open and closed positions to ensure that all parts are in working condition.

4.8 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.

4.9 PIPE BEDDING

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

4.10 PAVEMENT RESTORATION

The Contractor shall restore paved surface which have been cut under this contract, as part of the work under the excavation items and at no extra cost to the owner/employer.

4.11 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.

4.12 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 atleast (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.

4.13 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.

4.14 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 resampling and retesting shall be recovered from the Contractor.

4.15 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

4.16 INDICATION PLATES

The indication plates shall be installed in accordance with the drawings and as directed by the Engineer.

4.17 WASHOUTS

The design and locations of washouts shall be illustrated on the Drawings to be approved by the Engineer. Exact positioning shall be determined with regard to topography and to the approval of the Engineer. At least 10 ft. of the washout pipework, inclusive of the isolating valve, measured from the centre line of the pipeline, shall be laid at the same time as the pipeline and suitably capped to preventingress of foreign material. The minimum gradient for the washout pipework shall be 1 in 100.

4.18 AIR VALVES

a) Double orifice Air Valves

These shall be designed to meet the following conditions:

- expulsion of air during charging of the pipeline
- admit air during emptying of the pipeline to avoid the occurrence of negative pressure
- expulsion of air accumulated at summit points along the pipeline under normal operating conditions

First two conditions shall be met by the employment of a large orifice capable of handling large volumes of air at high flow rate, and the third condition by a small orifice capable of discharging small quantities of air as they accumulate.

The large orifice shall be sealed by a buoyant rigid ball and the chamber housing shall be designed to avoid premature closing of the valve by the air whilst being discharged. The small orifice shall be sealed by a buoyant ball at all pressures above atmospheric except when air accumulates in the valve chamber.

b) Single Orifice Air Valves

These shall be designed to carry out the function described above. Each valve shall be provided with only a small orifice which shall operate in the same manner as that in a double acting air valve.

Valves with air intake or exhaust facilities shall have approved screening arrangements to prevent the ingress of air borne sand.

The nominal pressure shall range between NP 16 and 25.

Body ends shall be flanged with raised faces and drilled according to BS 4504 for the nominal pressure specified or indicated in the Drawings.

The materials for the valves shall be as follows:

Cast iron body cover and cowl: for small orifice, cast iron with gunmetal seat with rubber covered ball or other approved; for large orifice, cast iron with rubber seat and vulcanate covered ball or other approved.

5. TESTING

Flushing of the pipeline shall be followed by a leakage test. The Contractor shall provide facilities for performing the leakage test. Water and pumping facilities shall be provided by the Contractor. Before the testing of pipeline the Contractor shall ensure that concrete backing blocks have been provided where necessary. The test shall be performed only after all concrete work in contact with pipe to be tested has set for a minimum of 24 hours. All joints shall be left exposed. Leakage test shall be performed by keeping the end of the pipeline closed by proper plugs blocked to resist 150 per cent of the working pressure. While filling the line all valves and openings shall be kept open and water shall be filled in slowly. When the pipeline is completely filled with water and all air expelled, water shall be pumped into the pipeline to a minimum pressure of 150 percent of actual working pressure and the test pressure shall be maintained for at least 1 hour. Each and every joint shall be inspected for leaks and for all visible leakage and displacement leakage test shall be performed by the Contractor, for the newly laid pipeline. A measured quantity of water shall be pumped into the pipeline. No piping installation will be accepted until the leakage is equal or less than the number of imperial gallons per hour as determined by the formula:

$L = 0.00054\ ND / P$
L = Leakage in Imperial Gallons
N = Number of joints
D = Nominal diameter of pipe in inches
P = Average test pressure (psi) during test

In the event of the pipeline failing the leakage test, the Contractor shall locate and repair the defective pipe, fitting or joint at his expenses. For dewatering the line for repairs the Contractor shall follow the instructions given by the Engineer for disposal of water. After repairs of the line, the Contractor shall retest the line. The line will not be accepted until it passes the leakage test.

5.1 RETESTING AFTER BACKFILL

After the pipe trench has been backfilled, the entire length shall be subjected to a leakage test as a whole unit. The Contractor shall repair the line if it fails to pass the leakage test requirements specified hereinbefore. The test shall be repeated and repairs effected until the pipeline passes the leakage test.

6. MEASUREMENT AND PAYMENT

Measurement and payment of pipework, fittings, specials and appurtenances will be made in accordance with the provisions of this clause specified hereinafter.

6.1 PIPE WORK

6.1.1 Measurement:

Measurement will be made for the number of running feet of Asbestos cement, uPVC, cast iron and M.S. pipes including fittings, accessories and flanges acceptably installed complete in all respects as per relevant Drawings or as directed by the Engineer.

6.1.2 Payment:

Payment will be made for the running feet of pipework as measured above at the Contract Unit price and shall constitute full compensation to provide, handle, lay and joint asbestos cement, uPVC and cast iron pipes including fittings, flushing, leakage testing before & after backfilling, final flushing and all other work related to the item.

6.2 SERVICE CONNECTION

6.2.1 G.I. Pipe and Fittings

a) Measurement:

Measurement will be made for the number of linear feet of galvanized iron pipe including fittings acceptably installed complete in all respects as per relevant Drawings or as directed by the Engineer.

b) Payment:

Payment will be made for the number of linear feet of galvanized iron pipe work as measured above at the Contract Unit Price of each unit and shall constitute full

compensation to provide, handle, lay, joint and test galvanized iron pipe, fittings, including sleeves, nuts, sockets, plugs, bitumen coating with Polyethelene tape and all other work related to the item.

6.2.2 Ferrule Assembly

a) Measurement:

Measurement shall be made for the number of ferrules acceptably installed complete in all respects as per relevant Drawings or specifications.

b) Payments:

Payment shall be made for the number of ferrules measured as above at the contract unit price for each unit and shall constitute full compensation for providing, tapping, drilling, fixing including M.S. straps, Saddles, and all other work related to the item to make complete house connection.

6.3 PIPE FITTINGS AND SPECIALS

6.3.1 Measurement:

Measurement will be made for the number of pounds of fittings and specials acceptably installed in pipework complete in all respects as per relevant drawings or as directed by the Engineer.

6.3.2 Payment:

Payment will be made for the number of pounds of fittings/specials as provided above at the Contract Unit Price and shall constitute full compensation for the cost of providing, handling, fixing, jointing, disinfecting, respective type of fitting/special, and all other work related to the item.

6.4 SLUICE (GATE) VALVES

6.4.1 Measurement:

Measurement will be made for the number of sluice (gate) valves acceptably installed complete in all respects as per relevant Drawings.

6.4.2 Payment:

Payment will be made for the number of sluice (gate) valves measured as above at the Contract Unit Price for each unit and shall constitute full compensation for providing, handling, fixing and jointing and all other work related to the item including construction of chamber as shown on drawings.

6.5 CHECK VALVES

6.5.1 Measurement:

Measurement will be made for the number of check valves acceptably installed complete in all respects as per relevant Drawings.

6.5.2 Payment:

Payment will be made for the number of check valves measured as above at the Contract Unit Price for each unit and shall constitute full compensation for providing, handling, fixing and jointing and all other work related to the item including construction of chamber as shown on drawings.

6.6 FIRE HYDRANTS

6.6.1 Measurement:

Measurement shall be made for the number of fire hydrants acceptably installed complete in all respects as per relevant Drawings.

6.6.2 Payment:

Payment will be made for the number of fire hydrants measured as above at the Contract Unit Price for each unit and shall constitute full compensation for providing, handling, fixing and jointing and all other work related to the item including construction of chamber.

6.7 INDICATION PLATES

6.7.1 Measurement:

Measurement will be made for the number of indication plates acceptably installed complete in all respects as per relevant drawings.

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6.7.2 Payment:

Payment will be made for the number of indication plates measured as above at the contract unit price for each unit and shall constitute full compensation for providing handling, fixing and all other work related to the item.

6.8 WASHOUTS

6.8.1 Measurement:

Measurement will be made for the number of washouts acceptably installed including construction chamber complete in all respects and as approved by the Engineer.

6.8.2 Payment:

Payment will be made for the number of washouts measured as above at the contract unit price for each unit and shall constitute full compensation for providing handling, fixing and all other work related to the item including construction of chamber.

6.9 AIR VALVES

6.9.1 Measurement:

Measurement will be made for the number of air valves acceptably installed complete in all respects and as approved by the Engineer.

6.9.2 Payment:

Payment will be made for the number of air valves measured as above at the contract unit price for each unit and shall constitute full compensation for providing handling, fixing and jointing related to the item including construction of chamber.

6.10 SAND CUSHION

6.10.1 Measurement:

Measurement will be made for the number of cubic foot of sand acceptably placed complete in all respects and as approved by the Engineer.

6.10.2 Payment:

Payment shall be made for the number of cu.ft of sand measured as provided above at the contract unit price per cu.ft

and shall constitute full compensation for all work related to the item.

6.11 THRUST BLOCKS

6.11.1 Measurement:

Measurement will be made for the number of cubic foot of class ‘C’ concrete acceptably placed complete in all respects and as approved by the Engineer.

6.11.2 Payment:

Payment shall be made for the number of cu.ft of class ‘C’ concrete measured as provided above at the contract unit price per cu.ft and shall constitute full compensation for all work related to the item.

6.12 CONCRETE ENCASEMENT

6.12.1 Measurement:

Measurement will be made for the number of cubic foot of class C concrete acceptably placed complete in all respects and as approved by the Engineer.

6.12.2 Payment:

Payment shall be made for the number of cu.ft of class C concrete measured as provided above at the contract unit price per cu.ft and shall constitute full compensation for all work related to the item.

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

SECTION 5220

VALVES AND APPURTENANCES

1. SCOPE

2. APPLICABLE STANDARDS

3. SUBMITTALS

4. MATERIAL AND EQUIPMENT

5. DELIVERY, STORAGE AND HANDLING

6. MEASUREMENT AND PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

1. SCOPE

The work under this section of the specification consists of furnishing all plant, labour, equipment, appliances, materials and performing all operations required as specified herein, as shown on the drawings, or as directed by the Engineer, in connection with installation of valves.

2. APPLICABLE STANDARDS

Brass/Bronze gate valves	BS- 5154 (BS EN 12288)
Brass/Bronze check valves	BS- 5154 (BS EN 12288)

3. SUBMITTALS

The contractor shall submit technical brochures and samples of all the items mentioned in the Specifications from approved manufactures or as directed by the Engineer

4. MATERIAL & EQUIPMENT

4.1 DESCRIPTION

All valves shall be of renowned manufacturer as specified. Valve material shall be suitable for installation on potable water lines, sewage line or sludge piping. Service rating of the valves shall be at least 7 bars to 16 bars. The interior of all valves shall be cleaned of all foreign material before installation.

Valves shall be installed at the position indicated in the Contract Documents or as directed by the Engineer. Valves shall be adequately supported. Installed valves shall be subjected to pressure and leakage tests and no leakage shall be observed under these tests. End joints, flanges, etc., shall be of the appropriate class and material.

Valves shall be installed either in chambers or above grade on line as shown in the Contract documents and/or as specified herein. Valves shall be securely anchored.

Open and closed position indicator shall be provided for all valves. If installed in valve chambers, the indicator shall not extend above ground and shall not interfere with opening or closing of the valve. The indicator design shall be approved by the Engineer before installation.

4.4 BRASS/BRONZE GATE VALVE

Brass/Bronze gate valves shall conform to B.S. 5154 (BS EN 12288), "Specifications for Copper Alloy. Globe, Globe Stop, Check and Gate Valves for General Purposes". Valves shall be rated for a working/service pressure of 16 bars. Valve ends shall be screwed or flanged as shown on the drawings. Threads shall be to B.S. 21 and flanges shall be drilled to B.S. 4504 Part 1. Valves shall close in clockwise direction. Open and shut indicators shall be marked on the wheel handle.

4.5 BRASS/BRONZE CHECK VALVES

Check valves shall conform to B.S. 5154 (BS EN 12288) "Specifications for bronze check valves for general purposes". The service rating shall be 16 bars. The direction of flow shall be permanently marked on the body of the valve. Body of valve shall be tested to 1-1/2 times the service rating and seat shall be tested to service rating. No leakage shall be permitted under the above tests. Check valves shall be of swing type.

End of the valves shall be Screwed or flanged to joint with the standard fittings. Valves shall be installed at positions shown on the drawings the interior shall be cleaned of all foreign matter before installation. They shall be inspected to ensure that all components are sound and in working condition.

4.11 INSTALLATION OF VALVES, TESTING & COMMISSIONING

Valves shall be installed either in chambers or above grade on line as shown on the drawings and as directed by the Engineer. Before installation, the interior surfaces of valves shall be cleaned of all foreign matters, inspected to ensure that all components are sound and in working condition and tested to 1-1/2 times the working pressure or the service pressure whichever is greater. After installation, valves shall be securely anchored, tested, retouched where paints have been damaged and labeled.

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5. DELIVERY, STORAGE & HANDLING

Valves should be handled and stored properly to avoid any damage and slippage of threads especially during installation.

6. MEASUREMENT AND PAYMENT

6.1 General

Except otherwise specified herein or elsewhere in the Contract Documents, no measurement and payment will be made for the under mentioned specified works related to the relevant items of the Bill of Quantities. The cost therefore shall be deemed to have been included in the quoted unit rate of the respective items of the Bill of Quantities.

a. Jointing arrangement of pipe on both ends of valves, including gaskets, nuts, bolts etc.
b. Valves and appurtenances supports and anchors
c. Keys for operation of valves
d. Steel embedded parts and label plates
e. Manufacturer's literature and operation manual for valves and appurtenances
f. Painting of valves, water meter and appurtenances
g. Stand pipe and coupling for underground fire hydrants

6.2 Measurement:

Measurement of acceptable completed works of all types of valves will be made on the basis of actual number of valves provided and installed in position as shown on the drawings, and as directed by the Engineer.

6.3 Payment:

Payment for the acceptable measured quantity of all types of valves will be made on the basis of unit rate per number quoted in the Bill of Quantities and shall constitute full compensation for all the works related to the item.

*** End of Section 5220 ***

SECTION 5230

MANHOLE COVERS, ROAD GULLY GRATINGS AND FRAMES FOR DRAINAGE PURPOSES

1. SCOPE
2. APPLICABLE STANDARDS
3. SUBMITTALS
4. MATERIAL
5. PROTECTIVE COATING
6. DESIGN REQUIREMENTS
7. QUALITY CONTROL
8. MARKING
9. MANHOLE COVERS, INSPECTION COVERS AND FRAMES
10. ROAD GULLY GRATINGS AND FRAMES
11. KERB – TYPE GULLY COVERS AND FRAMES
12. LOADING TEST
13. MEASUREMENT AND PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

SECTION 5230

MANHOLE COVERS, ROAD GULLY GRATINGS AND FRAMES FOR DRAINAGE PURPOSES

1. SCOPE OF WORK

The work to be done under this section of the specifications consists of furnishing all plants, labour, equipment, appliances, material and performing all operations required in connection with supply and installation of C.I cover with frame, complete as specified herein, as shown on the drawings and or as directed by the Engineer.

All cast iron covers and frame shall be of the sizes and grade (or duty) as specified on the drawings. The specified size means the clear opening. The cover shall be complete with frame. Top of cover shall be roughened in an approved pattern. Locking and lifting arrangement shall also be provided. The frame shall be well in place at the time of pouring of concrete. The cover shall tightly fit in the frame. It shall be air tight and water tight.

2 APPLICABLE STANDARDS & SUBMITTALS

Manhole covers with frame BS-497

3. SUBMITTALS

The contractor shall provide samples and literature for manhole & grating covers with frame from approved manufacturers or as directed by the Engineer.

4. MATERIAL

4.1 The metal used for the manufacturer of castings shall be either:-

a). flake graphite iron (also called grey iron) of a quality not less than that specified as grade 10 BS 1452: 1961.

b). Spheroidal or nodular graphite iron or (also called ductile iron) complying with the requirements specified in BS 2789: 1973 for grade 500/7, 600/3 or 700/2, as selected by the manufacturer to suit the design and dimensions of the unit.

4.2 Cast steel gully gratings. The metal used for the manufacture of cast steel gratings shall comply with the requirements for BS 592 grade: A given in BS 3100: 1967.

4.3 Bolts. Bolts supplied for loosely coupling separate sections of covers and grating, shall be steel, hexagon headed, complying with the requirements of BS 4190: 1967 and not less than size M16, complete with hexagon nut: these shall be provided with means to prevent undue tightening of the unit sections. Alternative coupling devices, of used, shall be of steel, have a minimum cross sectional area of 140 mm^2, and be removable and incapable of undue lightening of loosing.

5. Protective Coating

All units shall be supplied coated by dipping, or other equivalent means, using a hot applied coal tar based material. Alternatively, at the option of the manufacturer, a cold applied black bitumen material may be used. No coating shall be applied to any casting unless the surfaces of the casting are clean, dry and free from rust.

6. Design requirements

Products manufactured to the requirements of this standard shall be capable of supporting, without fracture, the following design loads.

Grade of cover or grating	Design load (KN)	(Tonns)
A	350	35.14
B	150	15.06
C	10	1.00

The contractor/manufacturer shall verify the design of each type of unit by submitting a sufficient number of prototypes of the loading tests specified in this clause and in Clause 7 below.

7. Quality Control

7.1 Quality control tests. The contractor/manufacturer shall test sample units, by the method given in appendix A of BS specifications 497, for compliance with the requirements given in 7.2

7.2 Acceptance requirements. Products shall be deemed to comply with the loading test requirements of this standard if, when tested in accordance with the procedures described in section 12, the following requirements are satisfied.

(a) Grey iron units sustain the loads specified in 9.3, 10.3 and 11.3 without fractures.

(b) Ductile iron and cast steel units sustain the loads specified in 9.3, 10.3 and 11.3 without fracture and any resultant permanent set, measured are the midpoint between any two selected supporting seatings after removal of the test load, is not greater than one five hundredth (0.2 %) of the distance between these selected seatings.

7.3 Testing of recessed covers. Recessed covers shall be tested before they are filled with concrete.

8 Marking

All covers, grating and frames shall have clearly cast thereon the number of this British Standard and the appropriate grade, e.g. BS 497, Grade A, and such other markings as may be agreed between the manufacturer and the purchaser.

9 Manhole covers, inspection covers and frames

9.1 Grades, Manhole covers, inspection covers and frames complying with the requirements of this British Standard shall be graded as follows:

Grade A (Extra Heavy duty)
Manhole covers and frames, capable of bearing wheel loads up to 11.50 tones for use in carriage ways. These covers and frames shall incorporate a permanent non-rock design feature such as triangular point suspension or machined faces.

Grade-B
Class-1 (Heavy duty)
Manhole covers and frames, capable of bearing wheel loads up to 5.00 tones, for use in carriage ways carrying relatively slow moving normal commercial vehicles. These covers and frames shall incorporate a permanent non rock design feature such as triangular point suspension or machined faces.

Grade-B
Class 2 (Medium duty)
Sealed manhole covers and frames (see 9.4.7) capable of bearing wheel loads up to 5.00 tones, for use in area to which vehicles would have only occasional access (e.g. pedestrian precincts).

Grade-C (Light duty)
Sealed inspection covers and frames (see 9.4.7) for use in situation inaccessible to motor vehicle.

The duty, weight, test and working load for 600mm circular or square C.I. cover and frame shall be as follows:-

Class/Duty of Cover and Frame Load	Gross Weight	Peak or Test Load	Service Working
Extra Heavy Weight	275-285Kg	35 Ton	11.5 Ton
Heavy Weight	200-210Kg	15 Ton	5 Ton
Medium Weight	130-140Kg	5 Ton	1.5 Ton
Light Weight	70- 80Kg	1 Ton	upto 1 Ton

9.2 Shape and size. Only minimum clear opening size and certain frame dimensions are stipulated (see 9.5), shape (.e.g square, rectangular, circular) and size being the product of the individual manufacturer's design.

The minimum clear opening dimensions that relate to rectangular designs in table 3,4 and 5 shall be deemed not to be contravened by projections at the corners, required for manufacturing purposes, provided that the resulting reduction of minimum clear opening area does not exceed 15 cm^2 at each of the corners.

9.3 Test loads for quality control purposes (see also Clauses 7 and 12). The loads and sizes of the bearing blocks for the test specified in clause 7 shall be as follows:

Grade of cover	Test Load		Size of block
	Grey iron (KN)	Ducting iron (KN)	(mm)
Grade-A Manhole covers	350	235	300 dia
Grade B classes 1 and 2 manhole covers	150	100	300 dia
Grade C inspection covers	10	7	300 dia

9.4 Design features

9.4.1 Displacement by traffic. The design of covers shall be such that they cannot be displaced by normal traffic. Grade A and grade B frames of less than 100 mm depth shall be provided

with means of additional anchorage (e.g openings and/or holes for anchor bolts in the flange.

9.4.2 Drainage and skid resistance. Covers of solid top type shall be self draining and have a raised pattern, such as chequers, so as to provide a skid resisting surface.

9.4.3 Loosening. A recess for a prising bar shall be incorporated in manhole covers unless other means of loosening the cover from the frame are provided.

9.4.4 Grade C recessed cover shall be recessed to a clear depth of not less than 28 mm. The recess shall extend, except for keyway housing and locking pads, to within 25 mm of the outside of the frame at surface level.

9.4.5 Keyways. At least two keyways shall be provided in each complete cover, one in each segment for a double triangular cover. Closed keyways shall always be provided on grade B Clase-2 and on grade C covers, open or closed keyways may be provided on grade A, on grade B class 1 and on kerb type gully covers.

9.4.6 Clearance. The maximum clearance between cover section and frame, or between section and section, shall be 3 mm (as for gratings).

9.4.7 Sealing. When a manhole or inspection cover unit is described as sealed, unless an alternative method is agreed by the purchaser, the frame shall provide a continuous means of retaining a sealing material. This standard seal may be of either single or double pattern and the minimum depth of penetration of the cover sealing flange(s) into the frame shall be 10 mm.

9.4.8 Locking. Where specified by the Engineer, means shall be provided for locking sealed covers in their frames, without nullifying the seal. Where locking devices would be rendered ineffective by corrosion, they shall be suitably protected.

9.4.9 Ventilated covers. The total area of ventilation shall be not less than 5% of the minimum clear opening area. The width of slots shall not exceed 40 mm and their length shall not exceed 125 mm.

9.5 Specified dimension and details. The dimensions of manhole covers and frames of specified grades and BS reference numbers shall be as given in table 1 to 5

Table1. Grade-A manhole covers and frames

BS Reference	Minimum clear opening (see 9.2) (mm)	Minimum depth of frame (mm)	Minimum bedding width of frame) (mm)
MA-50	500 dia	75	75
MA-55	550 dia	75	75
MA-60	600 dia	75	75

Table-2 Grade-B class 1 manhole covers and frames

BS Reference	Minimum clear opening (see 9.2) (mm)	Minimum depth of frame (mm)	Minimum bedding width of frame) (mm)
MB1-50	500 dia	75	75
MB1-55	550 dia	75	75
MB1-60	600 dia	75	75

Table 3. Grade-B class 2 single seal manhole covers and frames

BS Reference	Minimum clear opening (see 9.2) (mm)	Minimum depth of frame (mm)	Minimum bedding width of frame) (mm)
MB2-50	500 dia	75	75
MB2-55	550 dia	75	75
MB2-60	600 dia	75	75
MB2-60/45[a]	600 x 450	75	75
MB2-60/60[a]	600 x 600	75	75
MB2R-60/45[b]	600 x 450	75	75
MB2R-60/60[b]	600 x 601	75	75

a. Solid top
b. Recessed top

Table 4 Grade-C single seal inspection covers and frames

BS Reference	Minimum clear opening (see 9.2) (mm)	Minimum depth of frame (mm)	Minimum bedding width of frame) (mm)
MC1-45/45[a]	450 x 450	40	40
MC1-60/45[a]	600 x 450	40	40
MC1-60/60[a]	600 x 600	40	40
MC1R-45/45[b]	450 x 450	60	40
MC1R-60/45[b]	600 x 450	60	40
MC1R-60/60[b]	600 x 600	60	40

a. Solid top
b. Recessed top, See 6.4.5

Table 5 Grade-C double seal inspection covers and frames

BS Reference	Minimum clear opening (see 9.2) (mm)	Minimum depth of frame (mm)	Minimum bedding width of frame) (mm)
MC2-45/45[a]	450 x 450	40	65
MC2-60/45[a]	600 x 450	40	65
MC2-60/60[a]	600 x 600	40	65
MC2R-45/45[b]	450 x 450	60	65
MC2R-60/45[b]	600 x 450	60	65
MC2R-60/60[b]	600 x 600	60	65

a. Solid top
b. Recessed top, See 6.4.5

10 Road gully gratings and frames

10.1 Grades. Road gully gratings and frames complying with the requirements of this British Standard shall be graded as follows.

Grade A

Class 1 Gully gratings and frames, capable for bearing wheel loads up to 11.50 tones, for use in carriageways. These gratings and frames shall incorporate a permanent non rock design feature such as triangular point suspension or machined seating.

Class 2 Gully gratings and frames, incorporating a hinged grating and capable of bearing wheel loads up to 11.50 tones, for use in carriageways.

Grade B Gully gratings and frames, incorporating a hinged grating and capable of bearing wheel loads up to 5.00 tones, for use in carriageways carrying relatively slow moving normal commercial vehicles.

10.2 Shape and size. Two minimum 'nominal' widths, 325 mm and 450 mm, with minimum water way area are specified (see 10.5), shape and size being the product of the individual manufacturer's design (see figure 2* for definition of nominal width). (* for figures, see BS-497 standard)

10.3 Test loads for quality control purposes (see also Clause 7 and 12). the loads and sizes of the bearing blocks for the purposes of the test specified in clause 7 shall be as follows:-

Grade of grating	Test Load			Size of block (see notes 1 and 2)
	Grey iron	Ductile iron	Cast steel	
	KN	KN	KN	(mm)
A	350	235	235	300 x 235
B	100	100	100	300 x 235

NOTE:1 If a non-flat upper surface is specified for a grating (see 7.4.4), the test block shall have a contoured bottom face to mate with the shape of the grating.

NOTE:2 The test block shall be used with the 300 mm side parallel to the kerb face of the gully.

10.4 Design features

10.4.1 Waterway area distribution. Of the total waterway area, there shall be minimum of 45 cm^2 between the kerb face of the frame and a parallel line 50 mm distant (line X-X in figure 2)* and there shall also be a minimum of 60cm^2 between the kerb face of the frame and a parallel line 90 mm distance ((line Y-Y) in figure 2)*.
(* for figures, see BS-497 standard)

10.4.2 Slot width and direction. The maximum width of a slot in a grating shall be limited to 40 mm, this figure to include the 3 mm clearance (see 10.4.3) when this forms an integral part of such a slot. The predominant direction of slots must be at an angle to the kerb face of between 40° and 90° .

10.4.3 Clearance. The maximum clearance between grating section and frame, or section and section, shall be 3 mm (see figure 2)*. The area of such clearance shall not count as part of the minimum waterway area specified in 10.5 nor shall it count as part of the

areas as specified in 10.4.1, except where such clearance forms an integral part of an adjacent drainage slot.
(* for figures, see BS-497 standard)

10.4.4 Grating surface. The upper surface of all gratings shall be flat unless otherwise agreed between Engineer and manufacturer.

10.4.5 Grating length and width. The actual length of the grating shall not be less than 325 mm.

10.4.6 Displacement by traffic. The design of gratings shall be such that they cannot be displaced by normal traffic. Frames of less than 100 mm depth shall be provided with means of additional anchorage (e.g openings and/or holes for anchor bolts in the flange).

10.4.7 Hinged gratings. When designed to hinge open, gratings shall be self supporting in the fully open position. They shall remain open when the frame is placed on a test slope as indicated below, with the hinge side at the top of the slope.

Type	Test slope
Hinged at kerb	
On road side	1 in 20
Hinged at end	1 in 10

10.5 Specified dimensions and details. The dimensions of roads gully gratings and frames of specified grades and BS reference numbers shall be as give in table 6 to 8.

Table 6 Grade-A class 1 gully gratings and frames

BS Reference	Minimum nominal width (see figure 2)* (mm)	Minimum area of water way Cm^2	Minimum depth of frame (mm)	Minimum bedding width of frame ** (mm)
GA1-325	325	650	75	75
GA1-450	450	900	75	75

** On three sides of grating only, no frame flange on kerb face
* for figures, see BS-497 standard

Table 7 Grade-A class 2 gully gratings and frames

BS Reference	Minimum nominal width (see figure 3)* (mm)	Minimum area of water way Cm^2	Minimum depth of frame (mm)	Minimum bedding width of frame ** (mm)
GA2-325	325	650	75	75
GA2-450	450	900	75	75

** On three sides of grating only no frame flange on kerb face
* for figures, see BS-497 standard

Table 8 Grade-B gully gratings and frames

BS Reference	Minimum nominal width (see figure 3)* (mm)	Minimum area of water way Cm^2	Minimum depth of frame (mm)	Minimum bedding width of frame ** (mm)
GB-325	325	650	75	75
GB-450	450	900	75	75

** On three sides of grating only no frame flange on kerb face
* for figures, see BS-497 standard

11. Kerb – type gully covers and frames

11.1 Duty These covers and frames are for use in the kerbs of carriageways.

11.2 Types Units shall provide kerb inlet with access cover opening away from the carriageway. Weir depth (distance from top of cover to top of fixed weir, if any) shall be either 115 mm or 165 mm .

11.3 Test load for quality control (see also clause 7 and 12). A load of 150 kN for grey iron units, or 100 kN for ductile iron units, on a rectangular bearing block 300 mm x 235 mm (with the 300 mm dimension parallel to the kerb face) shall be used for the purpose of the test specified in clause 7.

11.4 Design features

11.4.1 Weir length and water way. The weir length shall be at least 425 mm and a rectangular clearway at least 250 cm^2 in area shall be provided above the weir level (see 11.2), both excluding any debris trap as specified in 11.4.4.

11.4.2 Road retaining bar. Unless otherwise specified by the Engineer, a road retaining bar minimum cross section 35 mm x 25 mm, shall be provided as a standard feature. It shall be supplied loose so as to provide adjustment to suit the required road level. Alternatively, a deflector plate may be provided.

11.4.3 Cover The cover shall be provided with either a keyway(s) for the standard small key or a locking mechanism. Where the cover may be readily raised without the use of the key or other tool, a locking mechanism shall be provided. Where a hinge is provided, this shall be at the rear edge of the cover as viewed from the road. The top shall be self draining and have an adequate raised pattern, such as chequers to provide a slip resisting surface.

11.4.4 Debris trap. A robust grid with horizontal bar(s) or a minimum of two vertical fins shall be provided to act as a debris trap across the open mouth of the unit.

11.4.5 Cleaning access. The opened unit shall provide a minimum rectangular clear opening 400 mm x 250 mm.

11.5 Specified dimensions. The dimensions of kerb-type gully covers and frames of specified BS reference numbers shall b as given in table-9

Table 9 Kerb-type gully gratings and frames

BS Reference	Weir depth (mm)	Minimum net weir length (cm^2)	Minimum rectangular clearway (mm)	Minimum rectangular clear opening (see 10.4.5) (mm)
GK-115	115	425	250	400 x 250
GK-165	165	425	250	400 x 250

12. Loading Test

12.1 Apparatus. The following apparatus is required

12.1.1 A standard frame to be used as a supporting frame.

12.1.2 Bearing block of the shape and size specified in 9.3, 10.3 and 11.3 as appropriate, of hardwood faced with hard rubber or other resilient material, and sufficiently hard to ensure that the load on the cover of grating is only distributed over the full area of the block.

12.1.3 A device, preferable a hydraulic testing machine for applying the load. The device shall be capable of applying a load at least 25% greater than the appropriate load specified in 9.3, 10.3 and 11.3. If a testing machine is used, it shall comply with the accuracy requirements for grade. Grade A or grade B testing machines given in BS 1610: 1964. If any other load measuring device is used it shall be accurate to within 2% of the indicated load.

12.1.4 A measuring device, accurate to 0.1 mm, suitable for indicating deflection measurements on the ductile iron units and cast steel gully gratings.

12.2 Procedure: Carry out the loading test by applying the appropriate load specified on 8.3, 9.3 and 10.3 through the bearing block of specified size specified size placed centrally on the section(s) being tested. For grey iron covers or gratings proceed as described in 12.2.1 for ductile iron covers and grating and cast steel gratings as described in 12.2.2

12.2.1 Grey iron covers of gratings. Support the cover or grating in the frame and, using the testing machine or other load measuring device (12.1.3) apply the appropriate load without shock. Sustain the load for a minimum period of 30 second.

12.2.2 Ductile iron covers and gratings and cast steel gratings. Support the cover or grating in the frame and take two readings with the measuring device (12.1.4) as follows.

a. Before the load is applied, take an initial reading at a point midway between the two selected supporting seatings to establish a datum point. Where it is not practicable to make this measurement exactly on the line drawn between the two supporting seating, it shall be taken on a line parallel to, and as near as possible to, this line.

b. Apply the test load, without shock, five times; sustaining alternating maximum and zero loads for minimum period of 20 seconds then take a second reading at the datum point.

Record the difference between the two readings at the permanent set.

13. Measurement and Payment

13.1 Measurement

Measurement of acceptably completed works of cast iron cover with frame will be made on the basis of actual number of cover with frame provided and installed in position as shown on the drawings or as directed by the Engineer.

13.2 Payment

Payment will be made for acceptably measured quantity of cast iron cover with frame on the basis of actual number quoted in the bill of quantities and shall constitute full compensation for all the works related to the item.

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SECTION - 5240

PUMPING MACHINERY

1. SCOPE

2. MATERIALS AND PRODUCTS

3. SPECIAL REQUIREMENTS OF PUMPS

4. FIRE FIGHTING TURBINE PUMP

5. POTABLE WATER PUMP & MOTOR

6. FIRE FIGHTING TURBINE PUMP

6 SUBMERSIBLE DRAINAGE PUMP AND MOTOR

7 MAINTENANCE MANUALS AND TOOLS

8. MEASUREMENT AND PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

1. SCOPE

The work to be done under this section of the specifications includes furnishing all plant, labour, equipment, appliances and materials and in performing all operations required in connection with the installation of pumping machinery including all accessories as specified herein or shown on the Drawings or as directed by the Engineer.

2. MATERIALS AND PRODUCTS

Materials and machinery shall conform to the latest referenced specifications and other provisions specified herein and shall be new and unused. In case where manufacturers are specified, materials and equipment will be of the same manufacturers. In all other cases the Contractor shall submit the names and addresses of the Manufacturers and trade names of the materials and equipment that he intends to buy. Other information such as diagram, drawing and descriptive data will be supplied if so desired by the Engineer. Approval of materials and all the machinery under this provision shall not be construed as authorising any deviations from the specifications. The approval of machinery of manufacturer other than that specified will be purely on the discretion of the Engineer. The Engineer will fully ascertain the facts and satisfy himself as to the performance of the machinery offered by the Contractor.

3. SPECIAL REQUIREMENTS OF PUMPS

The Contractor shall furnish with each pump properly identified characteristic curves prepared and certified by the manufacturer showing capacity, head, efficiency and brake horsepower throughout the entire range of the pump.

The pumps shall have stable throttling curves and be suitable for unrestricted parallel operation.

All pumps shall be electric driven.

The pumps and their drives shall not overload or trip when operating against zero pressure.

The design, construction and materials shall be such that damage as a result of cavitation is completely eliminated.

Pumps shall have bearings and be suitable for continuous as well as intermittent operation without external sealing or cooling water. The pumps shall be such that they shall come into operation at once after a prolonged shutdown period without having to take special measures. Pumps shall be capable of delivering specified quantity of water at the specified pressure.

Pumps shall be tested at site before their final acceptance.

Pumps shall be installed at positions shown on the Drawings and/or as directed by the Engineer.

Pumps and their drives shall be in perfect alignment when installed in position.

Pump set shall be provided with reducer/enlarger if necessary on pump discharge pipe and suction pipe.

4. FIRE FIGHTING PUMPING UNIT

The pump set shall be NFPA compliance Centrifugal Pump, furnish not less than 150 percent of rated capacity at the total head of not less than 65 percent of the total rated head. The total shutoff head not exceed 140 percent of total rated head on vertical turbine pumps. The Centrifugal Pumps with minimum class IE electric motor of specified capacity, head and duty, pressure switches, sluice & check valves, discharge headers, pressure gauges, control unit, manual tools, spare parts, testing and commissioning etc., complete in all respect ready to be connected with fire water supply line.

Pump materials shall be as under:

Impeller	:	Bronze
Shaft	:	Stainless steel
Casing	:	Cast Iron
Shaft Seal	:	Packing Gland-Immersion Graphite

Pumps shall have mechanical seal. The discharge flanges shall be rated for a working pressure of 25bars for fire pumps. The flanges shall be drilled to BS 10 (Table 'D' or 'E') or BS 4504.

Motors efficiency and features shall be defined by Electrical Engineer..

a) Fittings

The following fittings shall be required for attachment to the pump:
i) Automatic air relief valve
ii) Water level detector
iii) Discharge pressure gauge
iv) Relief valve & discharge cone (if diesel engine fire pump is installed)

b) Foundation

The certified dimension prints shall be obtained from the manufacturer. The foundation for pumps shall be substantially built to carry the entire weight of the pump and driver plus the weight of water contained in it. Foundation bolts shall be provided to firmly anchor the pump to the foundation.

5. POTABLE WATER BOOSTER PUMP SET (NOT APPLICABLE)

Skid mounted potable water booster pump set shall comprise centrifugal pump and a pressure tank provided with the following accessories:

One number PVC/polypropylene/rubber/epoxy lined steel hydro-pneumatic pressure tank of specified capacity with neoprene rubber diaphragm between the water and air sections. The tank shall be complete skid mounted boosting system with automatic motor control unit for dry run protection and auto operation system shall be provided with stainless steel piping. The unit shall be furnished ready for installation L/C flexible pipe gate valve, non return valve, pressure switch & pressure gauge and shall be ready for operation when connected to the piping & electricity supply. The tank shall be rated for a working pressure of 16 kg/cm2 and test pressure of 25kg/cm2 and shall comply with all the relevant clauses of “ASME Code for Pressure Vessel”.

Pump sleeve, intermediate chamber/guide vanes, impeller, suction inter-connector spline shaft cover plates etc. shall be of stainless steel with mechanical seal of approved material. Base plate shall be painted steel.

Pressure gauge, pressure switch gate and check valve on pump discharge pipe. Pressure switch will be adjustable between specified maximum and minimum pressure

levels and shall be wired to motor control panel.

- Gate valve and check valve on pump discharge pipe.

- Gate valve, on pump suction pipe.

- Minimum run timer adjustable from 0-6 minutes.

- Low water level cut-off switch.

- Reducer/enlarger, if necessary on pump discharge and suction pipe.

- Alternator with manual over-ride.

- Alarm shall sound at low water level.

Duty of the pump shall automatically alternate between the two pumps (if available) with manual override. In failure of any of the duty pump the standby pump will automatically come into operations within 30 second.

6. POTABLE WATER PUMP & MOTOR

The pump will be horizontal or vertical, single or multistage centrifugal pump of specified capacity, head and duty, totally enclosed, fan cooled, squirrel cage induction motors of specified power.

Pump materials shall be as under:

Pump Housing, head & Base	:	Fine grained grey cost iron
Intermediate chamber	:	Stainless Steel
Impeller	:	Stainless Steel
Shaft	:	Stainless steel
Shaft Sleeve	:	stainless steel
Power Transmission	:	Cast Iron split coupling

Pumps shall have mechanical seal. The suction and discharge flanges shall be rated for a working pressure of 16 kg/cm2 for potable water pumps. The flanges shall be drilled to BS 19 (Table 'D' or 'E') or BS 4504.

Motors efficiency and features shall be defined by Electrical Engineer..

Potable water pumps and motors shall be installed on concrete foundation with anchor bolts.

Potable water pumps will be automatically operated at pre-set levels in overhead tanks with help of level switches installed in respective overhead water tanks.*(Not applicable)*

In case a pump fails to start automatically, an alarm will be automatically sounded at preset minimum water level in overhead water tank. (Not applicable)

7. SUBMERSIBLE DRAINAGE PUMP & MOTOR (NOT APPLICABLE)

The pump shall consist of submersible drainage pump and motor with duck foot bend/auto coupling, guide rails and chain etc of the specified capacity and head and shall be integral sealed unit with strainer.

Pump material shall be as under:

Casing	:	Cast iron
Impeller/bowl	:	Cast iron
Shaft	:	Stainless Steel
Bearing	:	Pre-lubricated bearing
Motor	:	Air filled water tight

The pumps shall be installed inside the pit as shown on drawing. The discharge flange shall be threaded to BS 21 and shall be rated for working pressure of 10 kg/cm^2.

7.1 INSTALLATION

The submersible drainage/ sewage pumps shall be installed in the sump pits at the locations shown on the drawings.

7.2 PUMP ACCESSORIES

Pumps shall be provided inclusive of the following accessories:

(i) Duckfoot Bend, Guide rails and pulling chain etc.

(ii) Pressure gauge, level switches, flow switches etc.

(iii) Reducer/enlarger is necessary if the pump discharge size is different from discharge piping.

7.3 MOTOR PROTECTION

Motors of 3kw or less power shall be started direct on line. Larger motors shall be started by star-delta starter.

Motor shall be protected against under voltage over voltage, overload, over-heating and phase failure.

Motor shall be rated for normal operation against a voltage fluctuation of + 10% and frequency fluctuation of + 2Hz.

7.4 CONTROL

Submersible Drainage Pump

Operation of pumps shall be controlled by level switches installed inside the sump pit.

(i) One pump shall be duty and one shall be standby.
(ii) Pumps shall start and stop at the designated water levels inside the sump.
(iii) If duty pump fail to start, the standby pump shall automatically come into operation.
(iv) If standby pump fails to start, an alarm shall be sounded at high water level.
(v) An automatically operated change over switch shall also be installed to change over duty of pumps after each cycle.

7.5 LEVEL SWITCH

Level switches shall be electric actuating device, which will close/open the circuit at preset lower/higher pressures. The device shall be housed in diecast aluminium casing with enamel finish. The switch shall be adjustable. The pressure switch shall be rated for a working pressure of 16 Bar. The switch shall be wired to control panel.

7.6 WATER LEVEL INDICATOR

The water level indicator for high and low water level cut off shall operate on 230 Volt AC, 50 Hz and supplied complete with float, float chains, counter-weights, chain clamps, steel mounting brackets, chain guide roller and any other equipment and material necessary for installation and satisfactory operation.

The level indicator shall have at least 5 switch-contacts or as required for sensing the required water levels within the specified range. The level indicator shall be suitable to match with the specific gravity of the fluid in which it is intended to be installed. All operational, constructional and installation details shall be furnished by Contractor for approval.

The Tenderer may quote for non-mechanical type of water level indicator to give equivalent performance. Technical literature and data of the indicator is to be furnished along with the bid documents.

7.7 **SUBMERSIBLE GRINDER TYPE SEWAGE DISPOSAL PUMP & MOTOR (NOT APPLICABLE)**

The pump with cutting/grinding device/impeller shall consist of submersible drainage pump and motor with duck foot bend/auto coupling, guide rails and chain etc of the specified capacity and head and shall be integral sealed unit with strainer.

Pump material shall be as under:

Casing	:	Cast iron
Impeller/bowl	:	Cast iron
Shaft	:	Stainless Steel
Bearing	:	Pre-lubricated bearing
Motor	:	Air filled water tight

The pumps shall be installed inside the pit as shown on drawing. The discharge flange shall be threaded to BS 21 and shall be rated for working pressure of 10 kg/cm^2.

7.8 INSTALLATION

The submersible drainage/ sewage pumps shall be installed in the sump pits at the locations shown on the drawings.

7.9 PUMP ACCESSORIES

Pumps shall be provided inclusive of the following accessories:

(i) Duckfoot Bend, Guide rails and pulling chain etc.

(ii) Pressure gauge, level switches, flow switches etc.

(iii) Reducer/enlarger is necessary if the pump discharge size is different from discharge piping.

7.10 MOTOR PROTECTION

Motors of 3kw or less power shall be started direct on line. Larger motors shall be started by star-delta starter.

Motor shall be protected against under voltage over voltage, overload, over-heating and phase failure.

Motor shall be rated for normal operation against a voltage fluctuation of + 10%

and frequency fluctuation of + 2Hz.

7.11 CONTROL

Submersible Drainage Pump (Not applicable)

Operation of pumps shall be controlled by level switches installed inside the sump pit.

(vi) One pump shall be duty and one shall be standby.
(vii) Pumps shall start and stop at the designated water levels inside the sump.
(viii) If duty pump fail to start, the standby pump shall automatically come into operation.
(ix) If standby pump fails to start, an alarm shall be sounded at high water level.
(x) An automatically operated change over switch shall also be installed to change over duty of pumps after each cycle.

7.12 LEVEL SWITCH

Level switches shall be electric actuating device, which will close/open the circuit at preset lower/higher pressures. The device shall be housed in diecast aluminium casing with enamel finish. The switch shall be adjustable. The pressure switch shall be rated for a working pressure of 16 Bar. The switch shall be wired to control panel.

7.13 WATER LEVEL INDICATOR

The water level indicator for high and low water level cut off shall operate on 230 Volt AC, 50 Hz and supplied complete with float, float chains, counter-weights, chain clamps, steel mounting brackets, chain guide roller and any other equipment and material necessary for installation and satisfactory operation.

The level indicator shall have at least 5 switch-contacts or as required for sensing the required water levels within the specified range. The level indicator shall be suitable to match with the specific gravity of the fluid in which it is intended to be installed. All operational, constructional and installation details shall be furnished by Contractor for approval.

The Tenderer may quote for non-mechanical type of water level indicator to give equivalent performance. Technical literature and data of the indicator is to be furnished along with the bid documents.

8. MAINTENANCE MANUALS AND TOOLS

7.1 A book or books containing the complete information in connection with the assembly, operation, lubrication, adjustment and repair of the pumping equipment, electric motor, together with detailed parts list with drawings or photographs shall be furnished in duplicate.

7.2 For the pump room, special tools necessary for maintenance and repair of the pumps and electric motors including tools kits, grease guns etc. with accessories shall be furnished.

7.3 The manufacturer’s recommended list of spare parts to be stocked by the CLIENT shall be submitted by the Contractor to the Engineer for approval. Such spare parts will also be furnished by the Contractor.

7.4 All the maintenance manuals, tools, spare parts etc., shall be supplied by the Contractor at no cost of the CLIENT and all cost shall be deemed to be included by the Contractor in his bid against item of pumping set.

9. MEASUREMENT AND PAYMENT

6.1 Pumping Machinery

6.1.1 Measurement

Measurement for payment of pumping machinery pressure gauge, brass strainer, pressure switch and water level indicator shall be the actual number acceptably provided and installed in position; the Contractor's bid against these item shall include cost of providing and installing the pumping machinery including the pumps, electric motors, all accessories, manuals, tools, spare parts, etc., as shown on the Drawings, as specified herein or as directed by the Engineer.

6.1.2 Payment

Payment will be made for acceptable measured quantity of pumping machinery pressure gauge, brass strainer, pressure switch and water level indicator on the basis of unit rate per number quoted in the Bill of Quantities. The amount bid shall be full payment for the work specified.

*** End of Section 5240 ***

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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
- Power Transformer
- LT Distribution Boards
- 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 / DISCO 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	:	220 meters 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 other wise:

- 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/marking. 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 are 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 After one hour's run:	Oil Pressure 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 ***

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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 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 gasketting 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 30ºC 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 diagramatically 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

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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.

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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 100 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 (±5%) in 36W replacement for 2x36W waterproof TL-D Batten
2700 lumens (±5%) in 28W replacement for 2x36W fluorescent TL-D Batten
1350 lumens (±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 Ta = 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 (±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 140º.

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 Ta = 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 100 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 gasketted 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 at least 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 ºC and shall be capable to operate efficiently within the temperature limit of -40 ºC to 50 ºC. 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 luminaries 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 ºC and shall be capable to operate efficiently within the temperature limit of -40 ºC to 55 ºC. 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***

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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.

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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 100 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 (±5%) in 36W replacement for 2x36W waterproof TL-D Batten
2700 lumens (±5%) in 28W replacement for 2x36W fluorescent TL-D Batten
1350 lumens (±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 Ta = 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 (±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 140º.

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 Ta = 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 100 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 gasketted 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 at least 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 ºC and shall be capable to operate efficiently within the temperature limit of -40 ºC to 50 ºC. 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 luminaries 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 ºC and shall be capable to operate efficiently within the temperature limit of -40 ºC to 55 ºC. 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***

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

SECTION – 8220

WIRING ACCESSORIES

1.0 SCOPE OF WORK

2.0 GENERAL

3.0 APPLICABLE STANDARDS/CODES

4.0 MATERIAL

5.0 INSTALLATIONS

6.0 MEASUREMENT AND PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

1.0 SCOPE OF WORK

The work under this Section consists of supplying, installing, and commissioning of all material and services of the complete Wiring Accessories including switches, switch sockets, etc., 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 location and position of all wiring accessories.

The wiring accessories such as switches, switch socket outlets, socket outlets and ceiling roses, etc. 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 locations of the wiring accessories such as switches, sockets, etc. are tentatively shown on the drawings. The Contractor shall ensure the exact positions and locations of wiring accessories in coordination with other services drawings, as per site requirements and as directed by the Engineer. The Contractor shall be responsible for proper functioning of wiring accessories after installation and commissioning.

The description of switches, switch sockets, socket outlets etc. are given in the Bill of Quantities, stated as drawings and in this section. The Contractor shall submit sample of each and every item of wiring accessories for the approval of the Engineer.

3.0 APPLICABLE STANDARDS/CODES

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

BS 3676	-	Switches for domestic and similar purposes.
BS 4343	-	Industrial plugs, socket outlets and couplers for AC and DC supplies.
BS 2135	-	Capacitors for radio interference suppression.
BS 67	-	Ceiling roses.
BS 546	-	2-pole and earthing pin plugs, socket outlets and socket outlet adaptors.
BS 1362	-	Specification for general purpose fuse links for domestic and similar purposes.

BS 1363
(Part 4-1995) - Specification for 13A fused connection units: switched and unswitched.

BS 5733
(1995) - Specification for general requirements for electrical accessories.

DIN EN
60669-1 - Switches for household and similar fixed electrical installations.

4.0 MATERIAL

4.1 Switches/Blank Face Plates

Switches for controlling light and fan points shall be single pole, rated for 10 Amps, 250 volts AC. The body of the switches shall be of thermoplastic with faceplate suitable for flush mounting and colour as approved by the Engineer. The switches shall be gang type having silver tipped contacts and shall operate with snap action.

Unless otherwise specified wherever switches control only the light points, these shall be plate type gang switches installed on common outlet boxes. Where only sheet steel back box is indicated on drawings, blank face plates shall be provided of same make and model as that of switches.

Where specified weather proof or metal front plates shall be used with single grid type switches. The plate shall be finished in specified colour or as otherwise directed by the Engineer.

The bell push switches shall be spring loaded type with the identification symbol embossed on it.

Two-way and intermediate switches shall be used to control lights from two or more different locations particularly in staircase as shown on the drawings.

4.2 13A Switch-Socket/Socket Outlets

Switch socket/Socket units shall be 3 pin, 13 A 250V, AC with faceplate of colour as approved by Engineer. The outlets shall be heavy-duty type suitable for mounting on sheet steel outlet box. The 13 Amps Switch socket/Socket outlets shall have sheltered live contacts and designed such that the earth pin of plug is engaged to socket earth before making of live contacts.

Where metal plate switches are installed, the switch socket units shall also be provided with front plate of similar design.

4.3 15A Socket Outlets

15 Amps Socket Outlets shall be 2 pin + earth, 250V AC socket outlets with faceplate of colour as approved by the Engineer.

The outlets shall be heavy-duty type suitable for mounting on sheet steel outlet box. The 15 Amps Socket Outlets shall be designed such that the earth pin of plug is engaged to socket earth prior to making contact to the live contacts.

4.4 32A Industrial Socket Outlet

The 32A, industrial socket outlet shall be weather proof conforming to the standard and requirements of relevant IEC codes.

The socket outlets shall be of heavy-duty type suitable for outdoor installation. The socket outlet shall be mounted on polycarbonate enclosure and have gasketed cover and window, captive cover screw type. All socket outlets shall be supplied with matching plugs.

4.5 64A Industrial Socket Outlet

The 64A, industrial socket outlet shall be weather proof conforming to the standard and requirements of relevant IEC codes.

The socket outlets shall be of heavy-duty type suitable for outdoor installation. The socket outlet shall be mounted on polycarbonate enclosure and have gasketed cover and window, captive cover screw type. All socket outlets shall be supplied with matching plugs.

4.6 Connection Unit

Connection Unit shall be used to supply to appliances where so specified or shown on drawings. (Air conditioner/Hand drier / Water heaters etc.).

It shall be rated for 20A, 250V AC or as shown on drawings/BOQ. The body shall be of thermoplastic material. Installation shall be surface/ concealed as required.

Face plate and colour to be as per approval of Engineer.

Connectors shall be of best quality (for Phase, Neutral and Earth) and suitable for the size of wiring.

The connection unit shall have the following features as per requirement in B.O.Q or as shown on drawing.

- 20 A Double Pole Switch
- Fuse – Rating as per requirement of appliance
- Neon Indication light
- Grommetted outlet on face plate suitable for flexible wiring connection to appliance

4.7 Fan Dimmers

The fan regulator/dimmer shall be made of low voltage electronic components with essential radio frequency compressor and shall be designed for smooth speed control/variation of fans. The regulators/dimmer and fan control switches shall be of same make and colour as that of the approved wiring accessories. The regulator/dimmer and fan-controlling switch shall preferably be mounted on same face plate. They shall be suitable for flush mounting on a sheet steel outlet back box.

4.8 Sheet Steel Back Boxes

The sheet steel boxes for installation of switches, fan dimmers, socket, outlets and blank face plates shall be made of 16 SWG sheet steel having appropriate dimensions. The box shall have suitable arrangement for receiving the conduit(s). An earth terminal shall be provided for connecting at least three earth wires of 4-sq.mm size. The outlet box shall be finished in powder-coated paint. The sheet steel back box shall be as approved by the Engineer.

4.9 Ceiling Roses

The ceiling roses shall be suitable for 5 amps 250 volts single-phase ac. It shall have white plastic moulded base plate and copper or brass terminals suitable for connecting at least two wires of 2.5 sq. mm size. The ceiling rose shall have a cover with cable inlet hole suitable for multicore PVC insulated and PVC sheathed cable.

5.0 INSTALLATION

5.1 General

The mounting heights of all wiring accessories are stated on the drawings. In case the mounting height is not mentioned, the instructions of the Engineer shall be obtained before fixing.

5.2 **Wiring Accessories Installation**

All wiring accessories such as Switches, Blank Face Plates, 13/15A Switch Socket, 32/64/125A Industrial Socket Outlet, Connection Units & ground jack modules shall be installed on 1.63 mm (16 SWG) thick sheet steel box recessed in wall/column/floor. The faceplate shall be fixed on sheet steel box by means of flat head galvanized or brass screws sunk in the faceplate so as to finish flush with the surface. Matching screw caps shall be installed on the opening for screw in faceplates.

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 **13A Switch Socket/Socket Outlets, 15 Amps Switch Socket/Socket Outlets, 32/64/125A Industrial Socket Outlet & Connection Units**

6.2.1 Measurement:

Measurement shall be made for the total number of each type of socket outlet complete with sheet steel back boxes, polycarbonate enclosure and all accessories acceptably supplied and installed 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 and completion of each type and rating of outlet including screws, screw caps, sheet steel box, polycarbonate enclosure, nuts, bolts and other accessories as required.

*** End of Section 8220***

SECTION - 8230

CONDUITS AND PIPES

1.0 SCOPE OF WORK

2.0 GENERAL

3.0 APPLICABLE STANDARDS/CODES

4.0 MATERIAL

5.0 INSTALLATION

6.0 MEASUREMENT AND PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

1.0 SCOPE

The work under this section consists of supplying, installing and commissioning of all material and services of the complete Conduits and Pipes as specified herein and/or shown on Tender 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 route, location and position of the conduits and pipes.

The conduits and pipes 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 extent of works shown on the drawing does not indicate the exact position of conduits and pipes. The Contractor shall ensure exact location and route of conduit and pipes in coordination with other services drawings, as per site requirements and as directed by the Engineer.

The conduit system shall be continuous with manufacturer's recommended accessories.

The quality and material for the accessories of conduits and pipes such as sockets, end cap, elbows, bushings, bends, inspection/pull boxes, round boxes, etc., necessary for the complete installation shall be similar to that of conduits or pipes. All the accessories shall be supplied by the Contractor without any extra cost and deemed to have been included in the price of conduits/pipes.

Pull wire shall be laid in all empty conduits.

3.0 APPLICABLE STANDARD/CODES

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

BS 31	-	Steel conduits and fittings for Electrical Wiring.
BS 4607	-	Non-metallic conduits and fittings for electrical installations.
BS 1387	-	Galvanized Iron (GI) pipes and fittings.
BS 3505	-	uPVC pressure pipe and fittings.

4.0 MATERIAL

4.1 PVC Conduit and Accessories

The PVC conduits and accessories for lighting and power circuits shall be furnished by the Contractor as shown on the drawings or given in BOQ. The PVC bends shall have enlarged ends to receive conduit without any reduction in the internal diameter at joint. Manufactured smooth bends shall be used where conduit changes direction. Bending of conduits by heating or otherwise will be allowed in special situations only for which the consent of the Engineer shall be required. The use of sharp 90 degree bends and tees will not be allowed for concealed wiring.

The round PVC junction boxes for ceiling light or fan points shall have minimum dimensions of 63 mm diameter and depth. The junction boxes for wall light points shall have minimum dimensions of 63 mm diameter and 38 mm deep. Round junction boxes shall be provided with one piece PVC cover plate fixed to the box by means of brass screws.

4.2 Inspection/Pull and Adaptable Boxes

Inspection/Pull boxes and adaptable boxes shall be provided in conduit runs wherever required to facilitate pulling operation. The drawings are diagrammatic and do not indicate the position and spacing of inspection/pull boxes or adaptable boxes. However, these shall be as per Engineer's approval.

4.3 uPVC Pipes and fittings

Unplasticised PVC pressure pipes and fittings shall conform to BS 3505:1968 and shall be of class-D (working pressure - 12 bars). The buried uPVC pipes should be able to withstand the external load acting upon it by continuous movements of heavy duty vehicles such as trucks, cranes, forklift etc. where pipe changes direction, manufacturer smooth bend shall be used.

Fittings and accessories for use with uPVC pressure pipes shall be of the same class and manufacture as the pipe and shall have the required shapes and dimensions of turned ends to fit the uPVC pressure pipes. uPVC pipes and accessories shall be suitable for jointing with rubber rings or solvent.

Bending of pipes by heating or otherwise will not be allowed. The use of sharp 90 degree bends and tees will not be allowed. The bends shall conform to same specifications as given for PVC conduits. For joining of pipe all precautions and procedures recommended by manufacturer shall be allowed.

Hard PVC or reinforced concrete pipe range spacers shall be used if there is more than one pipe running in parallel. The distance between range spacers shall be maximum 2 meters. Range spacers shall be prefabricated/precast and decay resistant.

Flexible pipes shall be used as deemed essential or as approved by the Engineer.

5.0 INSTALLATION

5.1 PVC Conduits and Accessories

5.1.1 Concealed Conduit

Where concealed conduit system is shown on drawings/ mentioned in BOQ, the conduit shall be installed concealed in roof, wall, column, etc. Conduits shall be laid under floor only where specifically stated. The entire conduit system shall be installed and checked before wring is carried out. Any obstruction found shall be cleared before the installation of cable.

When concealed, the conduit shall have a minimum of 32mm cover of concrete measured from the top of conduit to finished surface. In the reinforced cement concrete (RCC) work the conduit shall be laid before pouring of concrete. Under no circumstances shall chases be made in the RCC structure for concealing conduit and accessories after pouring of concrete. The conduit shall be supported on top of bottom reinforcement of slab. All outlet boxes to be firmly supported and installed such that they finish flush with the soffit of slab or beam.

Where conduits have to be concealed in cement concrete (CC) work after concreting or in block masonry, chase shall be made with appropriate tools and shall not be made deeper than required. The conduit shall then be fixed firmly in the recess and covered with cement concrete mixture. The work of cutting in the cement concrete work or block masonry work shall be coordinated with the civil work. The Contractor shall obtain approval from the Engineer before starting chasing and cutting.

The termination of conduits at or near the equipment / switchboard is shown diagrammatically on the drawings. The exact locations of the termination shall be coordinated with the equipment/switchboard to be installed. Any extension of conduit to suit the site condition shall be made without any extra cost.

Conduit ends pointing upwards or downwards shall be properly plugged in order to present the entry of foreign materials. All openings through which concrete may leak shall be carefully plugged in order to prevent the entry of foreign materials. All opening through which concrete may leak shall be carefully plugged and boxes shall be suitably protected against filling with concrete. At all terminations of conduit, sharp edges of conduit ends shall be prevented to avoid the cutting or damaging of wires or cables during pulling through the conduits.

Under floor conduit shall be installed at a minimum depth of 2 inch from the finished floor level or as shown on the drawings. The conduits shall be installed empty, before finishing of floor or in RCC work, with an 18 SWG steel wire drawn through the conduit for pulling cable. No conduits shall be laid under floor in bathroom.

5.1.2 Surface Conduits

The surface conduits shall be installed where shown on drawings mentioned in BOQ. The conduits shall be installed parallel or perpendicular to the surface of wall, structural members, ceiling, etc., by means of PVC saddles and clamps of approved design. The conduits shall be kept at least 150 mm away from parallel runs of flues, steam pipes and hot water pipes.

The saddles shall be installed on surface by means of nylon or wooden plugs and galvanized screws. Appropriate size of holes in structure shall made by drilling, the thickness of saddles and clamps shall be at appropriate thickness and prime quality. The surface conduits shall be supported at maximum of one meter spacing along horizontal and vertical runs. The Contractor shall provide all accessories for complete installing of conduit system. The pull boxes, etc. as stated for concealed conduits shall also be applicable for surface conduit system.

5.2 uPVC Pipe and Fittings

uPVC pipes shall be installed as shown in the drawings. The depth of the pipe shall vary according to the conditions at site, and approval of Engineer shall be obtained prior to installation. In general the pipes shall be installed underground at the following depths measured from the top of the pipe.

- Under roads/pavement : 900 mm below finished surface.
- When crossing other services : 250/500 mm vertical/horizontal.

The trench of required dimensions shall be excavated and the bottom of trench cleaned and leveled. A 100 mm bed of fine sand shall be provided over which the PVC pipes installed after proper alignment. Where two or more pipes are installed in the same trench the clearance between pipes shall not less than 50 mm. This shall be done by the provision of pipe range spacers as per Engineers approval. After laying of pipe the trench shall be backfilled with clean screened sand at least 100 mm above the top most pipes. The remaining portion of trench shall be backfilled with selected earth in layers well compacted.

After installation, the ends of the pipe shall be plugged with manufactured end cap impervious to water and chemicals. All joints shall be sealed adequately not only to prevent entry of foreign elements but water tightness shall be ensured.

The installation of pipes shall be completed in all respects including its fixing at terminations, before cabling work is started. All sharp edges and burrs shall be removed by using reamer or any approved device. The pipe shall be through cleaned of dirt and dust from inside, the pipes shall be installed in proper co-ordination with other works.

The protective PVC pipe for cable entering building shall be installed so as to lead cable into the cable trench. The required number of pipes shall be fixed before completing the work in the plinth. If an opening is provided to the cable trench from outside, the required number of pipes shall be installed and part of the opening remained unutilized shall be properly packed and sealed using suitable packing material impervious to water and chemical to make it completely water-tight.
Spare pipes shall be provided with 5 mm dia rope pulled from end to end and plugged with manufactured end cap.

Flexible pipes of compatible material and size shall be used wherever deemed essential.

6.0 MEASUREMENT AND PAYMENT

6.1 General

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

6.2 Conduits PVC / Pipes PVC and Accessories

6.2.1 **Measurement:** Measurement shall be made for the total running feet of each type and size of conduits / pipes and accessories acceptably supplied and installed by the Contractor according to specification and as shown on drawings.

6.2.2 **Payment:** Payment shall be made for the total running feet of each type and size of conduits or pipes measured as provided above at the contract unit price each and shall constitute full compensation for supplying, installing and completion of the laying of the conduits and pipes including all accessories related to the item.

No separate payments shall be made for the under mentioned specified work related to the supply and installation of conduit and pipe. The cost thereof shall be deemed to have been included in the quoted rates of above work.

- Excavation and backfilling.
- Dewatering during excavation and backfilling.
- Providing and filling of fine sand in trenches.
- Providing pipe range spacers.
- Providing flexible pipes and accessories, jointing material/ compound, saddles, sockets, elbows, bend, junction boxes reducers, 16SWG GI pull wire for empty conduit, and 5 mm rope for empty pipe, soft metal bush, making threads and plugging of pipe with manufactured end cap etc. whether used or left spare.
- Compacted backfilling of trenches with specified material and disposal of surplus and rejected material.
- Watertight sealing of any unutilized opening to the buildings after installing the protective pipes entering the buildings.

*** End of Section 8230 ***

SECTION – 8240

EARTHING

1.0 SCOPE OF WORK

2.0 GENERAL

3.0 APPLICABLE STANDARDS/CODES

4.0 MATERIAL

5.0 INSTALLATIONS

6.0 MEASUREMENT AND PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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 Earthing system as specified herein, as 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 route, location and position of the earth electrode and ECC etc.

The Earthing system shall also comply with the General Specifications for Electrical Works Section - 8001 and with other relevant provisions of the Tender Documents.

2.0 GENERAL

The earthing system consists of earth electrodes, earthing leads, earth connecting points, earth continuity conductors and all accessories necessary for the satisfactory operation of the associated electrical system.

3.0 APPLICABLE STANDARDS/CODES

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

BS 951	-	Earthing clamps
BS 7430	-	Earthing
BS 2874	-	Nuts, bolts, washers, screws and rivets fixing for use on copper
BS 6346	-	PVC insulated cables

4.0 MATERIAL

4.1 Earth Electrode

4.1.1 Plate Type

Earth Electrode for earthing shall comprise of 75 mm x 4877 mm x 6 mm thick copper plate with 4 Nos. 6 mm dia brass nuts, bolts and washers 70 sqmm HDHC Copper wire as earthing leads. A 100 mm dia Medium Duty GI pipe shall be used with 10 mm dia holes @500 mm c-c. The total length of this GI pipe should be 45 ft.

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A 150 mm dia 60 ft long hole should be drilled in ground by percussion method and above mentioned 100 mm dia medium duty GI pipe should be fixed in this hole simultaneously up to the depth of 45 ft from NSL.

When the drilling up to 60 ft depth is complete, The above mentioned earth electrode shall be drop down to the bottom of the hole with the help of 2 Nos 70 sqmm earth leads. Once the plate is in- place; fill in the hole with moisture retaining bentonite slurry with termite method up to the top. When the bentonite settle down cast a (1:4:8) concrete manhole 700 mm x 700 mm & 500 mm deep as shown in the drawing. Place a medium duty CI cover as shown in the drawing.

4.1.2 Copper Clad Steel Rod Type

This type of earth electrode shall comprise a 3 metre long, 20 mm dia. copper clad steel rod having flat head at drive end and pointed conical tip at the driven end. The tip shall be hardened to facilitate driving. At the top of the rod, a brass clamp for bolted connections shall be provided suitable for connection to the down conductor or earthing lead as required. The thickness of Cu coating on the Galvanized Steel Rod should be 250 micron.

The inspection chamber with C.I. cover shall be provided as instructed by the Engineer.

4.2 Earthing Lead

The earthing lead shall connect the earth electrode to earth connecting point or equipment in the building. It shall be of stranded bare electrolytic copper of size shown on the drawings. The cost of earthing leads deemed to have been included in the price of earth electrode and no separate payment shall be made for it.

4.3 Earth Continuity Conductor

Earth continuity conductor (ECC) shall be stranded bare copper wire or single core PVC insulated copper conductor cable of sizes indicated on the drawings. All thimbles, lugs, sockets, nuts, washers & other accessories necessary for the complete installation of ECC shall be provided by the Contractor without any extra cost.

The specifications for single core PVC insulated cables used as ECC shall be same as those given in section "LT Cables" of the technical specifications. PVC insulated cables when used as ECC shall be green or green/yellow.

4.4 Earth Connecting Point

Earth connecting points shall comprise tinned copper bar, rectangular in shape, having dimensions of 300 x 50 x 6 mm. At least six terminals for connection shall be arranged on the bar, which can be increased or decreased as required by the Engineer.

The terminals shall have brass or tinned copper bolts, nuts and washers for protection against corrosion. Two holes shall be provided off centre of the copper bar for fixing to the wall by means of 10 mm dia. nut and bolt and shall be insulated by means of rubber gaskets/washers.

5.0 INSTALLATION

5.1 General

Complete earthing systems as shown on the drawing shall be installed by the Contractor. The earthing system shall give earth resistance, including the resistance of soil, earth leads and ECC equal to or less than one ohm.

At all connections of earth continuity conductor to Generator, Transformer, LT Switch Board, LT Distribution Board, or any other metallic body, proper size copper or brass sockets, thimbles or lugs shall be used to which the copper wire shall be connected by copper brazing. The soldering of copper wire at joints or terminations shall not be allowed. All tee-off connections shall be by copper brazing using suitable socket and clamps. After brazing, the jointed surface shall be protected by oxide inhibiting compound of low electrical resistance. For connections to metallic body, the surface shall be thoroughly cleaned before bolting the lug or socket.

The earth continuity conductor shall in general run in cable trench or in conduits/pipes as shown on the drawings. For under floor runs, these shall be installed in pipe/conduit of appropriate sizes. Where laid along underground cables, these shall be laid directly underground in unpaved areas and in pipes under paved areas.
The earthing system shall be tested after complete installation of earth electrodes.

5.2 Earth Electrode

5.2.1 Plate Type

The electrode plate shall be installed at a minimum depth of 5 metres from finished ground level or 1 metre below permanent water level whichever is less. The minimum horizontal distance between earth electrodes shall be 3 metres. Bentonite slurry with tremie method shall be made and buried alongwith the copper

plate in the ground to increase the soil conductivity. The electrode shall be installed as per details shown on the drawings. The inspection chambers shall be constructed at locations approved by the Engineer.

5.2.2 Copper Clad Steel Rod Type

In case the soil conditions at site permit and approved by the Engineer this type of earth electrode may be installed by hammering the electrode in soil, until the top of the rod is about 300 mm below the proposed finished ground level. If hammering down of rod is not possible due to site conditions, a pit shall be first excavated in bare ground upto the required depth and electrode shall be installed upright in the pit. The excavated pit shall be backfilled in layers of 500 mm, each layer tamped and compacted.

5.3 Earth Continuity Conductor

The earth continuity conductor of sizes shown on the drawing shall be installed all along the cable runs and connected to the earthing bar/terminals provided in equipment. The body of generator, transformer and all switchboards shall also be connected to earth by specified size of ECC. All other metal work shall also be connected to earth by specified size of ECC.

At any joint or terminations, the ECC shall be connected using proper accessories. No connection shall be made by twisting of earth conductors.

5.4 Earth Connecting Point

The earth connecting point shall be installed at locations shown on the drawings. It shall be fixed on wall surface by means of brass screws with nuts, washers and other insulating material as instructed by the Engineer.

6.0 MEASUREMENT AND PAYMENT

6.1 General

The Contractor's bid amount against each Bill of Quantities item as given below shall include supplying, installation, testing, and commissioning of all work specified herein, as shown on the Tender drawing related to the item.

6.2 Earth Electrode

6.2.1 Measurement:

Measurement shall be made for the total no. of each type of earth electrode 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, testing, commissioning and completion of earth electrodes including copper plate or copper clad steel rod, earthing leads, excavation, backfilling, lime and charcoal, inspection chamber with cover, GI pipes for earthing leads/watering, nuts, bolts, washers, lugs, brazing and all related civil works.

6.3 Earth Continuity Conductor (ECC)

6.3.1 Measurement:

Measurement shall be made for the total running feet of each size and type of earth continuity conductor (ECC) acceptably supplied and installed by the Contractor.

6.3.2 Payment:

Payment shall be made for the total running feet of each size and type of ECC measured, as provided above, at the Contract unit price and shall constitute full compensation for supplying, installing, connecting, testing and completing of ECC including all accessories such as sockets, thimbles, lugs, bolts, nuts, washers, brazing, etc.

6.4 Earth Connecting Point

6.4.1 Measurement:

Measurement shall be made for the total no. of earth connecting points acceptably supplied and installed 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 and completion of earth connecting point and all other associated accessories such as nuts, bolts, washers, lugs, etc.

*** End of Section 8240 ***

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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/mm^2
- Maximum Yield Point = 56.3 kg/mm^2

Yield Point

- Minimum Elongation = 24.7 kg/mm^2

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. An 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 mm^2 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 PAYMNET

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***

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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 along with 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 champhered.

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***

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

SECTION – 8312

STRUCTURED CABLING NETWORK

1.0 SCOPE OF WORK

2.0 GENERAL

3.0 APPLICABLE STANDARDS/CODES

4.0 MATERIAL

5.0 INSTALLATIONS

6.0 TESTING AND COMMISSIONING

7.0 MEASUREMENT AND PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

1.0 SCOPE OF WORK

The work under this section consists of supplying, installing, testing and commissioning of all material and services for provision of Structured Cabling Network as specified herein, as shown on Bidding Drawings and stated in the Bill of Quantities.

The Contractor shall discuss the Structured Cabling Layout with the Engineer and co-ordinate at site with other services for exact route, location and position of the system.

The Structured Cabling Network work with accessories shall also comply with the General Specifications, Section – 8001 and with other relevant provisions of the Bidding Document.

2.0 GENERAL

To ensure optimum performance, components of the structured cabling shall be sourced from the one manufacturer. This shall eliminate potential problems such as electrical and mechanical mismatch between different manufacturers.

Structured Cabling shall be covered under the manufacturers Certified Installation Program and installed by Certified Installation Company. Under this arrangement, the supply of components from the one manufacturer will facilitate the manufacturers Certification requirements of sole supply.

The Structured Cabling Network shall support the following systems, but not be limited to these systems.

3.0 APPLICABLE STANDARDS AND CODES

The following standards and all “normative addendums” shall be applicable to this document and must be adhered to for any installation work performed.

EIA/TIA 568-A	Commercial Building Telecommunications Cabling Standard.
EIA/TIA 569-A	Commercial Building Telecommunications Cabling Standard Pathways and Spaces.
TSB 67	Transmission Performance Specifications for Field-Testing of Unshielded Twisted-Pair Cabling Systems.
IEEE 802.3	Wire Speed Performances
IEEE 802.1Q	VLAN

All copper/optical fiber cabling, components and connecting hardware shall be in accordance with latest revision of ISO/IEC 11801, ISO/IEC/TR3 8802-1,

ISO/IEC/8802-3, ISO/IEC 61935-1, IEC 60364-1, IEC 60950, EN50173, EN50174-1, EN50174-2, and EIA/TIA TSB 72/73.

4.0 MATERIALS

4.1 Category – 6 UTP Cable

The horizontal cabling shall be Category – 6 UTP, 4 pair cable with gigabit support and specified up to 250MHz. The cable employed shall have excellent electrical characteristics and shall posses low weight, have slim design and shall be non corrosive (to IEC 60754-2), low smoke (to IEC61034), and flame retardant (to IEC 60332-3) and DIN VDE 0472, Part 804, test type C). The cable shall meet the requirements for EN 55022 Class B emission and EN 55024 immunity to be compliant with standards of electromagnetic compatibility and shall comply with following specifications:

Electrical Specification

- DC Resistance - < 200 milli Ohms
- DC Resistance Imbalance - < 50 milli Ohms
- Insulation Resistance - > 500 Mega Ohms min
- Wiring Sequence - TIA/EIA 568 A+B
- Delay Skew - < 1.25 nanoseconds

Mechanical Specification

- Diameter of Copper - AWG 23
- Wire Insulation - Zero Halogen foam - skin
- Sheath Material - Material
- Deployment Area - Zero Halogen, Flame Retardant
- Temperature Range (moving) - Dry and Damp Rooms
- Operating Temperature - 0 ºC to +50 ºC
- Min. Bend Radius for Single Flexure - -20 ºC to +60 ºC
- Min. Bend Radius during Installation - ≥ 40 mm
  ≥ 60 mm

4.2 Category – 6 RJ-45 Outlets

The horizontal cabling shall be terminated on RJ-45 outlets on white plastic wall plate. The category-6 outlets shall have provision of two outlets and shall accommodate one or two inserts (as per BOQ). To maintain security, the module shall not be removable from the front of wall plate. The RJ-45 outlets shall be protected by a spring-loaded

shutter which will cover the outlet when not in use. Outlets shall comply with following specifications:

Electrical Specification

- DC Resistance - < 200 milli Ohms
- DC Resistance Imbalance - < 50 milli Ohms
- Insulation Resistance - > 500 Mega Ohms min
- Wiring Sequence - TIA/EIA 568 A+B
- Delay Skew - < 1.25 nanoseconds

Mechanical Specification

Jack Contact

- Material of RJ45 pins - Copper alloy
- Plating of RJ45 pins - Gold plate 1.4 μm
- Operating Life (number of RJ45 Insertions) - 1500
- Plastic Housing (material type) - Polycarbonate (VO)

IDC Block

- Material of metal terminals - Copper alloy
- Wire Accommodation (diameter range) - AWG 22-24
- Tool Accommodation (required or not) - NO

7 Gas Tight IDC Cable Termination (yes/no) YES

- Plastic Housing (material type) - Polycarbonate (VO)
- Operating Life (number of re-terminations) up to 5

4.3 **Copper Patch Cord:**

The patch cords should be designed for applications up to 250 MHz and provides transmission performance meeting Category 6 specifications. Cables should be low skew products. I.e. the difference in propagation delay between the individual pairs is very low. Additional features are the slim design and low weight of the cables. The cable should meet or exceed the requirements for EN 55022 Class B emission and EN 55024 immunity allowing for networks to be built that are compliant with the standards on electromagnetic compatibility.

4.4 **Copper Patch Panel:**

Industry Standard 19” Patch panel capable of accommodating 24/48 No. Category – 6 UTP outlets. The patch panel should be modular having 1U height with integral strain relief. Front panel of patch panel should be made of high-grade steel.

4.5 Racks

All racks shall be 19 inch racking products. In all cases the backbone cabling sub-system shall be terminated into rack mounted panels and presented as MTRJ fibre connectors. The rack shall have Plexiglas door with pivoted handle and square key. Earthing point, multi socket strip for supplying power to the active components of data network and roof ventilator shall be provided in each rack.

Cable management shall be provided with manageable patching facility. Horizontal management side rings shall provide an environment for ongoing maintenance of all future patching and enable move and changes to be handled easily.

The Contractor shall be responsible for all records and labeling of the rack mounted panels, both fibre and UTP, to the convention provided by the Client.

4.6 Cable Management

Cable management facilities within each rack at the Wiring Closet Sub-system are a mandatory requirement.

The cable management channels shall be made up of power coated mild steel 19-inch rack mount panels with integrated “fingers” in which to route the patch leads. The horizontal channel formed by these fingers shall be enclosed by a snap-on ABS plastic cover at both ends of panel separate ABS plastic rings shall be mounted using the rack mount bolts of the panel to create a vertical ring run up the rack. These rings shall be sufficiently large enough to comfortably accommodate in excess of 50 patch leads, yet narrow enough not to overhang the width of the rack or obscure the horizontal ring run segment.

The cable management panels should be mounted on the patching facility between active and passive rows of RJ45 ports. In this way, patch leads from every RJ 45 patch panels port are directed to the cable management panels above or below the outlet, so that at no time even when fully populated, outlets are obscured by patch leads. Such a layout shall ensure the patching facility, when cable management is properly utilized, does not go out of control and can be efficiently utilized for adds, moves and changes over the life of the Structured Cabling System.
The plastic rings shall be sufficiently large enough to comfortably accommodate in excess of fifty (50) patch leads at any time.

In view of the dynamic nature of the patching facility, the “fingers” of the cable management panels shall be made of mild steel and integral to the metal panel, so that excessive force on the patch leads do not deform the channel formed within the “fingers”. The cable management panel shall

be supplied with a snap on cover to discretely conceal the patch leads when the patching facility is static.

To facilitate effective patching during the life of the Structured Cabling System, the rack shall be laid out for minimal clutter and the shortest reasonable route for patch cords.

5.0 INSTALLATION

All cable installations shall be completed according to the local regulatory board and conform to EIA/TIA 568-A and shall comply with the following criteria:

5.1 UTP Cable Installation

Cables shall be installed in already laid steel cable trunking (within suspended ceilings) suitably anchored to the building structure, and in conduit in floor and partitions (concealed). Cables shall be secured every 600mm using hook and loop fastening ties. Due care shall be taken to not over tighten ties and place undue strain on the cabling infrastructure.

Cables shall be bundled to a maximum of 24 UTP cables and each bundle individually supported within the cable trunking.

Bend radius shall be limited to 10 times the cable diameter (UTP).

During the installation of a UTP cable (maximum 90 metres) the pull distance should not exceed 30 metres at any one time.

6.0 TESTING AND COMMISSIONING

The following tests shall be carried out and the results shall be documented and maintained to form part of the “AS BUILT” drawings.

1. Test all of the STP copper cable installation for termination and twisted pair integrity, including continuity, polarity, pin-assignment and colour codes

2. Perform visual inspections to ensure that each pair of wires remain twisted as close as possible to the termination point, to maintain the impedance and minimize attenuation losses.

3. Test that the STP cable pairs comply with the Specification using measuring device for Near End Cross-talk and Signal Attenuation complying with EIA/TIA 568-A.

The documentation required at the completion of the installation phases shall contain all of the following information, together with any other information the installer has acquired during the installation.

1. "As-Built" documentation, showing total cabling and connection installed, utilizing floor space plans and cable record sheets. This documentation shall show all cables and outlets incorporating the full numbering and marking convention supplied.

2. All test results and certification information, identified by cable, connection and numbering convention, necessary for all Optical Fibre and copper cables.

All components of the Structured Cabling should be sourced from one manufacturer to ensure minimal impedance mismatch and best possible NEXT performance and to guarantee the Category-6 performance from end to end.

The Structured Cabling System should operate without introducing or being affected by electromagnetic radiation from other sources. Maintaining segregation from other services or screenings is to be ensured to achieve acceptable immunity.

7.0 MEASUREMENT AND PAYMENT

7.1 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 Drawings related to the item.

7.2 Backbone Cabling

7.2.1 Measurement:

Measurement shall be made for the total running feet of backbone UTP cable acceptably supplied and installed by the Contractor.

7.3.2 Payment:

Payment shall be made for the total running feet measured as provided above at the Contract unit price each and shall constitute full compensation for supply, installing, testing and commissioning of the backbone UTP cable including fibre management system and all accessories.

7.3 Conduit and Pipes

7.3.1 Measurement:

Measurement shall be made for the total running feet of conduit and pipes acceptably supplied and installed by the Contractor.

7.3.2 Payment:

Payment shall be made for the total running feet measured as provided above at the Contract unit price each and shall constitute full compensation for supply, installing, pouring and excavation of the conduit and pipes

7.4 RJ 45 Socket Outlet

7.4.1 Measurement:

Measurement shall be made for the total number of RJ 45 socket outlet acceptably supplied and installed by the Contractor as a complete unit.

7.4.2 Payment:

Payment shall be made for number of units measured as provided above at the contract unit price each and shall constitute full compensation for supplying, installing and completion of the RJ 45 socket outlet including all civil works and other accessories.

7.5 Patch Panels/Cable Management/Racks

7.5.1 Measurement:

Measurement shall be made for the total number of each patch panel/cable management/racks acceptably supplied and installed by the Contractor as a complete unit.

7.5.2 Payment:

Payment shall be made for number of unit measured as provided above at the contract unit prices each and shall constitute full compensation for supplying, installing, testing, commissioning and completion of the patch panel/cable management/racks including interconnecting cable trays between racks and all accessories.

7.6 **Wiring of RJ 45 Socket Outlets**

7.6.1 Measurement:

Measurement shall be made for the total number of wiring of RJ 45 socket outlet acceptably carried out by the Contractor as a complete unit.

7.6.2 Payment:

Payment shall be made for the total no. of units measured, as provided above at the Contract unit prices each and shall constitute for supplying, installing connecting, testing, commissioning and completion of the wiring between RJ 45 socket outlet and patch panel and between patch panels including required pair of multi-core data cable, appropriate size conduit and all accessories.

*** End of Section 8312 ***

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

SECTION – 8335

CLOSED CIRCUIT TELEVISION SYSTEM (CCTV)

1.0 SCOPE OF WORK

2.0 GENERAL

3.0 APPLICABLE STANDARDS/CODES

4.0 EQUIPENT

5.0 VIDEO SURVEILLANCE APPLICATION SOFTWARE

6.0 INSTALLATIONS

7.0 TRAINING

8.0 MEASUREMENT AND PAYMENT

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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 Reorders (NVR/CAMERA SERVER), Network Attached Storage (NAS) / Riad 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 10^0C 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 ½.8” or better format CMOS Sensor
Focal length	4 mm to 72 mm or better (for Artifical 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	360^0 Continuous
Tilt Travel	$0 – 90^0$
Manual Tilt Speed	0.5^0/SEC to 90^0/SEC
Manual Pan Speed	0.5^0/SEC to 90^0/SEC
Preset Tilt Speed	0.5^0/SEC to 90^0/SEC
Preset Pan Speed	0.5^0/SEC to 300^0/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 Otpic
3	Switch to Video Wall Switches	UTP CAT6/Fibre Otpic
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 d, 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 he 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 o 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 o 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. Incase 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 theBididnger. 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 theBididng 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 ***

SECTION - 8341

PUBLIC ADDRESS SYSTEM

1.0 SCOPE OF WORK

The work under this section consists of supplying, installing, testing and commissioning of all material and services of complete Public Address System as stated herein, as shown on Tender drawings and as given in the Bill of Quantities.

The Contractor will discuss the Public Address System layout with the Engineer and coordinate at site with other services for exact route, location and position of electrical lines and equipments.

Complete Public Address Sound System consisting of Central Network Controller, Power Amplifier, Paging Call Station, Speakers, Volume Control, Loudspeaker, automatic loudness control, wiring, steel conduit, outlet boxes and interface with Fire Alarm System and any hardware as required to make a complete operating system as shown on Tender drawings.

2.0 GENERAL

The fully digital public address system shall interface with the Fire Alarm System in accordance with NFPA 72.

The system shall be capable of fulfilling the following requirements:

- Clear, un-distorted announcements to selected areas during public addressing;

- Clear, un-distorted paging to all zones; either individually or collectively. Selection of groups of zones shall be programmable from time to time.

- In the event where controller fails; emergency announcement shall be able to broadcast to all areas.

For general office and public areas, the system shall be capable of delivering a sound pressure level of 85 dB at the listening level.

Signal processing modules shall be provided for the Call Station inputs. It shall act as a compressor to supply uniform microphone output levels, compensating for variation in voice volume, irrespective of different voice strengths and speaking distances.

The listening level shall be taken to be 1.5 m above floor level.

The reinforced sound shall be distributed evenly throughout the listening area; the total

variation in each area shall not exceed ±4 dB.

An articulation loss of consonants of less than 15% shall be maintained. (Generally, the reverberation time of the various locations shall be assumed to be not more than 1.9 seconds).

The central network controller shall be an Ethernet-based controller. It shall be using web technology for the user interfaces and system interaction. It shall have a means of monitoring, to continuously monitor the system from the microphone of the call station onwards; any faults shall be displayed on the screen of the Alpha-Numeric Display as well as the Central Monitoring, Configuration and Diagnostic PC. It shall come with dual cabling connectivity for redundant cable connection.

It shall be able to deliver high quality signals to the loudspeakers, all individual audio equipment shall have its own Digital Signal Processing modules.

High quality signals shall be maintained at the output of the power amplifiers to compensate for losses in the audio distribution lines.

Each power amplifier with 30% spare capacity shall be provided to drive all loudspeakers during an emergency without overloading.

Each power amplifier shall have a built-in self-restoring protection circuit to guard against hazards of operation such as mis-loading at its input, short-circuiting of its output and connection mistakes. It shall come with dual cabling connectivity for redundant cable connection.

The power amplifiers shall also have built-in line transformers for 100V loudspeaker matching, DC input of emergency operation, headphone monitor output, adjustable input sensitivity, and shall conform to the safety standard of IEC 65489. It shall have amplifier monitoring and auto-changeover over circuits & automatic volume control features built-in.

The power amplifiers shall have control inputs and audio inputs for interfacing for fire alarm signals. This control inputs shall be supervised, freely programmable for any system actions and with priorities setting. Each power amplifier shall have digital audio processing to ensure good audio quality being delivered to the Loudspeakers.

A built-in amplifier monitoring circuits shall continuously monitor the functioning of the power amplifiers and shall automatically switch in a spare power amplifier in case of failure of any of the amplifiers. Upon detection, the status of the fault shall be indicated by the LCD display on the amplifier itself as well as in the Central Monitoring, Configuration and Diagnostic PC. The number of spare power amplifiers to be provided shall be ten percent of the total quantity of each range of power amplifiers.

All speaker lines shall be supervised for open circuit fault, short circuit fault, and short to ground fault. Upon detection, the status of the fault shall be indicated by the LCD display on the amplifier itself as well as in the Central Monitoring, Configuration and Diagnostic PC.

The loudspeakers shall be located such that they meet the necessary requirements.

Facilities shall be incorporated to override volume control units, including those in the “off” position to enable emergency announcements to be broadcast. Horn speakers shall be provided for all plant rooms, generator rooms and outdoor areas with high ambient noise.

The Public Address System shall be network based and in digital domain and shall be flexible and easy to operate. Specific functions shall be easily programmed and changed by non-technical personnel through Internet Explorer to access the system configuration software

The main equipment shall be housed in standard 19 inch equipment racks.

Cabling between a call station and the central network Controller shall merely comprise a two-core fibre cable, while standard loudspeaker cables shall be used between the power amplifiers and the loudspeakers.

Cabling within the main equipment shall be via fibre cable with purpose built connectors located at the back of each equipment.

Each call station shall have a built-in converter that convert the analog signal to digital signal for transmission to the network controller of the PA system. The audio input of the microphone shall consist of equalizer.

Each user key on the call station shall be programmable via the Central Configuration PC. Each key shall be capable of being programmed with a priority hierarchy, signal tones, digitally stored messages and routing instructions prior to a call. Each user key when depressed shall activate a zone or group of zones of speakers according to type of announcement to be made.

Supervised control inputs and audio inputs shall provide the interface between the inputs and the central PA/EVC system. Each inputs are supervised and freely programmable for any system actions with priorities setting..

The central network controller shall manage the operation of the system; that is, detection of the user keys being depressed, routing of the microphone and attention signal tones, setting of the priority levels and switching of the loudspeaker volume control override circuits. It shall also acts as the 'watchdog,' continuously checking the system hardware.

A digital message module shall be stored in the central network controller for broadcasting of message in case of emergency. More than one message shall be able to be played simultaneously. The status of these messages shall be monitored.

For evacuation and emergency procedures, signals shall be programmed to precede an announcement from a call station, or they shall be capable of being broadcast independently by a defined user-key.

Signals shall be capable of being programmed to precede an announcement from a call station or may be used independently as alarms for evacuation or emergency procedures.

Whatever signal is being transmitted, the emergency and alarm calls shall always have top priority. They shall be broadcast immediately and at full volume, even in those zones where loudspeaker are currently switched off or set at a low volume.

The uniformity of sound pressure level distribution at 1.5 metres above the floor level shall not vary beyond ±4 dB for frequency up to 4,000 Hz and not more than ±8 dB for frequency up to 8,000 Hz.

The ceiling loudspeakers so chosen shall have uniform frequency response ranging from 100 Hz to 16,000 Hz within ±3 dB variation.

Each loudspeaker assembly shall incorporate a flush-mounted baffle, a 100V line matching transformer and a high efficiency loudspeaker in order to keep the operating power at a minimum.

Each loudspeaker shall be capable of generating an on-axis sound pressure level of at least 91 dB at 1 metre distance, with 1W input.

The remote volume control units shall be sufficiently rated to handle the total number of loudspeakers it has to serve and shall have a speech restoration circuit, which shall permit announcements always at full volume ir-regardless of the control setting.

2.4 CALL STATION KEYPAD

Call station shall have three colour LEDs, one to monitor the status of the system that signal an announcement may be made or the selected zone is engaged (that is, with another announcement) and the second one to indicate the status of the call station and the third one to monitor the power to the call station.

The microphone paging station shall have the flexibility of selecting any number of user keys (selection buttons) at any one time. It shall be able to program each user key for any function.

The call station keypad shall be used in combination with the call station basic unit for making a manual or prerecorded call to any pre-assigned zones or executing a predefined action. The call station keypad shall have 8 keys.

The call station keypad keys can be freely programmed for recall of selection, live speech call, cancel selection, BGM mute, BGM volume control and each key at the callstation keypad shall have 2 color LEDs.

2.5 RECESSED CEILING SPEAKER (LOW WATTAGE – 6 WATTS)

Rated voltage	:	100 volts
Rated impedance	:	1667 ohms
Effective frequency range	:	70 to 18,000 Hz

Opening angle (4 KHz)	:	70°
Power handling capacity	:	6 watts
Sound pressure level at 1 KHz, 1W, 1m	:	91 dB
Maximum sound pressure level	:	99 dB
Speaker diameter	:	200mm

2.6 **VOLUME CONTROL UNIT**

Type	:	Auto-transformer
Power handling capacity	:	10W, 35W, 75W
Total impedance	:	36 dB (10W), 30 dB (35W and 75W)
Attenuation per step	:	3 dB
No of positions	:	10
Insertion loss	:	0.5 dB (10W), 0.6 dB (35W and 75W)

3.0 **CODES AND STANDARDS**

Public Address System shall interface with fire alarm system in accordance with NFPA 72 standard.

4.0 **MATERIAL**

4.1 **Microphone**

The unidirectional microphone shall provide high quality speech intelligibility. It shall be suitable for either hand held or table mount. Microphone shall have 2-pole on/off slide switch and following minimum technical specifications.

Polar pattern / Directionality	Unidirectional
Frequency range	100 Hz to 13kHz
Sensitivity	83dB
Cable length	5m

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4.2 Central Network Controller

It shall have the following functions:

The Basic System shall be based on a 19" rack frame and shall comprise at least the following:

- Central Digital Signal Processor module
- 2 x 16-character LCD Display
- 8 Supervised Control Inputs and 4 Audio Inputs
- Ethernet interface for Configuration and Diagnostic & Logging functions
- Digital message storage
- Stores up to last 200 faults messages
- RS232/Ethernet Interface for logging

The control unit shall be the heart of the public address system. The unit shall be capable of routing minimum 10 audio channels, delivering power to the system, fault reporting and controlling of the system. This unit can work either in stand-alone mode or with a PC connected to it.

The network controller shall have 4 analog audio inputs.

There shall be 8 control inputs, which are freely programmable. These can be programmed for any action to be done in the system and assigned priorities.

The network controller shall have a redundant network wiring capability. Status/fault enquiries shall be made via the front panel display and rotary control of the network controller. The front panel shall have a 2 x 16-character LCD display and a rotary control to navigate through the menu. The network controller shall be provided with a storage facility for the last 200 fault messages in the system

The status of the digital audio storage and the messages shall be monitored. The audio messages (stored as wav files) can be downloaded from a computer via the Ethernet link.

The network controller shall monitor the status of all equipment in the system and report any status change as well as the microphone capsule of a call station microphone and report any fault.

Attention and alarm tone definitions shall be stored in the network controller. These tones can be accessed by any call stations or control inputs for announcement broadcast or alarm broadcast. The network controller shall have an internal real time clock and this clock can be synchronized via a control input.

The network control unit shall have extensive audio processing possibilities for audio inputs and audio outputs. Parametric equalization, limiter, and gain can be adjusted with the configuration software.

4.3 **Mixer / Power Amplifier**

The main function of the power amplifier is the amplification of audio signals for the loudspeakers. It shall be possible to select the output voltage between 100V, 70V or 50V by changing jumpers. The power amplifiers are provided with a 2 x 16-character display for fault monitoring and status display. It shall be class D amplifier.

The equipment can be used as tabletop or 19" rack mounting.

- The power amplifiers shall have audio inputs with microphone/line level selection.
- The audio input of the power amplifier can be selected as automatic volume control input in the configuration software.
- The power amplifiers shall have supervised control inputs that are freely programmable. These can be programmed for any action to be initiated in the system and can be assigned with priorities.
- The power amplifier shall have audio output that can be monitored by connecting a headphone to the headphone socket. Status changes of the unit shall be monitored continuously and reported to the network controller for fault/status reporting.
- The control input built-in the power amplifier shall have the ability to monitor the cable between the control input and the external switch against open and short circuits.
- The power amplifier shall be designed for redundant network wiring.
- The amplifier monitoring and changeover facility shall be incorporated in the power amplifier. The changeover relays shall be included in the unit. The unit shall be incorporated with digital audio processing and audio delay.

It shall meet the following minimum requirements:

Interfaces	:	2 x system network connection
Indication & Controls	:	2 x 16-character LCD display for status display
	:	Rotary/push control for selection of system enquiry mode & headphone volume
	:	Power supply for ON/OFF switch
Inputs	:	Control inputs & audio inputs selectable between microphone & line

Outputs	:	Selectable 100V, 70V or 50V
	:	Control outputs
	:	Headphone outputs
Audio inputs	:	Mono, balanced
Frequency Response (audio inputs)	:	Line - -3dB at 20Hz and 20KHz Mic. - -3dB at 100Hz to 16KHz
Frequency Response (Audio outputs)	:	60Hz to 20KHz
Mains supply	:	220 VAC / 60 Hz
Emergency battery supply	:	+48V (-earth)
Output power	:	4 x 125W, 2 x 250W, 8 x 60W, 4 x 60W, 1 x 500W
Type of Amplifiers	:	Class D
	:	
Safety	:	According to EN55103/FCC/CE

Configuration/diagnostic & Logging Software

Configuration software

The configuration software shall be used for configuring the system and shall User friendly. The configuration software shall be located in the network controller except for the file transfer facilities.

Fault enquiries can be made via the diagnostic section of the web interface. The configuration software shall be designed in such a way that even first-time users can navigate through the configuration easily.

Configuration of system shall be accessed at different authorization levels, namely Administrator, Installer and User

Diagnostic & logging software

- The diagnostic & logging software shall have the main function of monitoring and recording the status of all the units in the PA system. It shall log all events such as calls and status changes of system units, and provide a current view of the system status. This software section shall be used for real-time logging by connecting a PC with web browser.

- It shall be able to view historical log stored in the network controller including

logged events of monitored external devices. It shall be able to acknowledged and reset the events and the acknowledgment and reset actions shall be logged. It shall be able to view the last 200 faults, which are stored on the network controller

- The call station shall have a fixed microphone to transmit speech over the network and a press-to-talk key. It shall also have a headset socket with volume control for audio monitoring of pre-recorded message and chime signal.

- It shall have a speech filter with a cutoff frequency at 300Hz to improve intelligibility and prevent clipping of the audio input on low-frequency signals.

- It shall have an Analog-to-digital audio conversion circuit within the call station and a digital signal processor which can be used for audio processing. It can be used to adjust sensitivity, limiter and parametric equalizer.

- It shall have three 2-color LEDs for power/error indication, system status and call station status.

5.0 INSTALLATION

All equipment shall be installed in a neat and professional manner.

Cabling shall be neatly routed and bundled along the equipment cabinet sides. Cabling shall not hang or cross in the racks. Cabling shall be run at right angles to the rack.

Cable connectors shall be the mating connector to the terminal on the equipment. Adapters will not be accepted to interface a cable connector to the equipment jack.

Installer shall follow factory installation guidelines for pulling tension and bending radii for all cables.

- Cables shall be one continuous piece between each system device.

- Dress cables routed to equipment with sufficient slack to allow for service of equipment and avoid strain on connections or cable.

- Use wire ties for supporting low voltage cable runs concealed above ceilings. Do not run cables loose on ceiling tiles. Cables shall be grouped in bundles and support from structure above.

- All equipment power and signal wiring shall conform to the National Electrical Code and to applicable local codes.

- All equipment and devices shall be securely mounted to a permanent cabinet or panel. No device shall be supported by it's wires or cables.

- Terminate each cable to terminal blocks in sequence, including grounding drain wires.

- Terminal locations and cables shall be labeled, legibly, with permanent embossed labels or by labeling pen. Identification shall be labeled on As-built Drawings.

5.1 TESTING

All system functions shall be tested for proper performance. All test results shall be documented for inclusion in the as-built manuals.

Complete system programming shall be done by a person who has received factory training in the programming of the installed system.

5.2 TRAINING

Provide a minimum of four hours of on-site in-service training in the operation of the public address sound system. The training shall be provided by a training specialist specifically trained in the operation, programming and features of the installed system.

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 of all work specified herein and/or as shown on the tender Drawing related to the item.

6.2 Microphone

6.2.1 **Measurement:** Measurement shall be made for the total number of Microphone acceptably supplied and installed by the Contractor as a complete unit.

6.2.2 **Payment**: Payment shall be made for number of units measured as provided above at the contract unit price each and shall constitute full compensation for supplying, installing and completion of the Microphone including all civil works and other accessories.

6.3 Mixer / Power Amplifier

6.3.1 **Measurement:** Measurement shall be made for the total number of Mixer / Power Amplifier acceptably supplied and installed by the Contractor as a complete unit.

6.3.2 **Payment**: Payment shall be made for number of units measured as provided above at the contract unit price each and shall constitute full compensation for supplying, installing and completion of the Mixer / Power Amplifier including all civil works and other accessories.

6.4 **Configuration/diagnostic & Logging Software**

6.4.1 **Measurement:** Measurement shall be made for the Configuration /diagnostic & Logging software including chair acceptably supplied and installed by the Contractor as a complete job.

6.4.2 **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 Configuration / diagnostic & Logging software and all accessories.

6.5 **Call Station Keypad**

6.5.1 **Measurement:** Measurement shall be made for the total number of Call Station Keypad acceptably supplied and installed by the Contractor as a complete unit.

6.5.2 **Payment**: Payment shall be made for number of units measured as provided above at the contract unit price each and shall constitute full compensation for supplying, installing and completion of the Call Station Keypad including all civil works and other accessories.

6.6 **Recessed Ceiling Speaker**

6.6.1 **Measurement:** Measurement shall be made for the total number of Recessed Ceiling Speaker acceptably supplied and installed by the Contractor as a complete unit.

6.6.2 **Payment**: Payment shall be made for number of units measured as provided above at the contract unit price each and shall constitute full compensation for supplying, installing and completion of the Recessed Ceiling Speaker including all civil works and other accessories.

6.7 **Central Network Controller**

6.7.1 **Measurement:** Measurement shall be made for Central Network Controller acceptably supplied and installed by the Contractor as a complete unit.

6.7.2 **Payment**: Payment shall be made for the complete unit measured as provided above at the contract unit price each and shall constitute full compensation for supplying, installing and completion of the Central Network Controller including all civil works and other accessories.

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

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BIDDING DRAWING

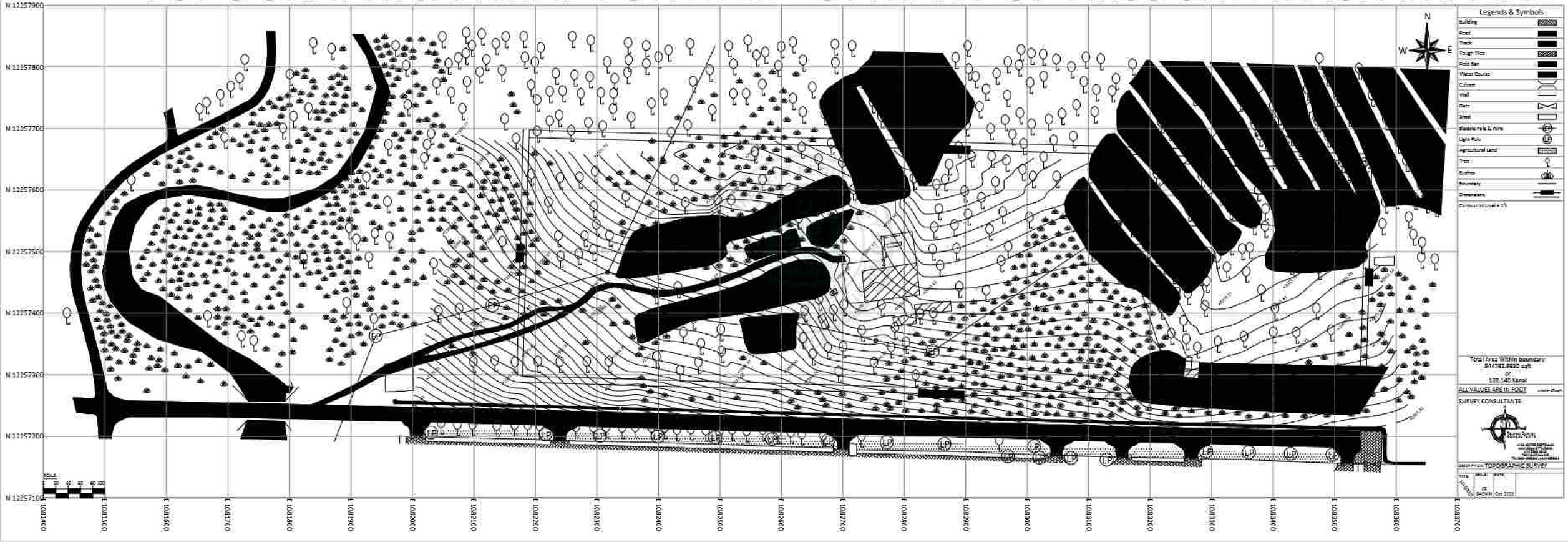
VOLUME III (A)

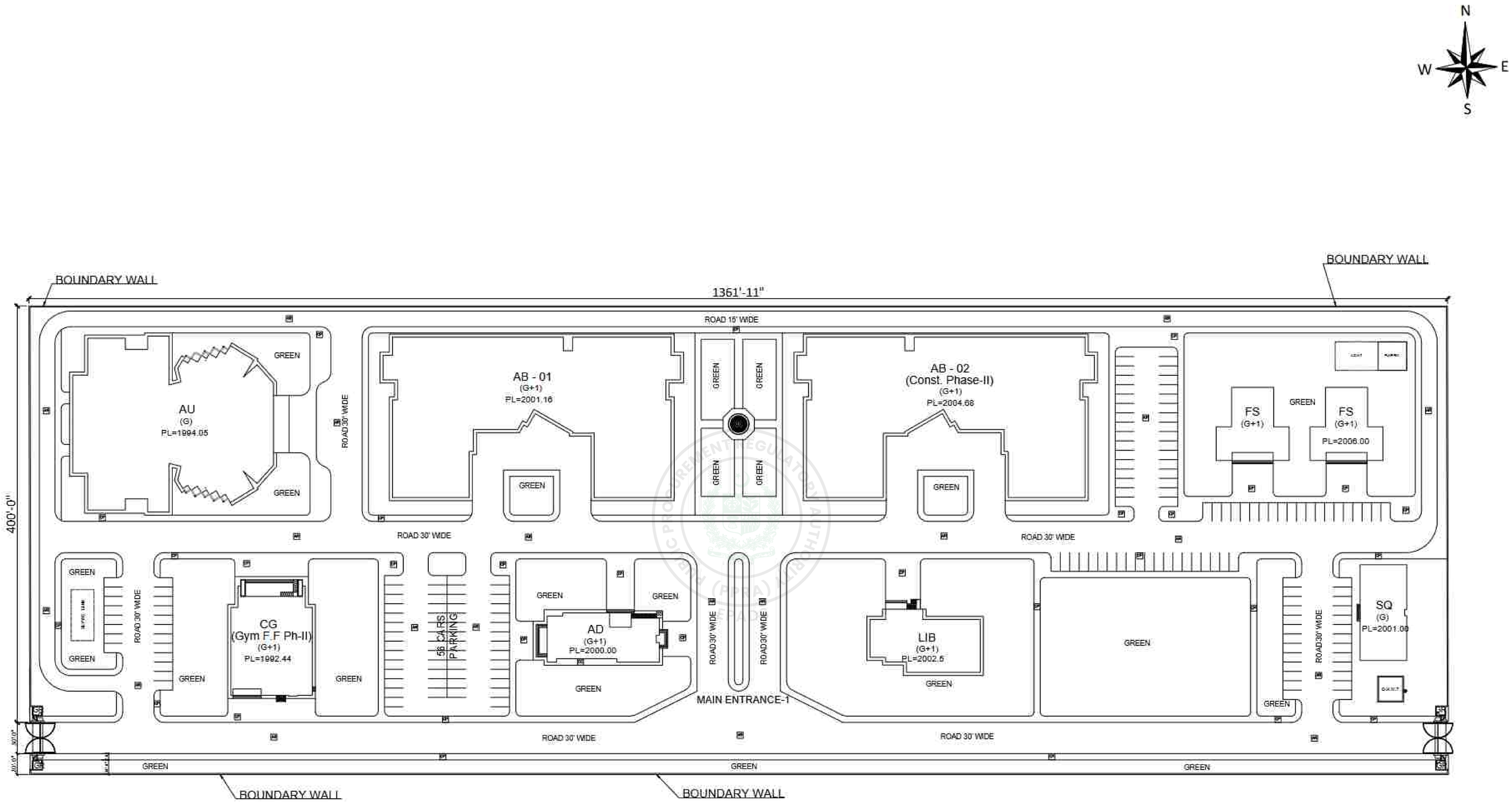
D R A W I N G S

MAY, 2026

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT) LIMITED.
SECTOR G-5/2, ISLAMABAD

TOPOGRAPHICAL MAP FOR DEVELOPMENT OF NIISS SITE IN ISLAMABAD





LEGEND (BUILDINGS)

SR. NO.	ABBREVIATION (BUILDING)	BUILDING	REMARKS	FOOTPRINT
1	AB-01	ACADEMIC BLOCK - 01		33,163 SFT.
2	AB-02	ACADEMIC BLOCK - 02	CONST. IN PHASE-II	33,163 SFT.
3	AD	ADMINISTRATION BLOCK		5,380 SFT.
4	LIB	LIBRARY		5,573 SFT.
5	AU	AUDITORIUM		25,657 SFT.
6	CG	CAFE & GYM	GYM AT F.F IN PHASE-II	8,437 SFT.
7	FS	FACULTY SUITES		2x 3,918 SFT.
8	SQ	STAFF LINES		4,173 SFT.
				123,582 SFT. TOTAL

TOTAL GROUND COVERAGE 123,582 SFT.
TOTAL PLOT AREA 544,762 SFT.
TOTAL COVERAGE 22.68%

LEGEND (EXTERNAL WORK)

SR. NO.	ABBREVIATION (BUILDING)	BUILDING
1	GR	GUARD ROOM
2	ER	ELECTRICAL ROOM
3	UG	UNDER GROUND WATER TANK & PUMP ROOM

LEGEND (FINISHES)

ASPHALT ROAD	AR
CONCRETE CHEQUERED TILES (PLINTH PROTECTION)	CC
CONCRETE PAVER (WALKWAY)	CP
CONCRETE LAID IN PANELS (4' x 4')	C

SITE PLAN
TOTAL AREA 544,762 SQ.FT.

SHEET A3 SCALE=0/00"=0'-0"

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

MASTER PLAN

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

REFERENCE DRAWINGS	REV. NO.	DATE	BY	CKD.	APPR.
	A	AUG,2023			

DESN: NESPAK
DWN:
FILE:
CKD:
SUBM:
RECOMMENDED
VER./CKD.
APPROVED
DATE: FEB,2026
DRAWING NO.: 156/322/BD/MP B00
REV: 0

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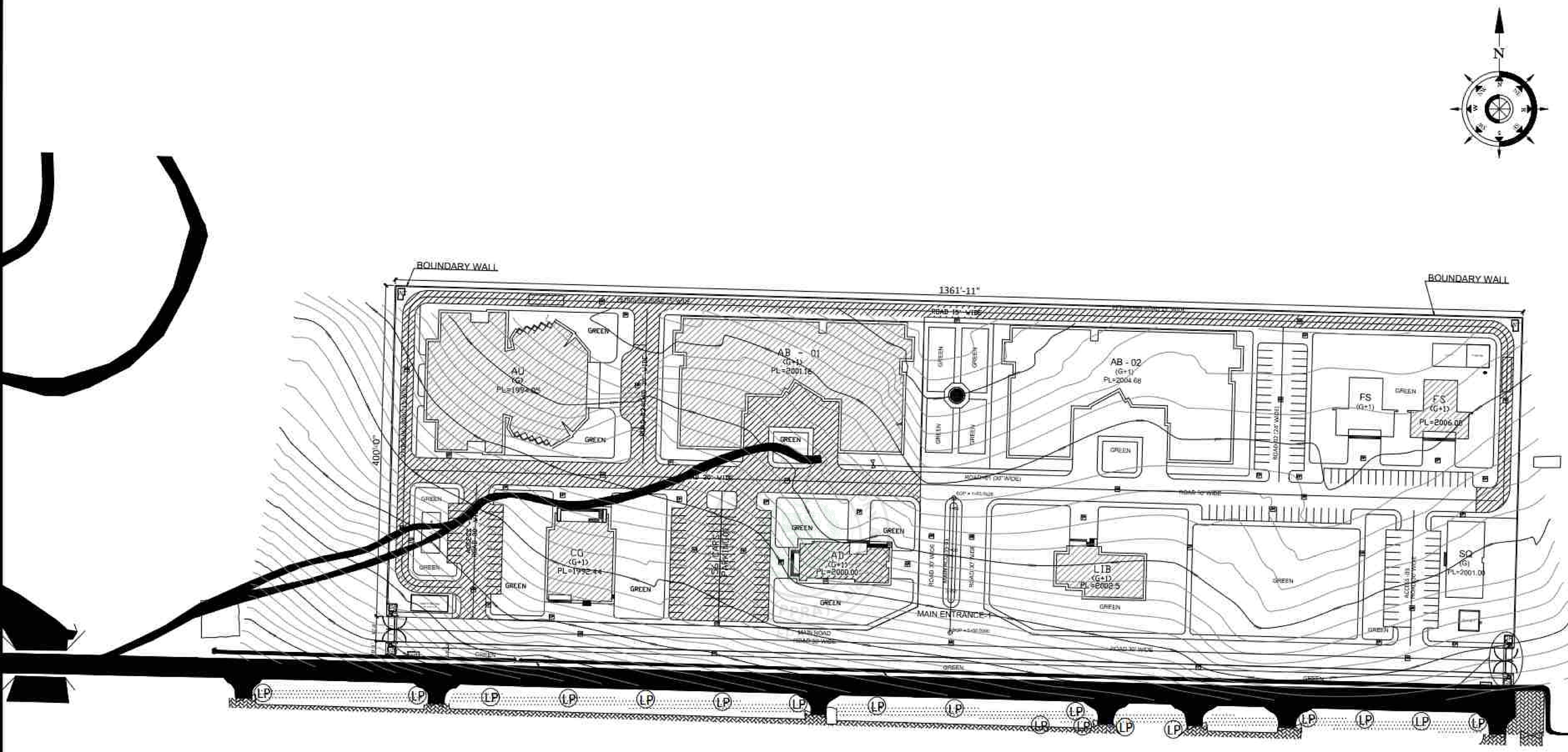


NOTES:

1- READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.
2- ALL DIMENSIONS ARE IN F.P.S. UNLESS MENTIONED OTHERWISE.

LEGEND (BUILDINGS)

SR. NO.	ADMINISTRATION DRAWING	BUILDING	COVERED AREA
1	AB-01	ACADEMIC BLOCK - 01	
2	AB-02	ACADEMIC BLOCK - 02	
3	AD	ADMINISTRATION BLOCK	
4	LIB	LIBRARY	
5	AU	AUDITORIUM	
6	CG	CAFE & GYM	
7	FS	FACULTY SUITES	
8	SQ	STAFF QUARTERS	

LEGEND (EXTERNAL WORK)

SR. NO.	ADMINISTRATION DRAWING	BUILDING
1	WT	WATCH TOWER
2	GR	GUARD ROOM
3	ER	ELECTRICAL ROOM
4	UG	UNDER GROUND WATER TANK & PUMP ROOM

LEGEND (FINISHES)

ASPHALT ROAD	AR
CONCRETE CHEQUERED TILES (FLOOR FINISHES)	CC
CONCRETE PAVER (WALKWAY)	CP
CONCRETE LAID IN PANELS (6' x 6')	C

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY, ISLAMABAD

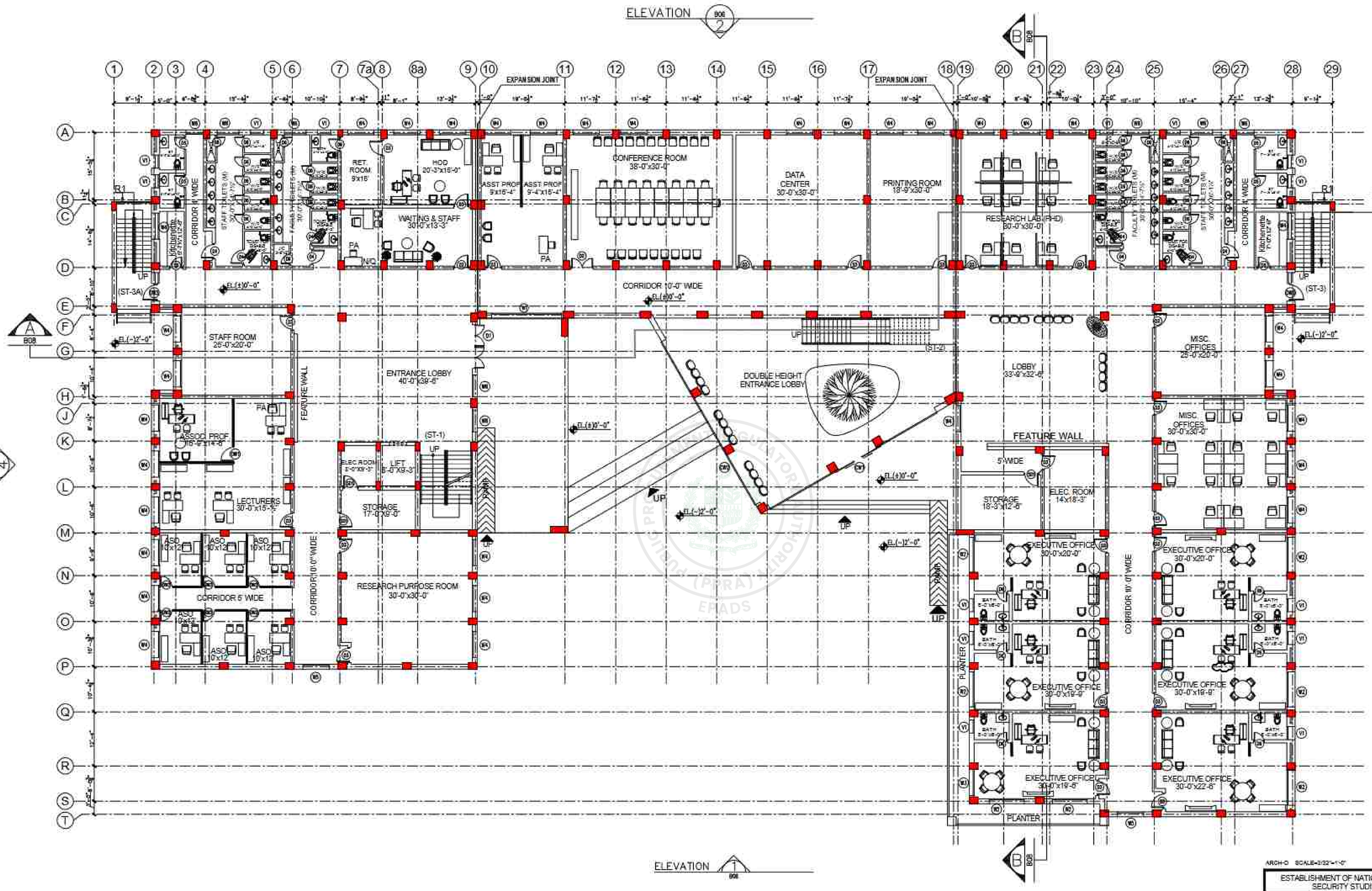
INFRASTRUCTURE DEVELOPMENT OF NATIONAL INSTITUTE OF INTELLEGENCE AND SECURITY STUDIES AT QAU, ISLAMABAD

EXTERNAL DEVELOPMENT WORKS
MASTER PLAN SUPERIMPOSED ON SURVEY
(SHEET 1 OF 1)

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED
DWN.			
FILE	DATE	DRAWING NO.	REV.
CKD.	FEB.2026	SA-555/324/BD/MPC 01	0
SUBM.			

REFERENCE DRAWINGS	REV NO.	DATE	DESCRIPTION	BY	CKD.	APPR.



LEGEND

DRY WALL

GLASS WALL

COVERED AREA = 26,772.00 SQ.FT.

LEGEND

1.EXECUTIVE OFFICES
2.RESEARCH LAB (PhD)
3.RESEARCH PURPOSE ROOM
4.PRINTING ROOM
5.DATA CENTER
6.MISC. OFFICES
7.CONFERENCE ROOM
8.FACULTY OFFICES
9.STAFF ROOM
10.ADMIN STAFF OFFICES

NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.

REFERENCE DRAWINGS	REV. NO.	DATE		BY	CKD.	APPR.
	A	MAY, 2026				

ARCH-D SCALE=3/32"=1'-0"

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

ACADEMIC BLOCK (ST)
GROUND FLOOR PLAN

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

DESN. NESPAK	RECOMMENDED	VERIFIED	APPROVED
DWG.			
FILE			
CKD.			
SUBM.			

DATE	DRAWING NO.	REV.
MAY, 2026	SA-555/322/BD/02B02	0

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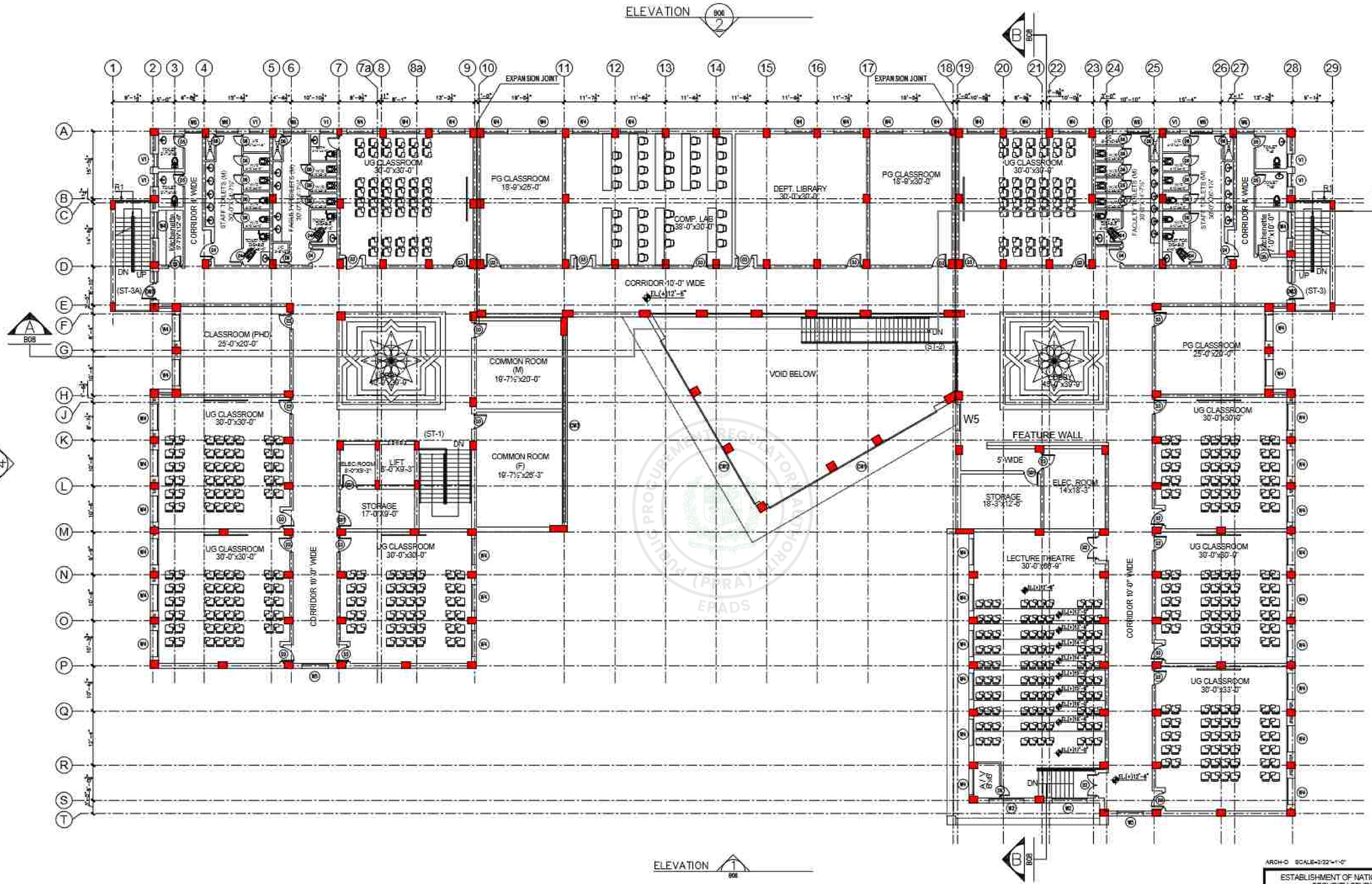

LEGEND

1. COMPUTER LAB
2. DEPARTMENT LIBRARY
3. POST GRADUATE CLASSROOM (4)
4. UNDERGRADUATE CLASSROOMS (8)
5. BOY'S COMMON ROOM
6. GIRLS COMMON ROOM
7. STORAGE

NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.

COVERED AREA = 29,866.00 SQ.FT.

ARCH-D SCALE=3/32"=1'-0"

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

ACADEMIC BLOCK (ST)
FIRST FLOOR PLAN

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

REFERENCE DRAWINGS	REV. NO.	DATE	BY	CKD.	APPR.
	A	MAY, 2026			

DESN. NEESPAK | RECOMMENDED | VERIFIED | APPROVED

DWN. | CKD. | SUBM.

DATE: MAY, 2026

DRAWING NO.: SA-555/322/BD/02B03 | REV.: 0

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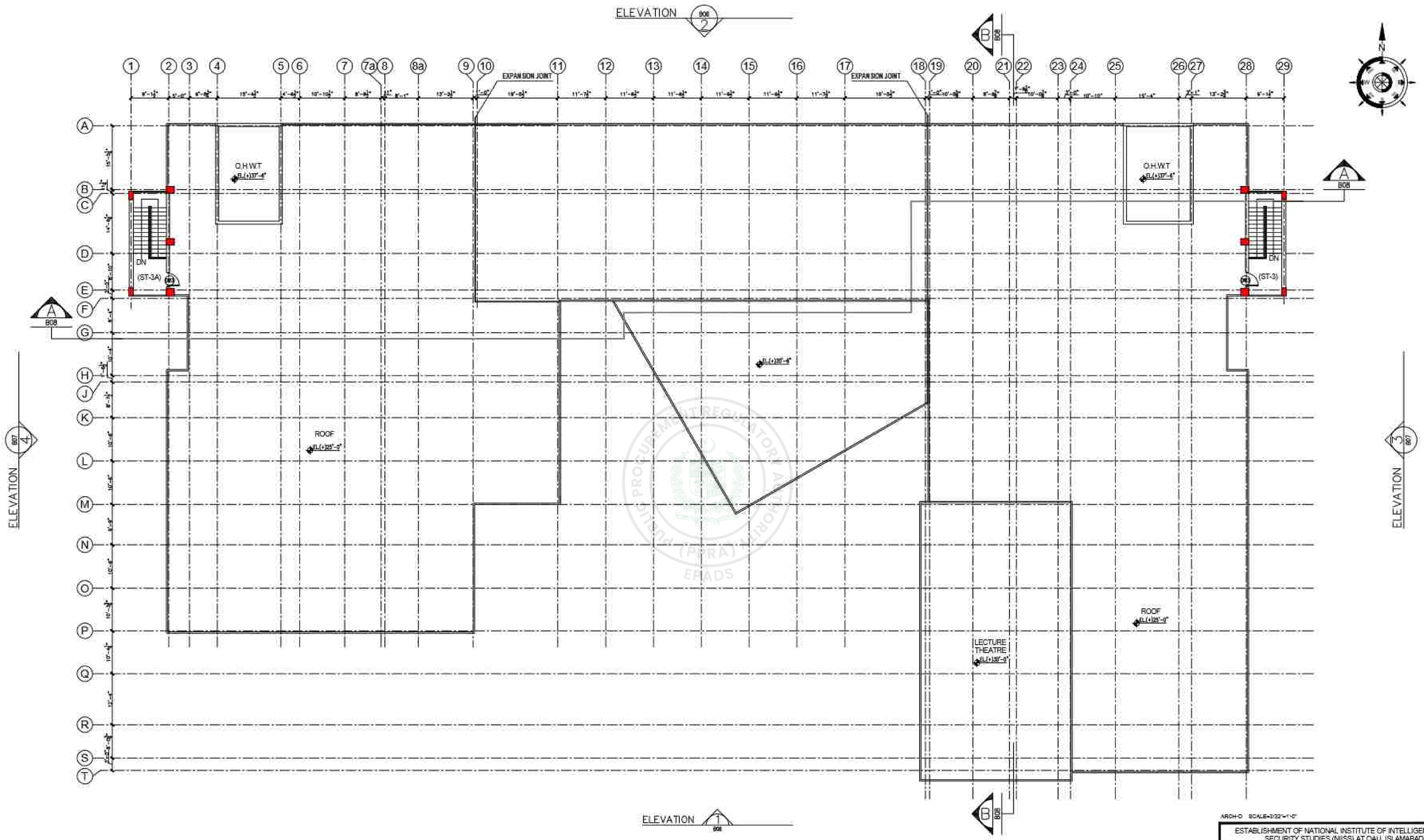

ARCH-D SCALE=3/32"=1'-0"

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

ACADEMIC BLOCK (ST)
MUMTY PLAN

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.

REFERENCE DRAWINGS	REV. NO.	DATE	BY	CKD.	APPR.
	A	MAY, 2026			

DESN. NESPAK
DWN.
FILE
CKD.
SUBM.

RECOMMENDED | VER./CKD. | APPROVED

DATE: MAY, 2026

DRAWING NO.: SA-555/322/BD/02B04 | REV.: 0

COVERED AREA = 495.00 SQ.FT.

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ELEVATION 2 B08

B B08

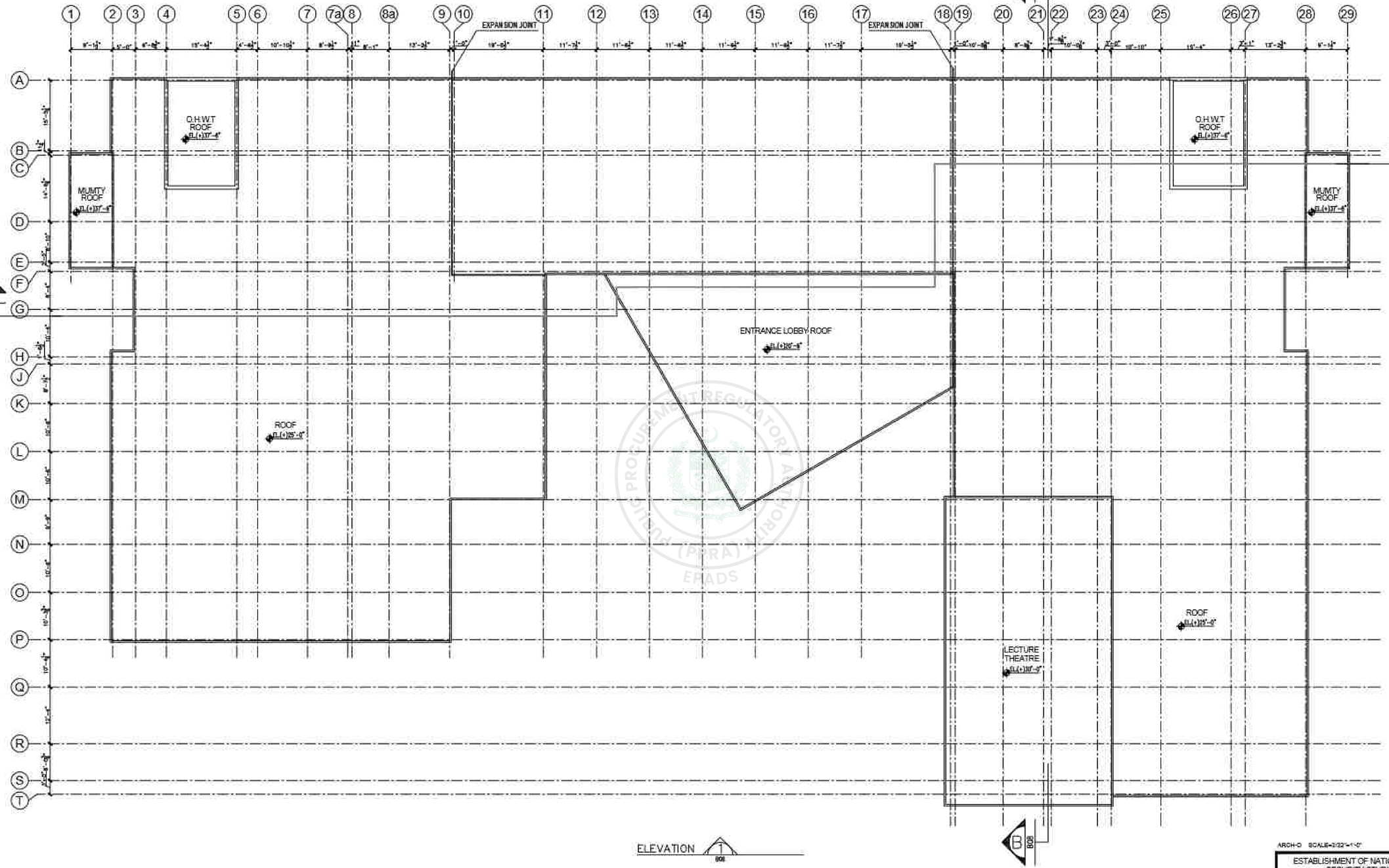
A B08

A B08

ELEVATION 4 B07

ELEVATION 3 B07

ELEVATION 1 B08



ARCH-D SCALE=3/32"=1'-0"

NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.

REFERENCE DRAWINGS	REV. NO.	DATE		BY	CKD.	APPR.
	A	MAY, 2026				

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

ACADEMIC BLOCK (ST)
ROOF PLAN

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

DESN. NESPAK	RECOMMENDED	VERIFIED	APPROVED
DWN.			
FILE	DATE	DRAWING NO.	REV.
CKD.	MAY, 2026	SA-555/322/BD/02B05	0
SUBM.			

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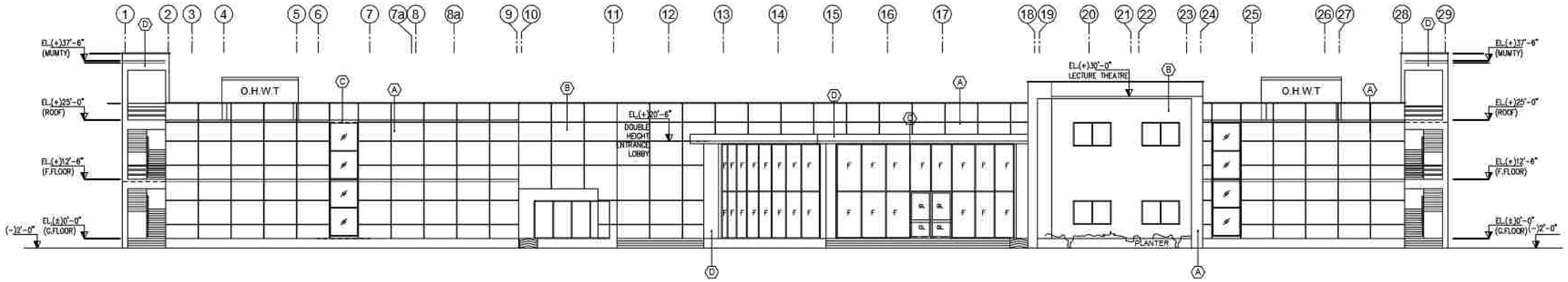

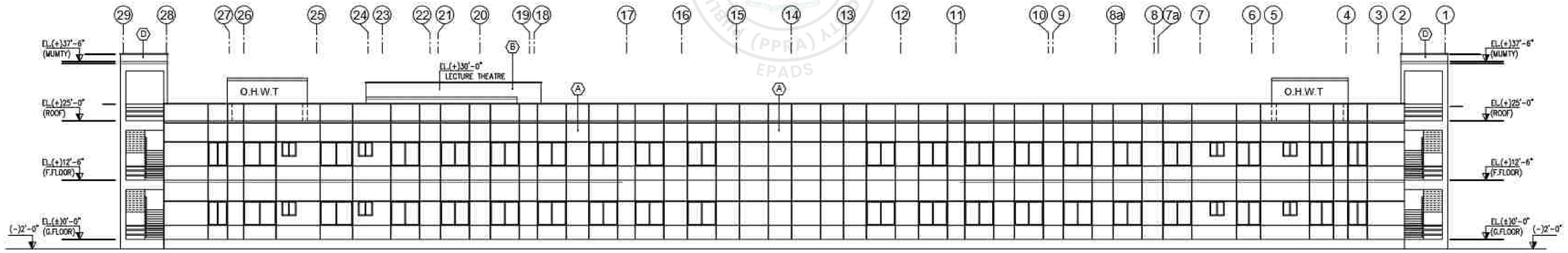

ARCH-D SCALE=3/32"=1'-0"

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

ACADEMIC BLOCK (ST)
ELEVATION 1 & 2

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

DESN. NESPAK	RECOMMENDED	VERIFIED	APPROVED
DWG.			
FILE			
CKD.			
SUBM.			

DATE: MAY, 2026

DRAWING NO. SA-555/322/BD/02B06 REV. 0

LEGEND

A - COLOUR CRETE WITH GROVES 1"
B - BRICKFACING TILE (3"X9"X1")
C - CURTAIN WALL
D - TEXTURE COATING

NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.

REFERENCE DRAWINGS	REV. NO.	DATE		BY	CKD.	APPR.
	A	MAY, 2026				

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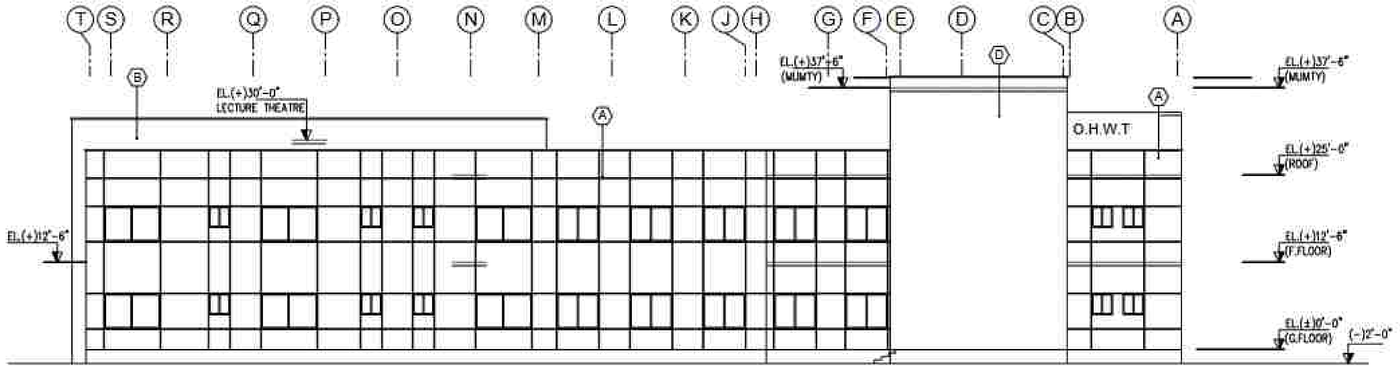

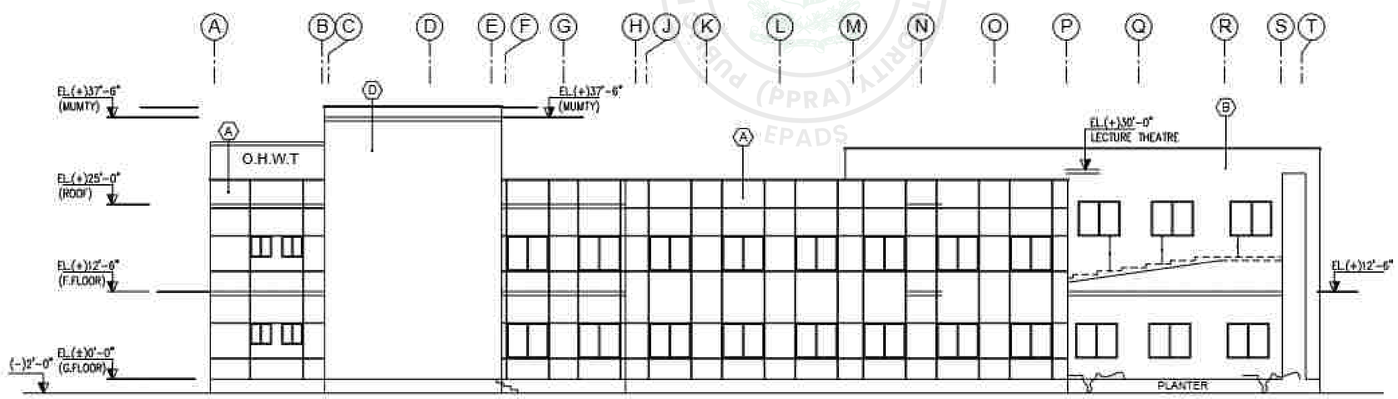

LEGEND

A - COLOUR CRETE WITH GROVES 1"
B - BRICKFACING TILE (3"X9"X1")
C - CURTAIN WALL
D - TEXTURE COATING

NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.

REFERENCE DRAWINGS	REV. NO.	DATE		BY	CKD.	APPR.
	A	MAY, 2026				

ARCH-D SCALE=3/32"=1'-0"

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

ACADEMIC BLOCK (ST)
ELEVATION 3 & 4

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

DESN. NESPAK	RECOMMENDED	VERIFIED	APPROVED
DWN.			
FILE			
CKD.	DATE	DRAWING NO.	REV.
SUBM.	MAY, 2026	SA-555/322/BD/02B07	0

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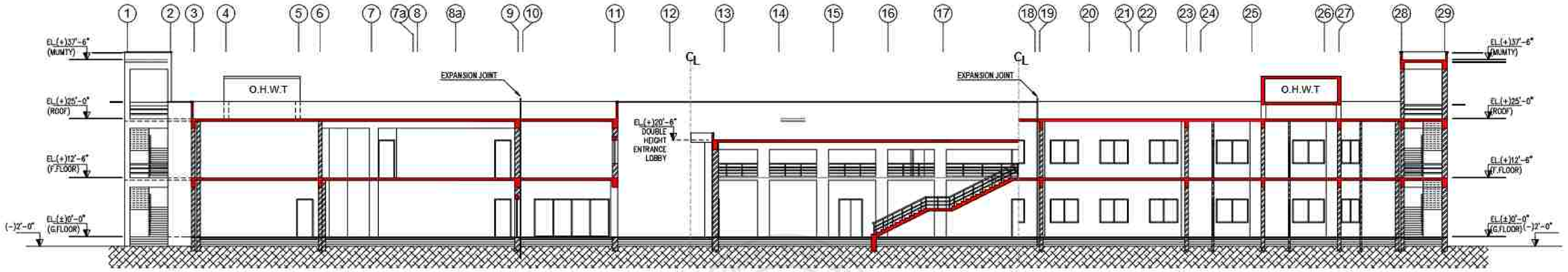
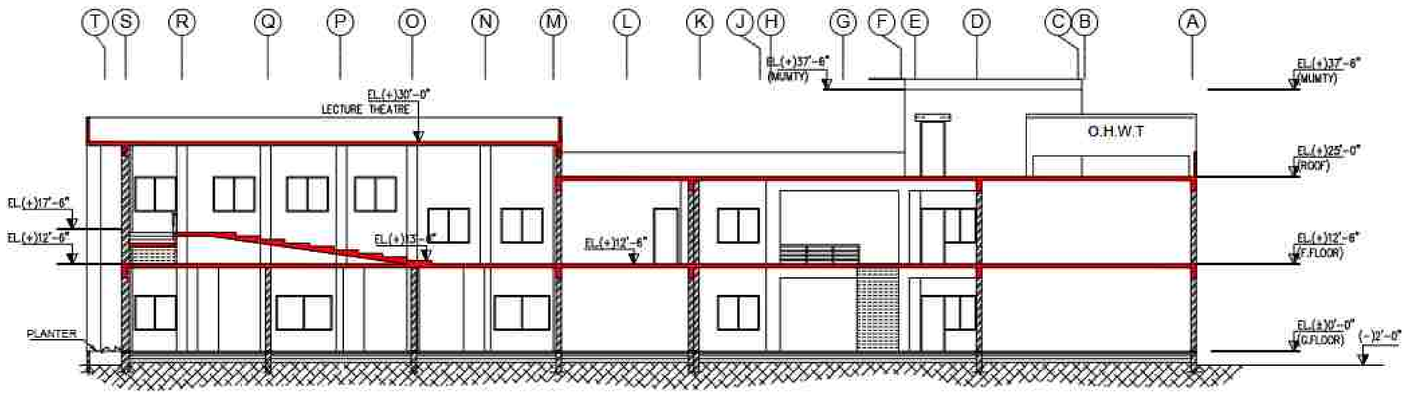




PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA)
EPADS

ARCH-D SCALE=3/32"=1'-0"

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

ACADEMIC BLOCK (ST)
SECTIONS AA & BB

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

DSGN.: NESPAK | RECOMMENDED | VERIFIED | APPROVED
DWN.:
CHD.:
FILE:
CHD.:
SUBM.:

DATE: MAY, 2026

DRAWING NO. SA-555/322/BD/02B08 | REV. 0

NOTES

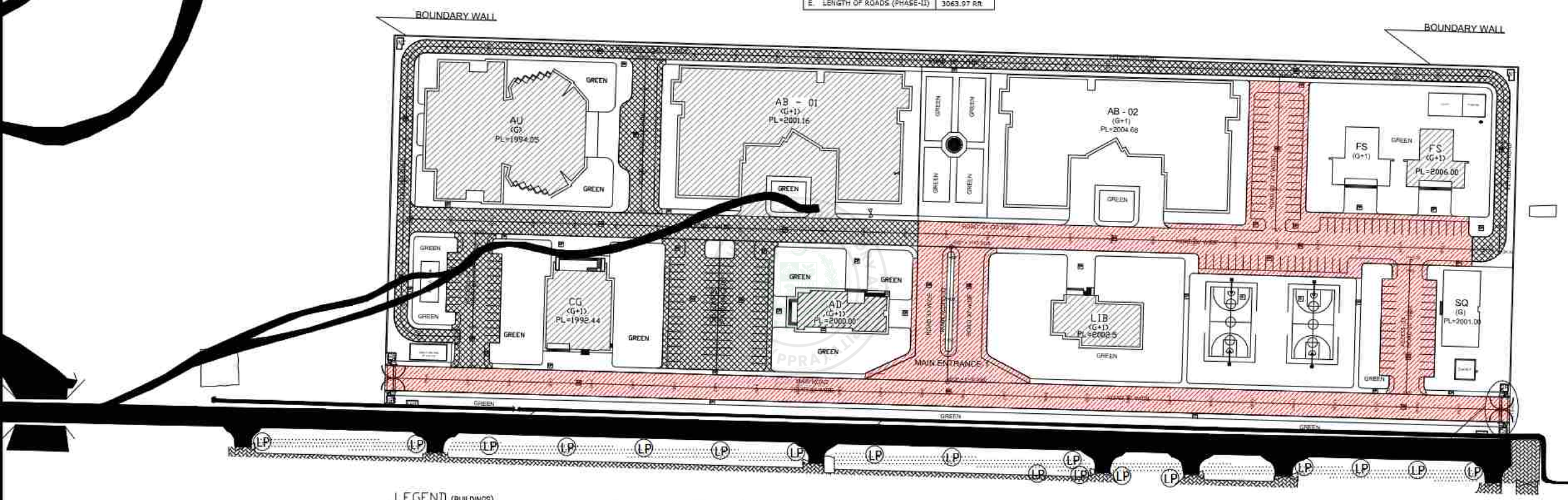
1. READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.

REFERENCE DRAWINGS	REV. NO.	DATE		BY	CHD.	APPR.
	A	MAY, 2026				

ROADS DETAIL	
A. PAVED AREA PHASE-I	110631.73 Sft
B. PAVED AREA PHASE-II	87175.67 Sft
C. TOTAL PAVED AREA (A+B)	197807.40 Sft
D. LENGTH OF ROADS (PHASE-I)	2571.11 Rft
E. LENGTH OF ROADS (PHASE-II)	3063.97 Rft

PHASE - I

PHASE - II



LEGEND (BUILDINGS)

SR. NO.	ABBREVIATION (BUILDING)	BUILDING	REMARKS	FOOTPRINT
1	AB--01	ACADEMIC BLOCK - 01		33,163 SFT.
2	AB--02	ACADEMIC BLOCK - 02	CONST. IN PHASE--II	33,163 SFT.
	AD	ADMINISTRATION BLOCK		5,380 SFT.
	LIB	LIBRARY		5,573 SFT.
	AU	AUDITORIUM		25,857 SFT.
		CAFE & GYM	GYM AT F.F IN PHASE--II	8,437 SFT.
		FACULTY SUITES		2x 3,918 SFT.
		STAFF LINES		4,173 SFT.
				123,582 SFT.

TOTAL GROUND COVERAGE 123,582 SFT.
TOTAL PLOT AREA 544,762 SFT.
TOTAL COVERAGE 22.68%

LEGEND (EXTERNAL WORK)

SR. NO.	ABBREVIATION (BUILDING)	BUILDING
1	GR	GUARD ROOM
2	ER	ELECTRICAL ROOM
3	UG	UNDER GROUND WATER TANK & PUMP ROOM

LEGEND

ASPHALT ROAD	AR
CONCRETE CHEQUERED TILES (PLINTH PROTECTION)	CC
CONCRETE PAVER (WALKWAY)	CP
CONCRETE LAID IN PANELS (4' x 4')	

NOTES:

1- READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.
2- ALL DIMENSIONS ARE IN F.P.S. UNLESS MENTIONED OTHERWISE.

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

INFRASTRUCTURE DEVELOPMENT OF NATIONAL INSTITUTE OF INTELLEGENCE AND SECURITY STUDIES AT QAU, ISLAMABAD

EXTERNAL DEVELOPMENT WORKS
MASTER PLAN SUPERIMPOSED ON SURVEY
(SHEET 1 OF 1)

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

REFERENCE DRAWINGS	REV NO.	DATE	DESCRIPTION	BY	CKD	APPR.	

DESN. NESPAK	RECOMMENDED	VERIFIED	APPROVED
DWN.			
FILE			
CKD.	DATE	DRAWING NO.	REV.
SUBM.	FEB,2026	SA-555/324/TD/MPC 01	0

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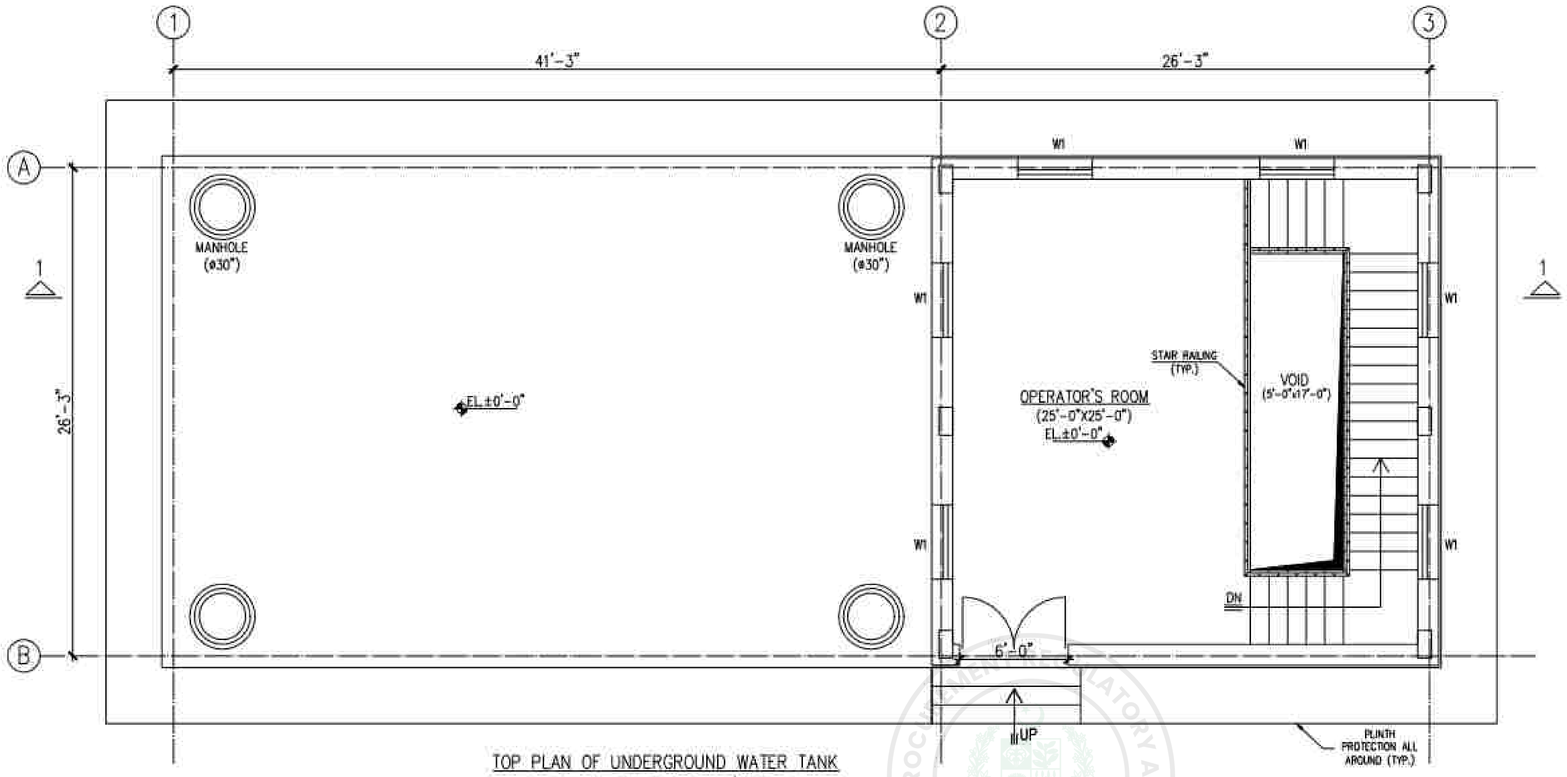
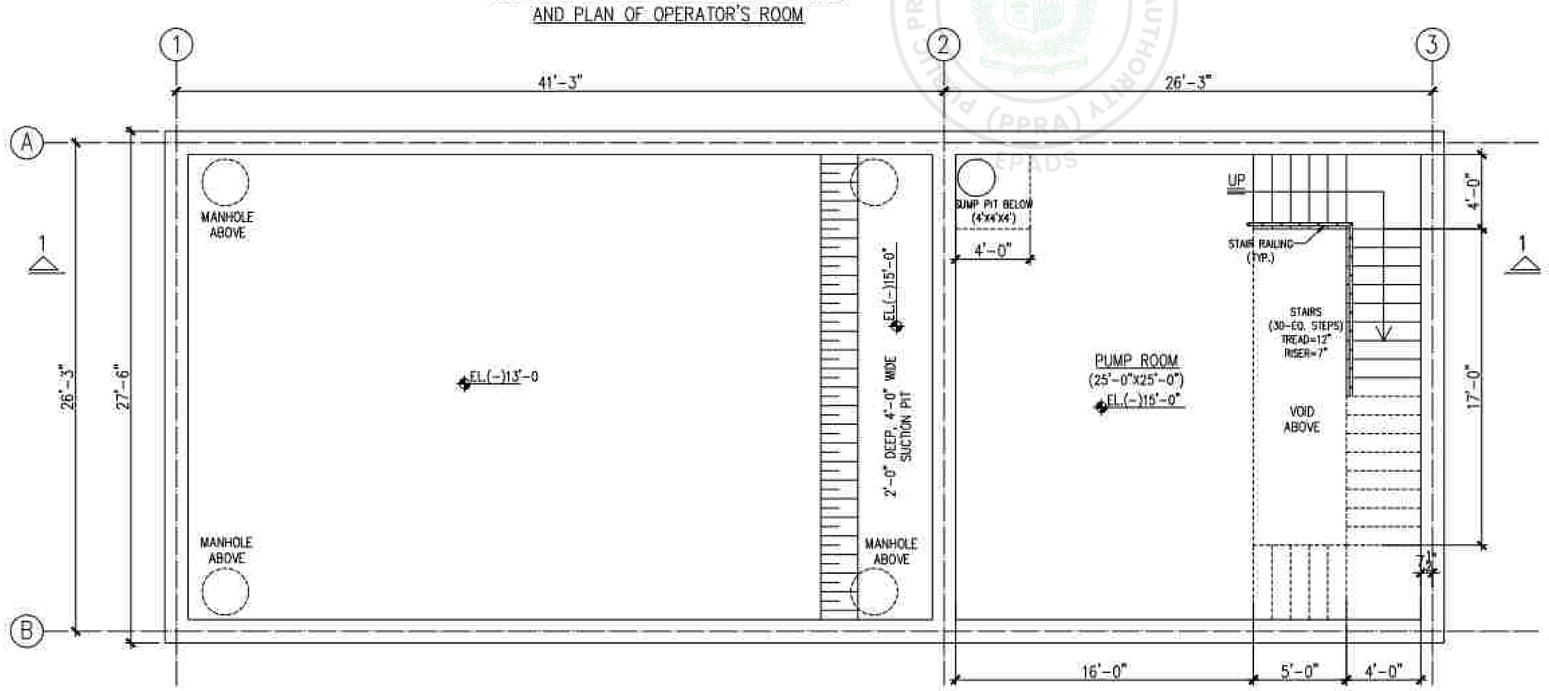


TOP PLAN OF UNDERGROUND WATER TANK
AND PLAN OF OPERATOR'S ROOM



PLAN OF UNDERGROUND WATER TANK
AND PUMP ROOM

NOTES:

1. ALL DIMENSIONS ARE IN FPS--UNITS, EXCEPT NOTED OTHERWISE.
2. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT PROJECT DRAWINGS.

NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.

REFERENCE DRAWINGS	REV. NO.	DATE		BY	CKD.	APPR.

24"x36" SCALE: 1/4"=1'-0"

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QALI, ISLAMABAD

EXTERNAL DEVELOPMENT WORKS

UNDERGROUND WATER TANK (60,000 GALLONS & PUMP ROOM)

ARCHITECTURAL DETAILS
(SHEET 01 OF 02)

[redacted] NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

DESN. [redacted]	RECOMMENDED	VERIFIED	APPROVED
DWN. [redacted]			
FILE			
CKD. M.A.JAVED	DATE	DRAWING NO.	REV.
SUBM. M.A.JAVED	JULY 2025	SA-555/322/BD/03B03	0

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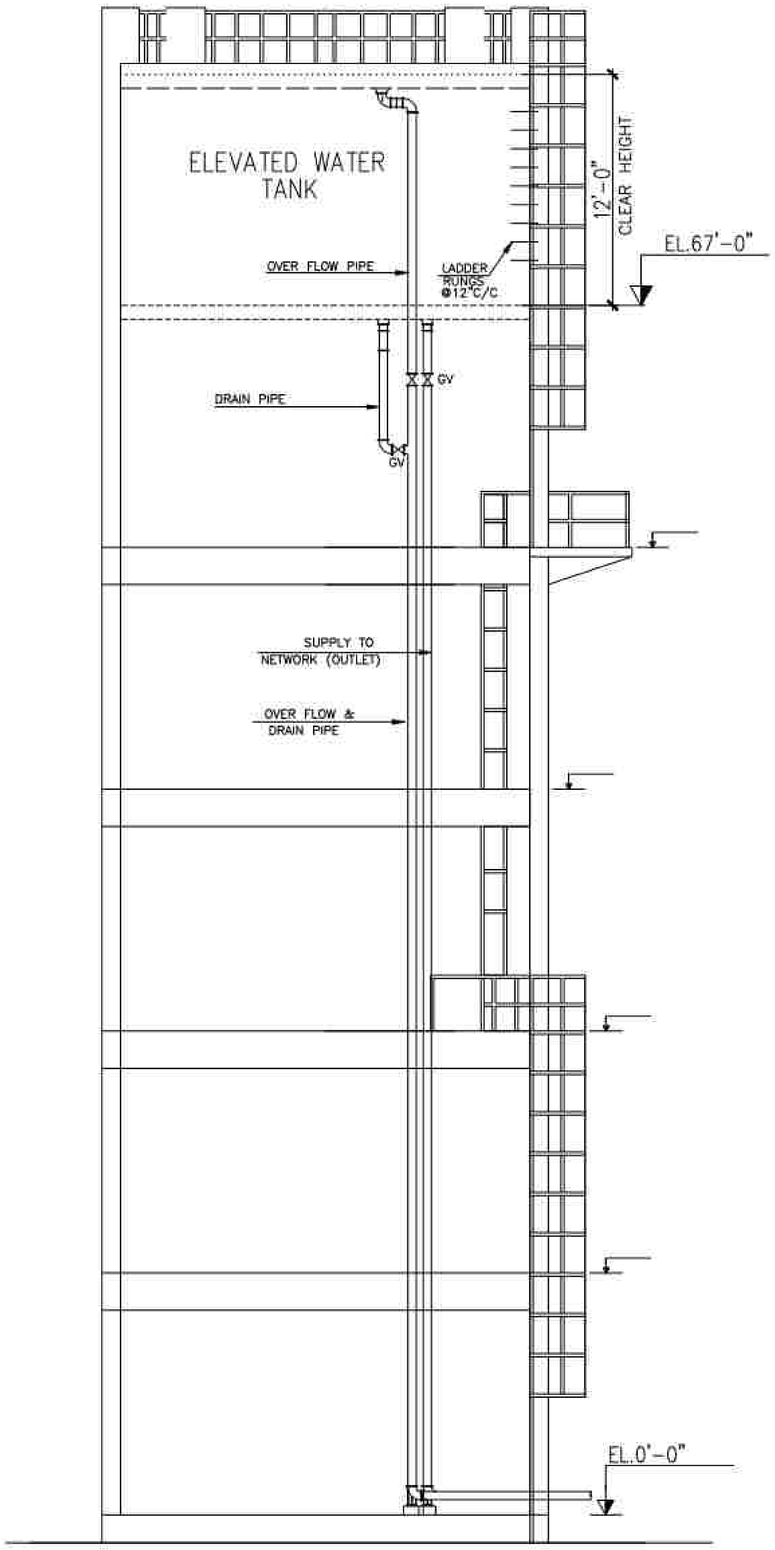
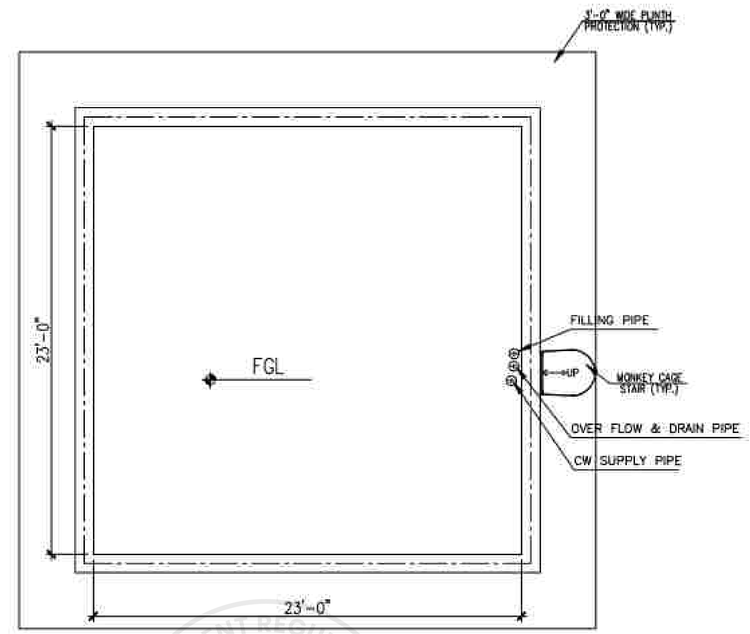
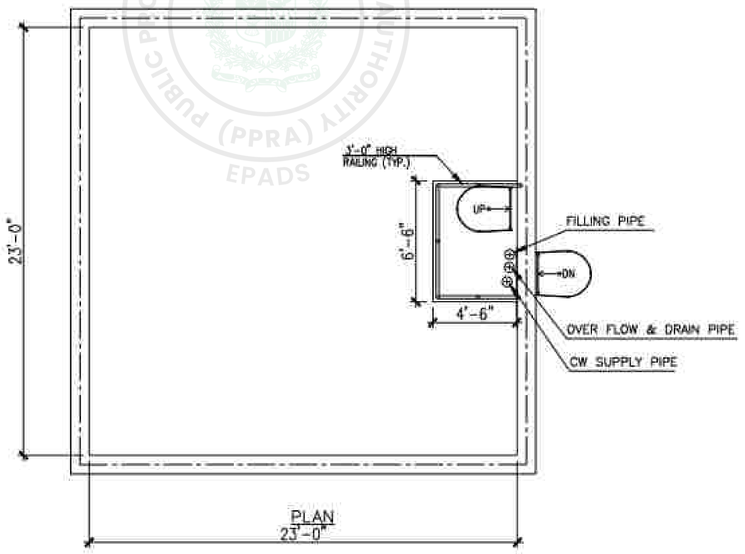


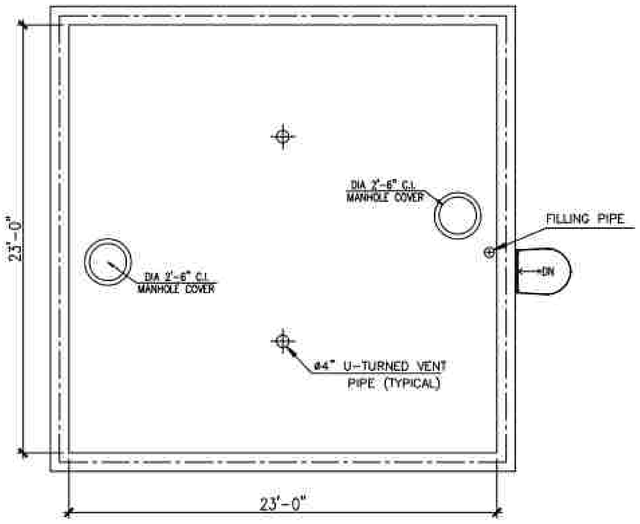
ELEVATION OF ELEVATED WATER TANK



GROUND FLOOR PLAN



PLAN



ROOF PLAN

NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.

REFERENCE DRAWINGS	REV. NO	DATE		BY	CKD	APPR.

24"x36" SCALE 1/4"=1'-0"

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QALI, ISLAMABAD

EXTERNAL DEVELOPMENT WORKS

ELEVATED WATER TANK
30,000 GALLONS CAPACITY

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

DESN.	RECOMMENDED	VERIFIED	APPROVED
DWN. M.ASHAT			
FILE			
CKD. M.A.JAVED			
SUBM. M.A.JAVED			

DATE: JULY,2025

DRAWING NO. SA-555/322/BD/03B04

REV. 0

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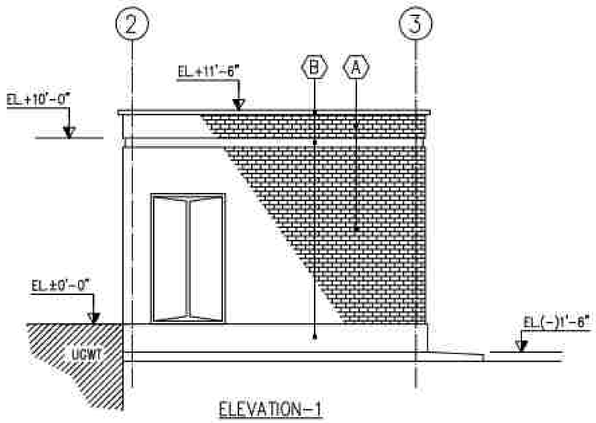
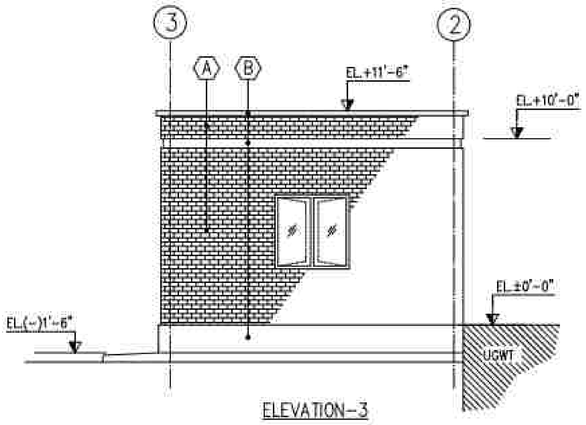
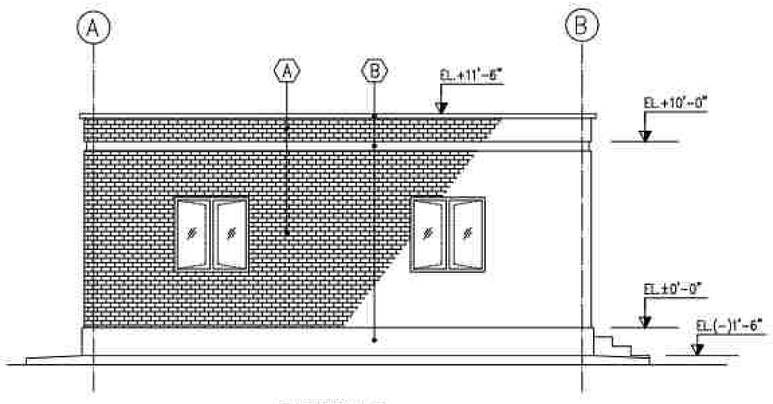


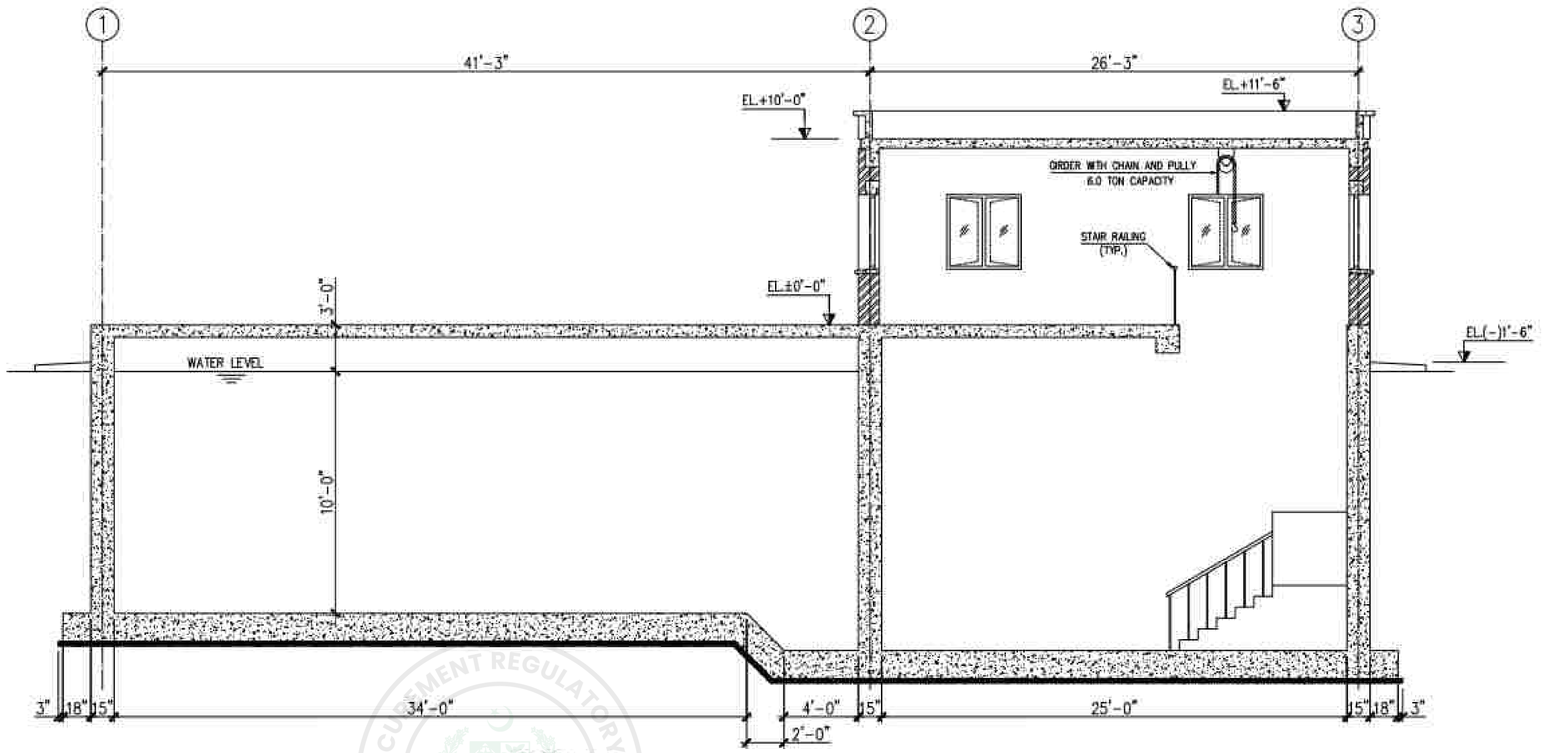
ELEVATION–1



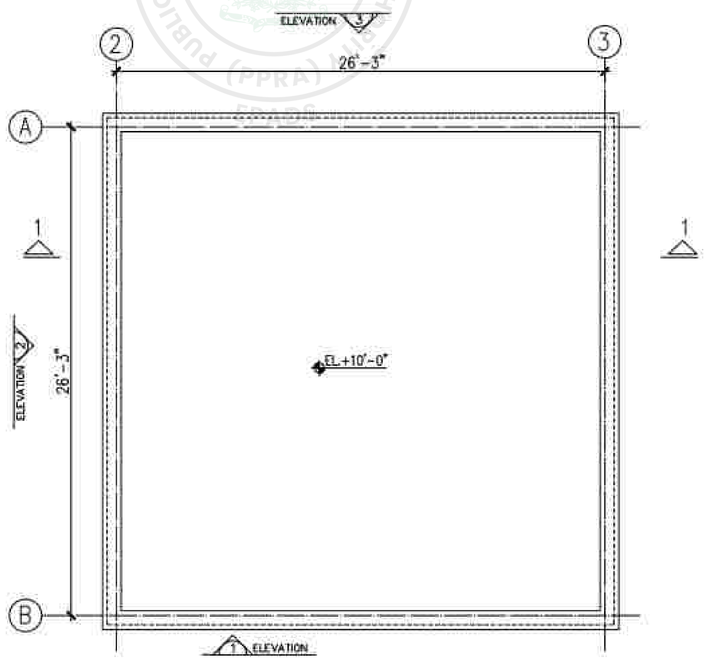
ELEVATION–3



ELEVATION–2



SECTION 1–1



ROOF PLAN OF OPERATOR'S ROOM

LEGEND FOR EXTERNAL FINISHES:

(A) SPECIAL BRICKS WITH POINTING

(B) WEATHER SHIELD PAINT

NOTES:

1. ALL DIMENSIONS ARE IN FPS–UNITS, EXCEPT NOTED OTHERWISE.
2. READ THIS DRAWING IN CONJUNCTION WITH RELEVANT PROJECT DRAWINGS.

NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.

REFERENCE DRAWINGS	REV. NO	DATE		BY	CKD.	APPR.

24"x36" SCALE: 1/4"=1'-0"

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

EXTERNAL DEVELOPMENT WORKS

UNDERGROUND WATER TANK (60,000 GALLONS & PUMP ROOM)

ARCHITECTURAL DETAILS
(SHEET 02 OF 02)

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

DESN.	RECOMMENDED	VERIFIED	APPROVED
DWN. HASNAT			
FILE	DATE	DRAWING NO.	REV.
CKD. M.A.JAVED	JULY 2025	SA-555/322/BD/03B05	0
SUBM. M.A.JAVED			

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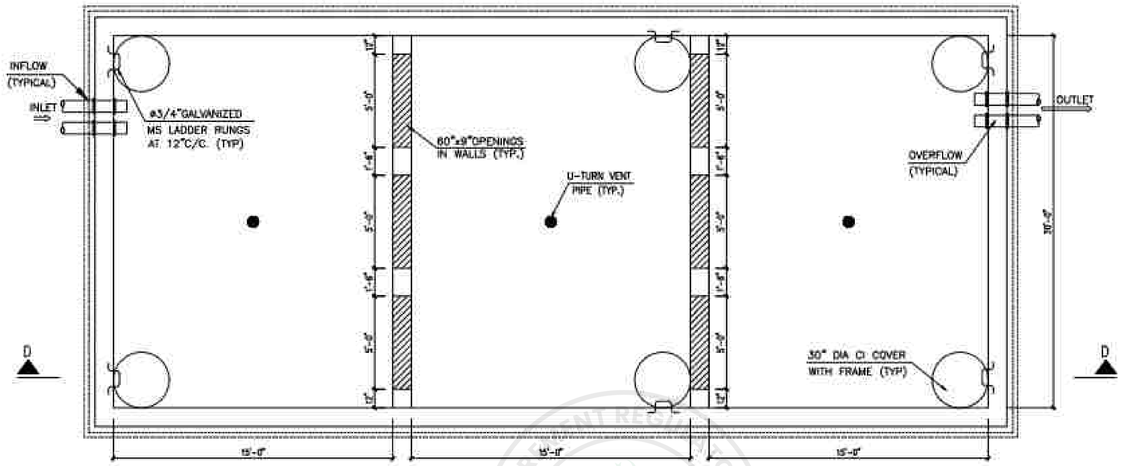
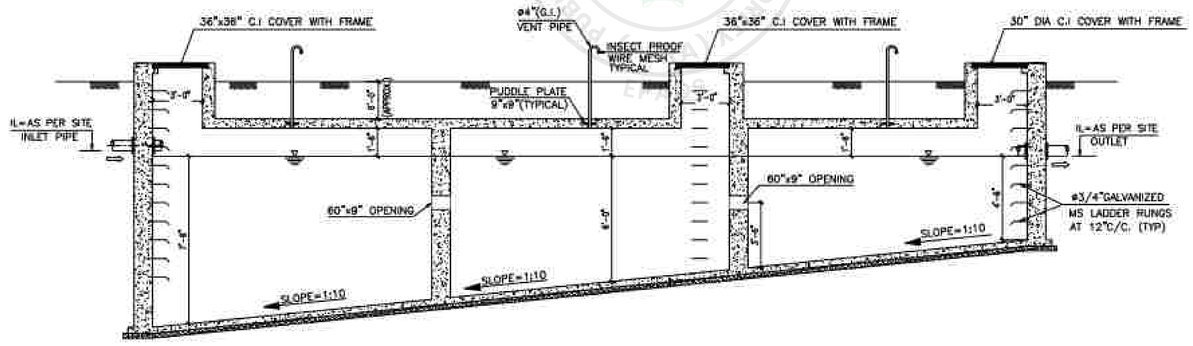


PRIMARY TREATMENT UNIT
SEPTIC TANK



SECTION D–D

NOTES

1. READ THIS DRAWING IN CONJUNCTION WITH ALL RELEVANT PROJECT DRAWINGS.

REFERENCE DRAWINGS		REV. NO.	DATE		BY	CKD.	APPR.

24"x36" SCALE 1/4"=1'-0"

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QALI, ISLAMABAD

EXTERNAL DEVELOPMENT WORKS
DETAILS OF SEPTIC TANK
(PLAN & SECTION)

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

	RECOMMENDED	VERIFIED	APPROVED
DESN. NESPAK			
DWN. NESPAK			
FILE			
CKD. M.A.JAVED			
SUBM. M.A.JAVED			

DATE	DRAWING NO.	REV.
JULY 2025	SA-555/322/BD/03B06	0

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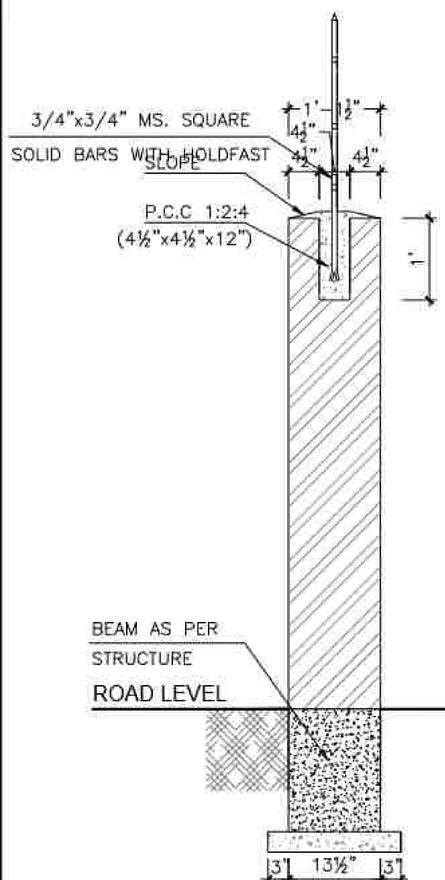

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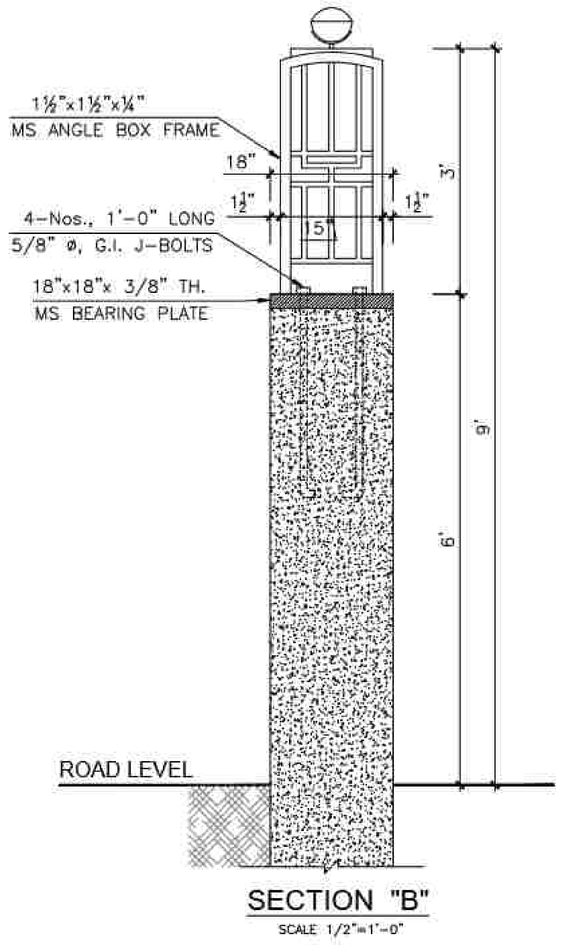

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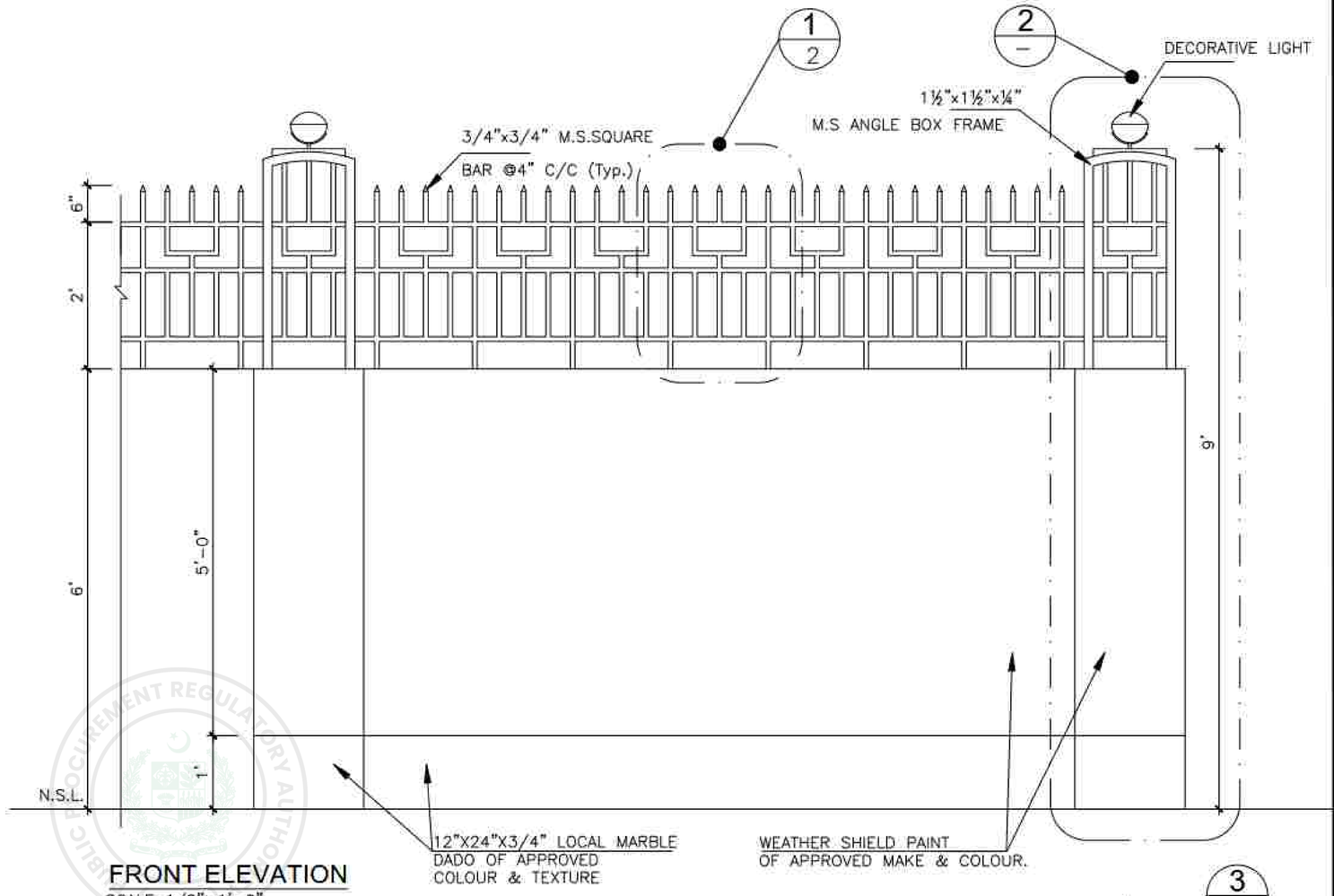

FRONT ELEVATION

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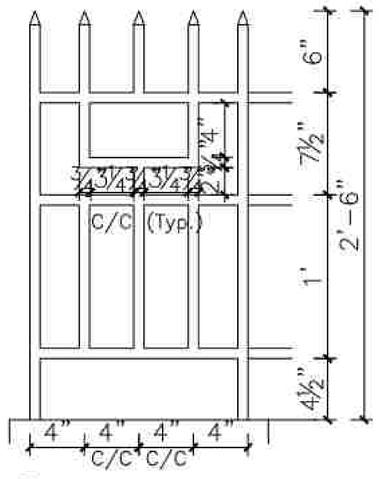
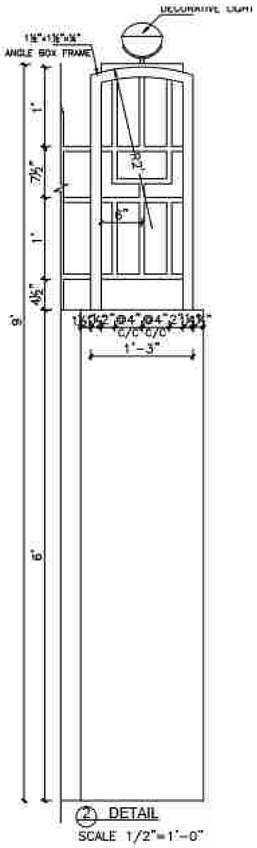


1 DETAIL

SCALE 1"=1'-0"



2 DETAIL

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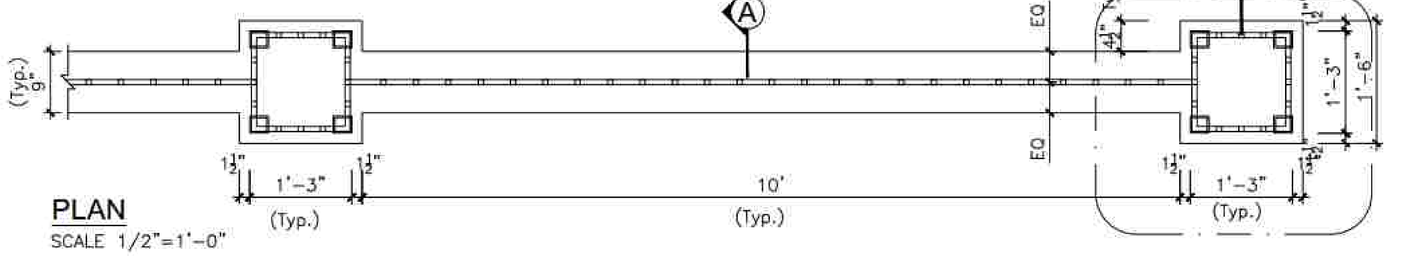


PLAN

SCALE 1/2"=1'-0"

SCHEDULE OF INTERNAL FINISHES

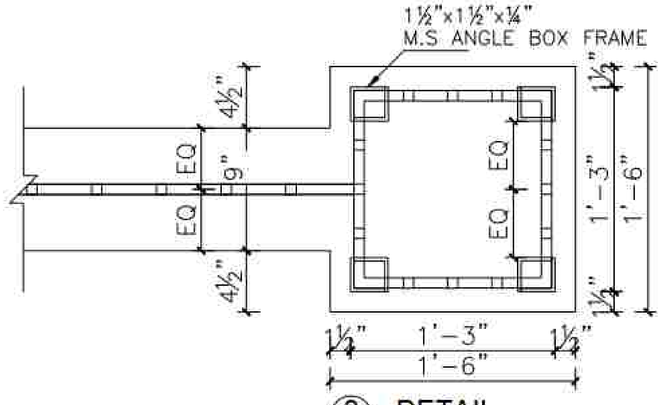
1. 24"x24"x3/4" LOCAL MARBLE OF APPROVED COLOUR & TEXTURE
2. 4"x24"x3/4" LOCAL MARBLE SKIRTING OF APPROVED COLOUR & TEXTURE
3. 12"x24" FULL BODY LOCAL PORCELAIN TILES (MATT FINISH) OF APPROVED MAKE & SHADE
4. 12"x24" FULL BODY GLAZED LOCAL PORCELAIN TILES OF APPROVED MAKE & SHADE 7'-0" HIGH FOR BATH ROOMS WITH PLASTIC EMULSION PAINT(OF APPROVED MAKE & SHADE) ABOVE UPTO CEILING
5. 12"x24" LOCAL FULL BODY PORCELAIN TILES. OF APPROVED MAKE & SHADE 3' HIGH BETWEEN BASE & HANGING CABINET & 7' HIGH ON OTHER WALLS WITH PLASTIC EMULSION PAINT ABOVE UPTO CEILING
6. PLASTIC EMULSION PAINT OF APPROVED MAKE & SHADE OVER C/S PLASTER
7. VINYL EMULSION PAINT OF APPROVED MAKE & SHADE OVER C/S PLASTER
8. PRECAST INTERLOCKING CONCRETE PAVERS WITH CONCRETE CURB STONE (APPROVED MAKE ,COLOR & DESIGN)
9. 1" TH. P.C.C (1:2:4) LAID IN PANELS WITH MARBLE DIVIDING STRIPS.
10. WEATHER SHIELD PAINT OF APPROVED MAKE & COLOUR.

LEGEND

SKIRTING — WALL
FLOOR — CEILING

EXTERNAL FINISHES

WEATHER SHIELD PAINT OF APPROVED MAKE & COLOUR.



3 DETAIL

SCALE 1"=1'-0"

SCALE: AS SHOWN

REV. NO.	DATE	DESCRIPTION	BY	CKD.	APPR.

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY, ISLAMABAD

(BOUNDARY WALL DETAIL)

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LPC. ISLAMABAD

DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED
DWN. M.SALEEM		WAJIHA REHAN	
FILE	DATE	DRAWING NO.	REV
CKD.	FEB 2020	156/322/TD/BW01	0
SUBM.			

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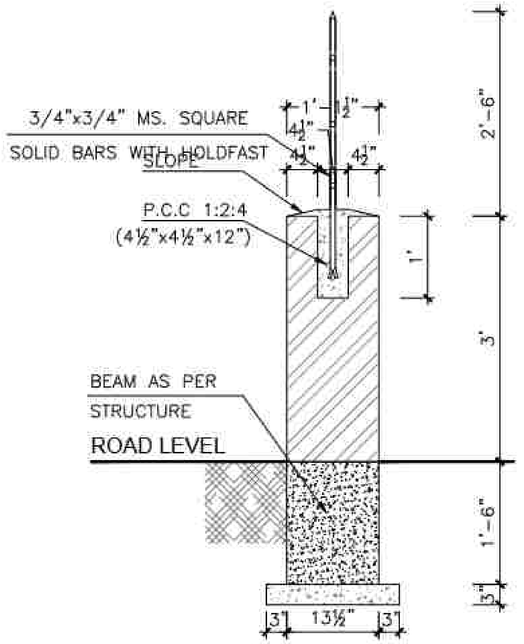
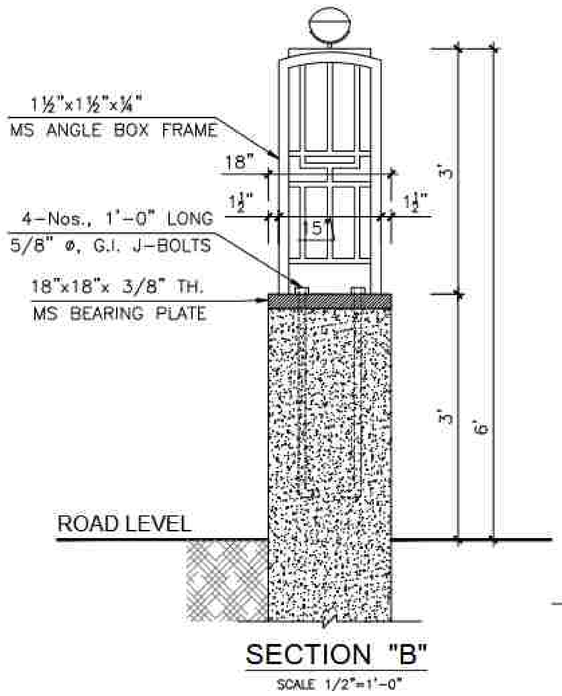


SECTION "A"

SCALE 1/2"=1'-0"



SECTION "B"

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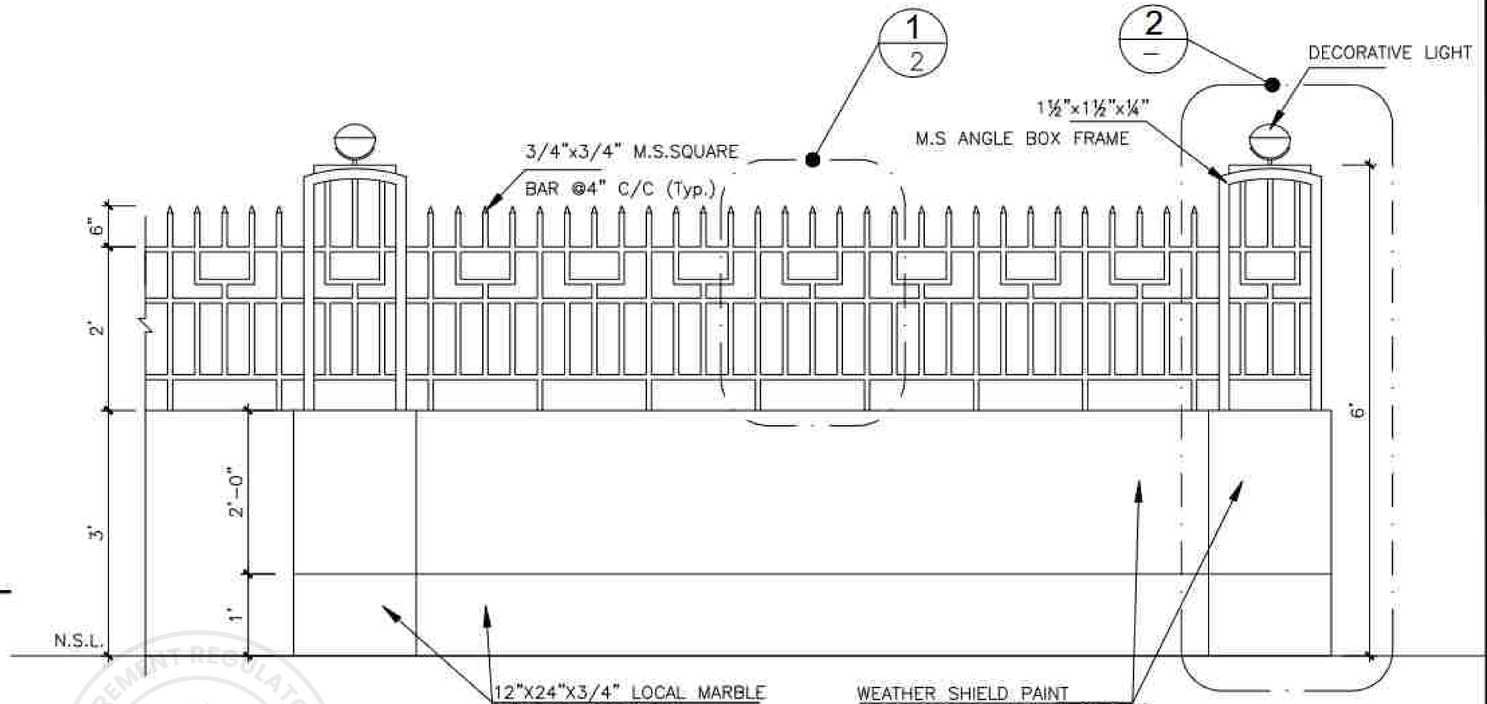
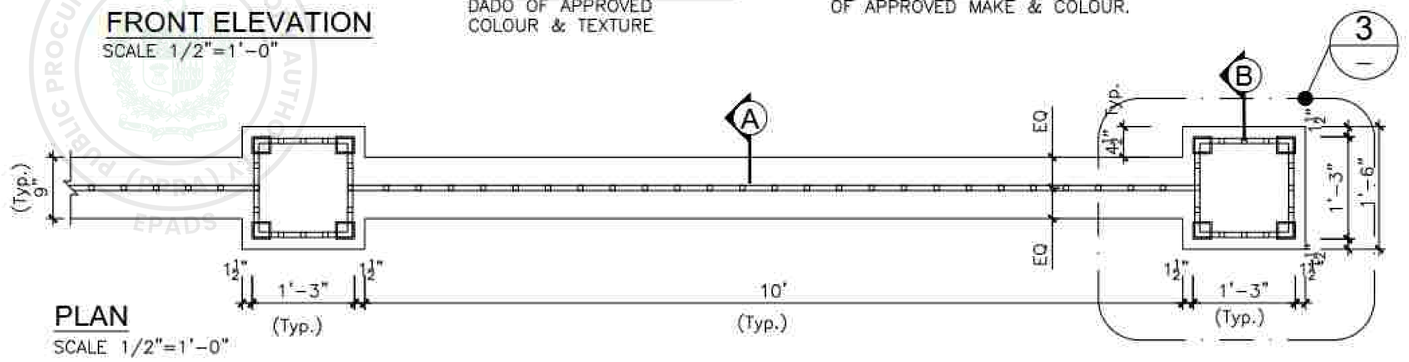


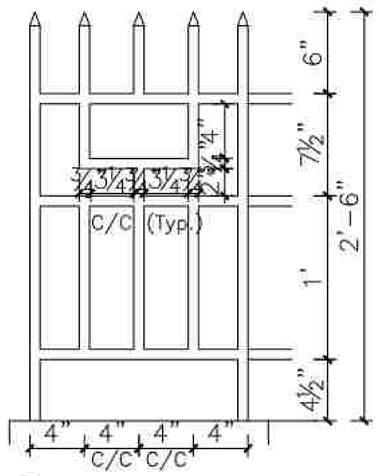
FRONT ELEVATION

SCALE 1/2"=1'-0"



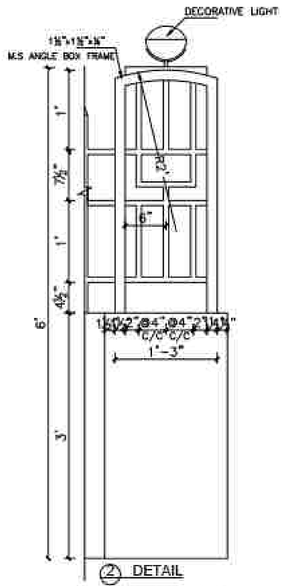
PLAN

SCALE 1/2"=1'-0"



1 DETAIL

SCALE 1"=1'-0"



2 DETAIL

SCALE 1/2"=1'-0"

SCHEDULE OF INTERNAL FINISHES

1. 24"x24"x3/4" LOCAL MARBLE OF APPROVED COLOUR & TEXTURE
2. 4"x24"x3/4" LOCAL MARBLE SKIRTING OF APPROVED COLOUR & TEXTURE
3. 12"x24" FULL BODY LOCAL PORCELAIN TILES (MATT FINISH) OF APPROVED MAKE & SHADE
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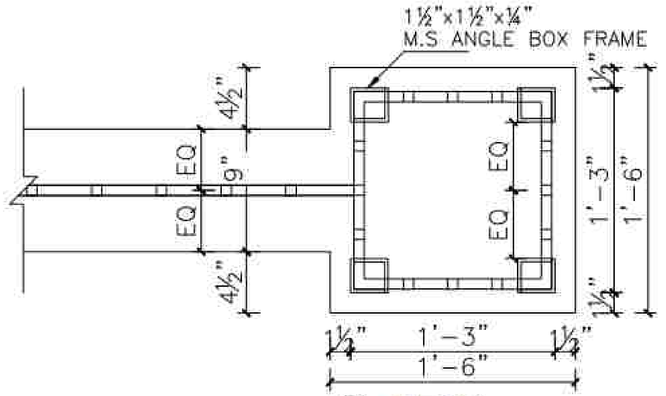
9. 1" TH. P.C.C (1:2:4) LAID IN PANELS WITH MARBLE DIVIDING STRIPS.
10. WEATHER SHIELD PAINT OF APPROVED MAKE & COLOUR.

LEGEND

SKIRTING — WALL
FLOOR — CEILING

EXTERNAL FINISHES

WEATHER SHIELD PAINT OF APPROVED MAKE & COLOUR.



3 DETAIL

SCALE 1"=1'-0"

SCALE: AS SHOWN

REV NO.	DATE	DESCRIPTION	BY	CKD.	APPR.

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY, ISLAMABAD

(BOUNDARY WALL DETAIL)

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LPC. ISLAMABAD

DESN. NESPAK	RECOMMENDED	VER./CKD. WAJIHA REHAN	APPROVED
DWN. M.SALEEM			
FILE	DATE FEB.2020	DRAWING NO. 156/322/TD/BW01	REV. 0
CKD.			
SUBM.			

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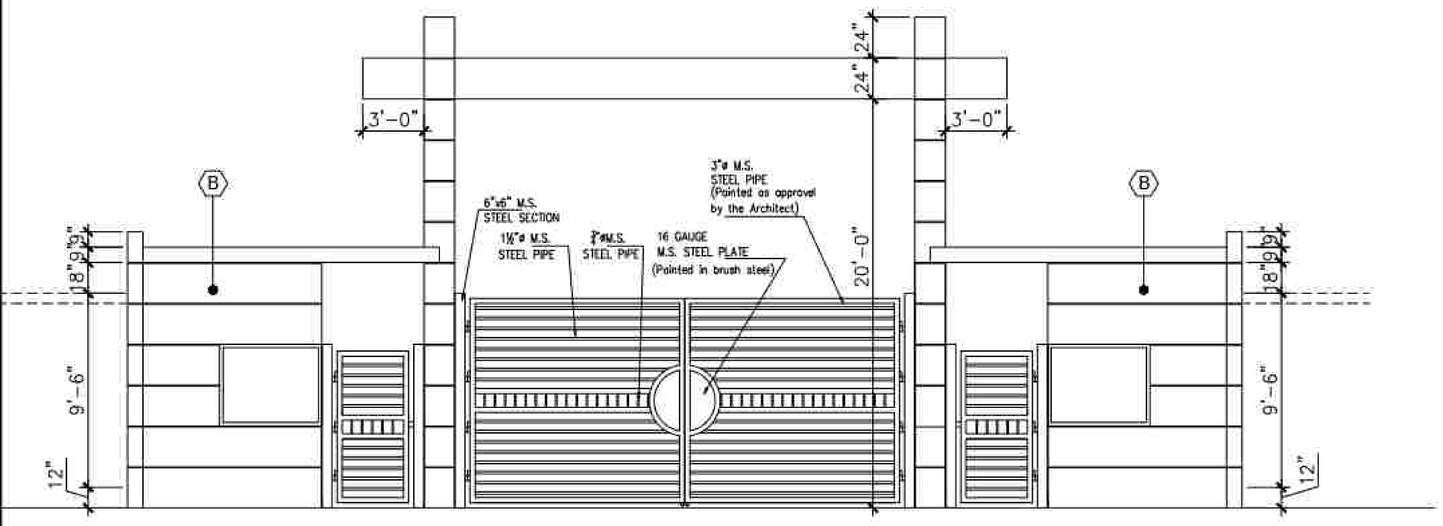
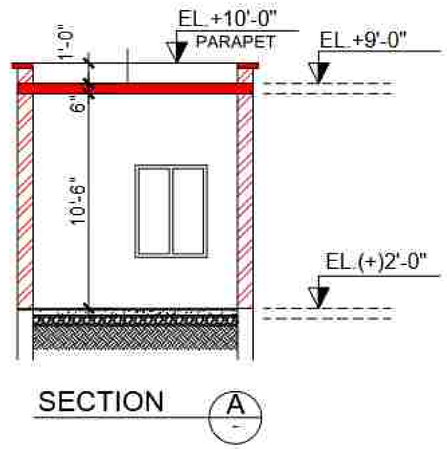


ELEVATION - 1



SECTION A

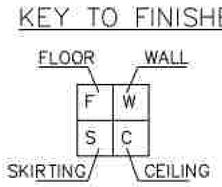
FLOOR
- F1 - TERRAZZO 12"x12"
- F2 - CERAMIC TILES
- F3 - MARBLE TILES 12"x24"

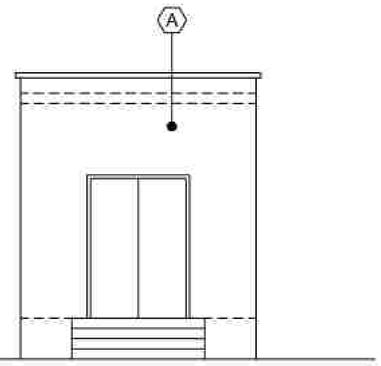
SKIRTING
- S1 - 4" TERRAZZO
- S2 - 4" MARBLE

WALL
- W1 - PLASTIC EMULSION (PAINT)
- W2 - CERAMIC TILES
- W3 - WEATHER SHIELD PAINT (EXTERNAL)

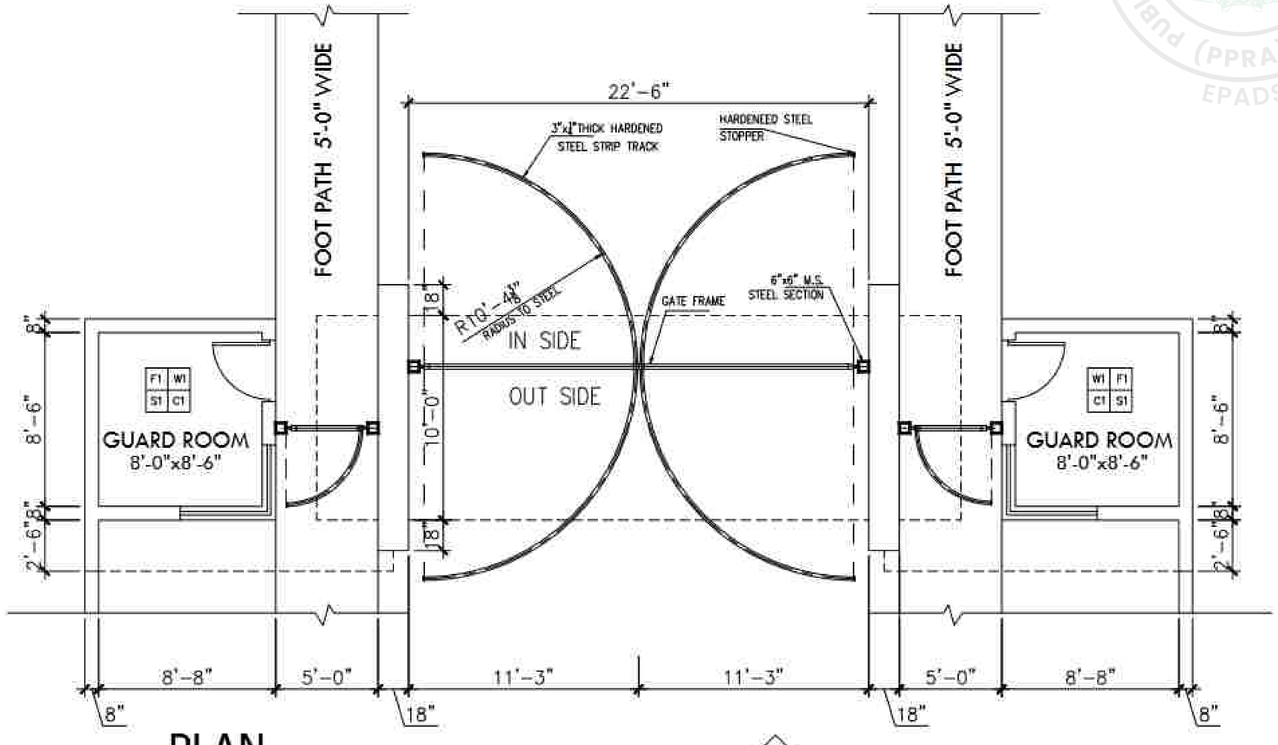
CEILING
- C1 - PLASTIC EMULSION (PAINT)

KEY TO FINISHES



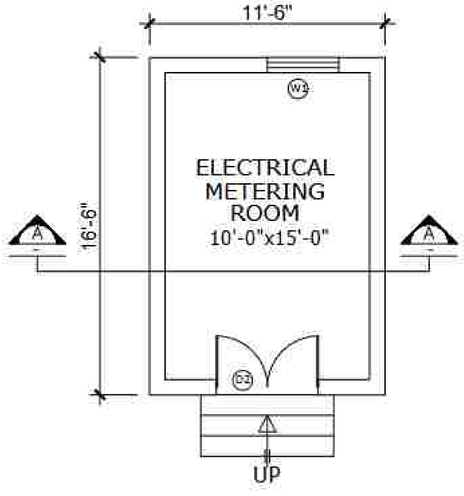


ELEVATION



PLAN

ELEVATION 1



GROUND FLOOR PLAN

LEGEND OF EXTERNAL FINISHES

- (A) — WEATHER SHIELD PAINT
- (B) — TEXTURE COATING

GENERAL NOTES

1. ALL DIMENSIONS AND LEVELS ARE IN FPS SYSTEM.
2. ± 0.00 CORRESPONDS TO EL.---- WITH REFERENCE TO SURVEY PLAN.
3. ALL EL (LEVELS) ARE STRUCTURAL LEVELS.
4. FIRST CLASS BRICK AS SELECTED BY THE ENGINEER SHALL BE USED FOR ALL MASONRY WORKS.
5. ALL DOORS ARE 4½" OFFSET FROM THE WALL UNLESS OTHERWISE SPECIFIED.
6. FINISH FLOORS ARE 2" ABOVE EL.
7. FINISH FLOORS FOR KITCHEN & TOILET AREAS ARE 1/2" ABOVE EL.
8. ALL EXTERNAL WALLS ARE 9" THICK BRICK MASONRY WALLS UNLESS OTHERWISE SPECIFIED.

SCALE: 1/8" = 1'-0"

REV NO.	DATE	DESCRIPTION	BY	CKD.	APPR.

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY, ISLAMABAD

(GUARD ROOM , MAIN GATE & METERING ROOM) PLAN , ELEVATION & SECTION

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LPC. ISLAMABAD

DESN. NESPAK	RECOMMENDED	VER./CKD.	APPROVED
DWN. M.SALEEM		WAJIHA REHAN	
FILE	DATE	DRAWING NO.	REV
CKD.	FEB,2026	156/322/TD/GR01	0
SUBM.			

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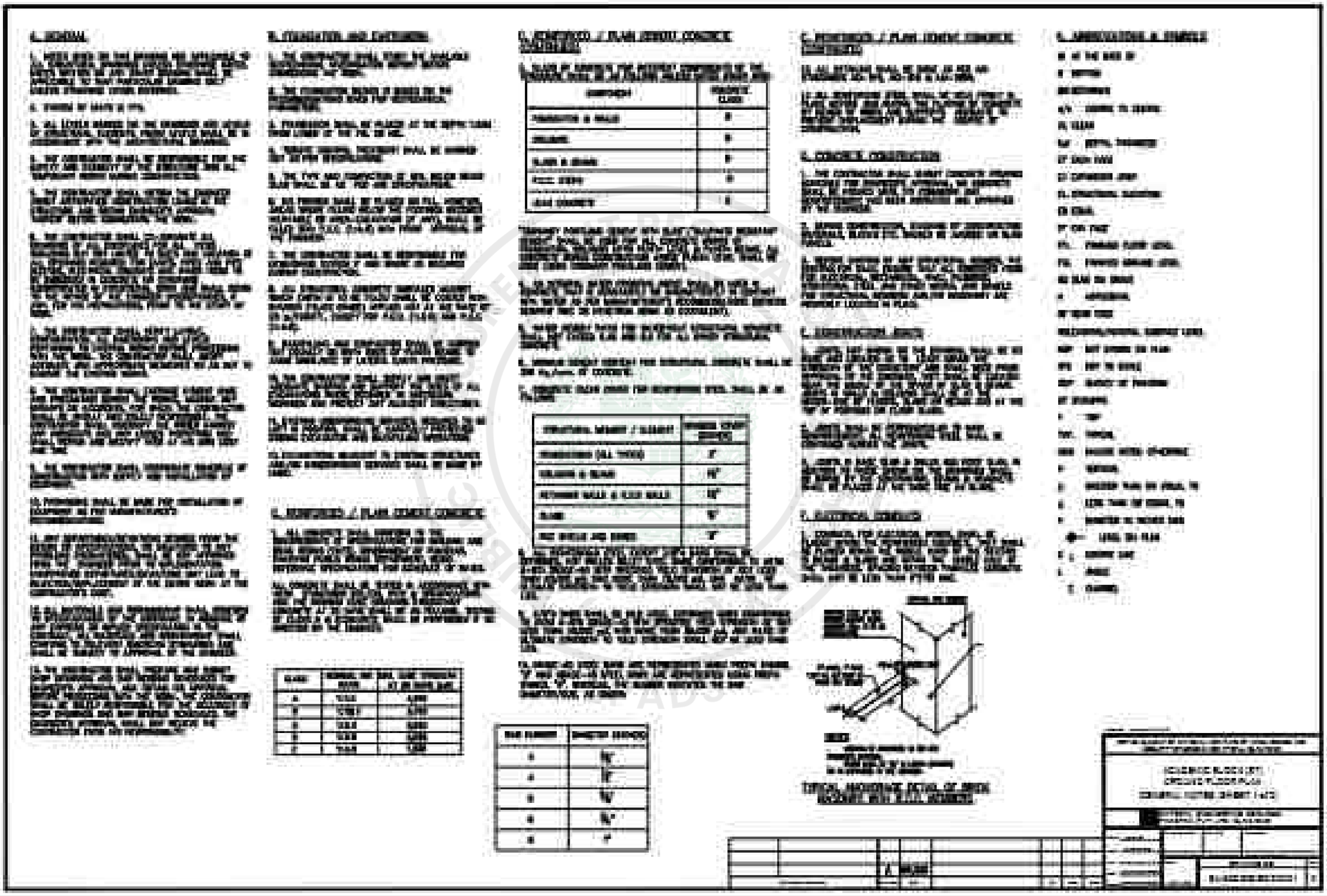
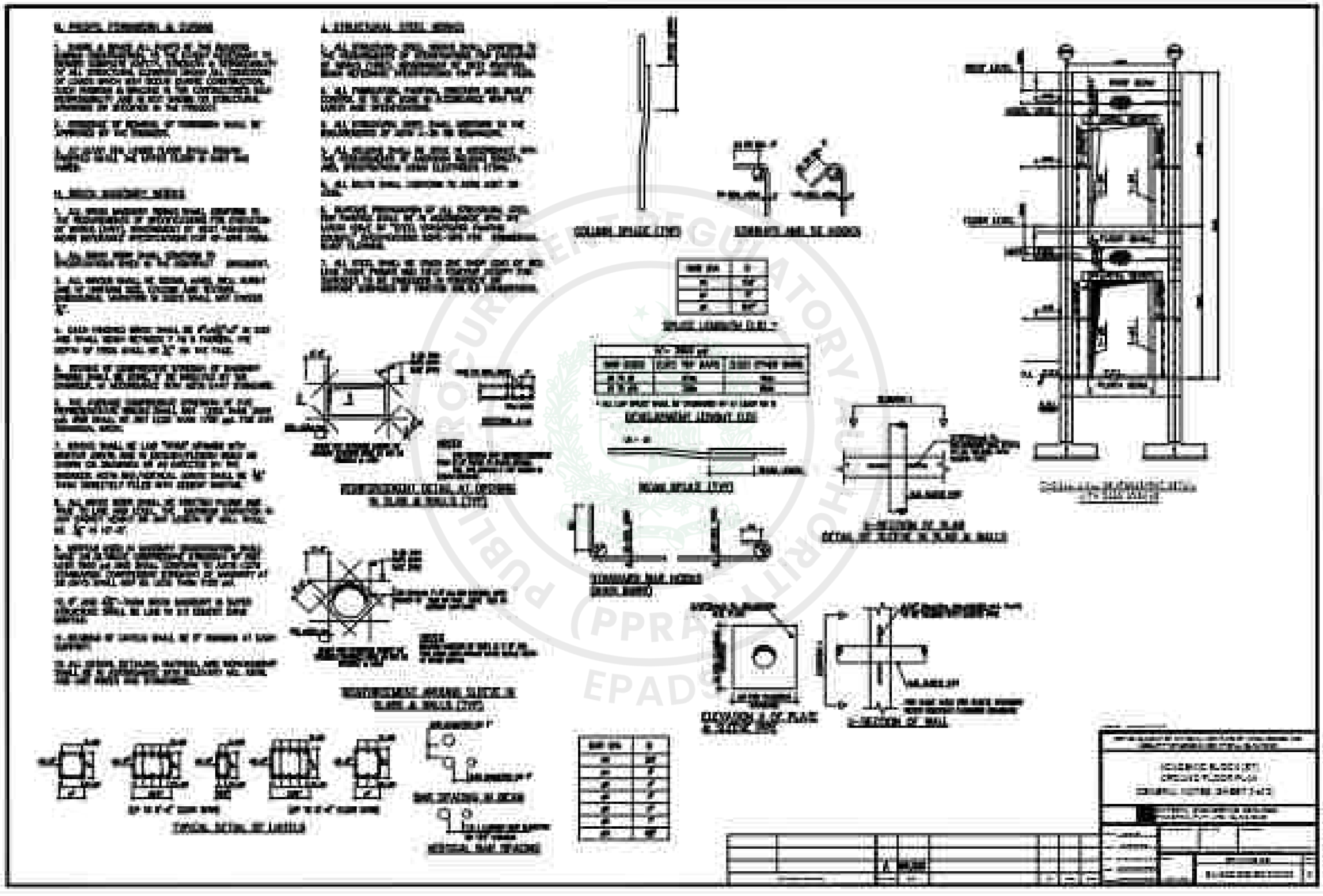
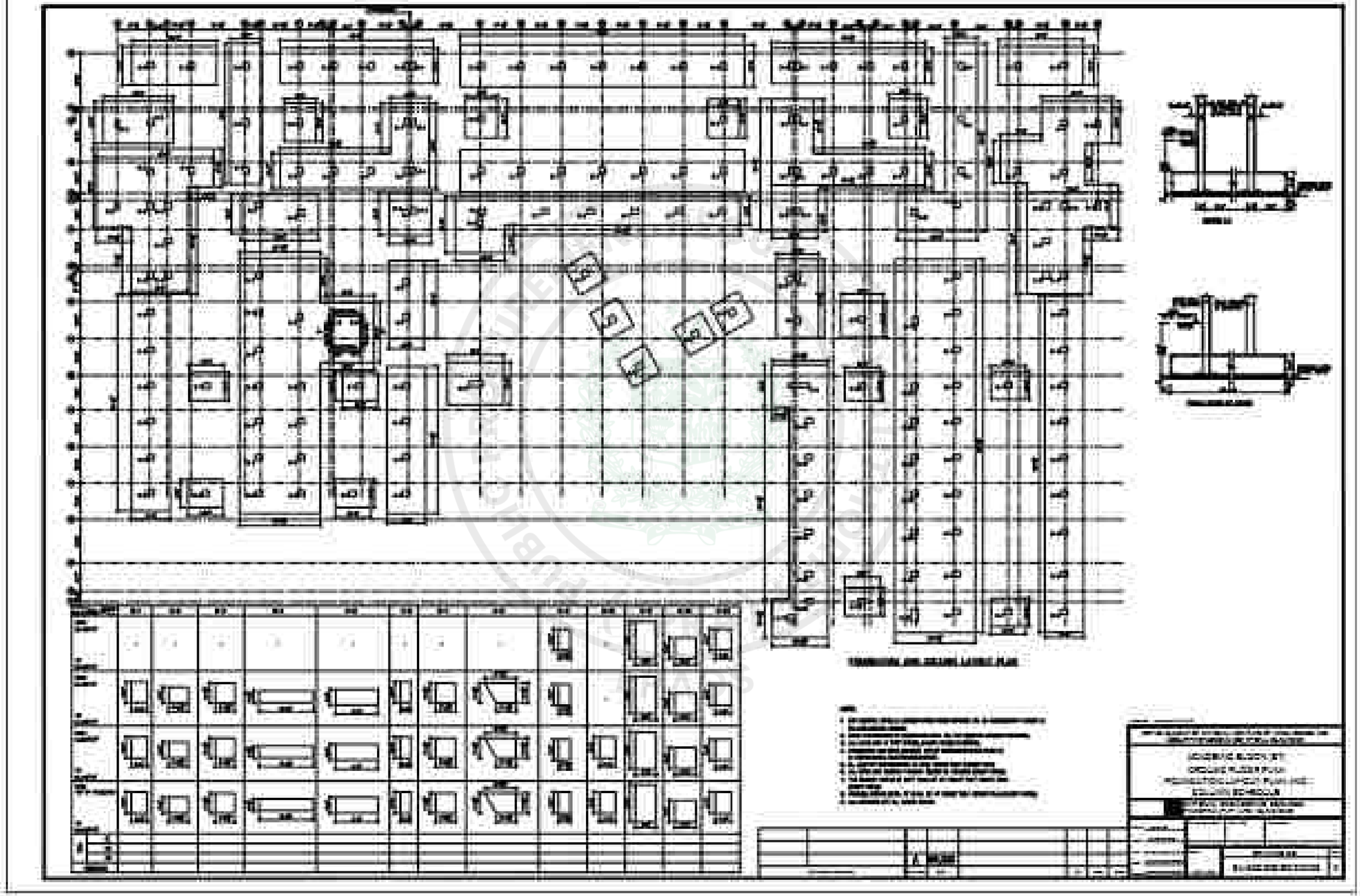
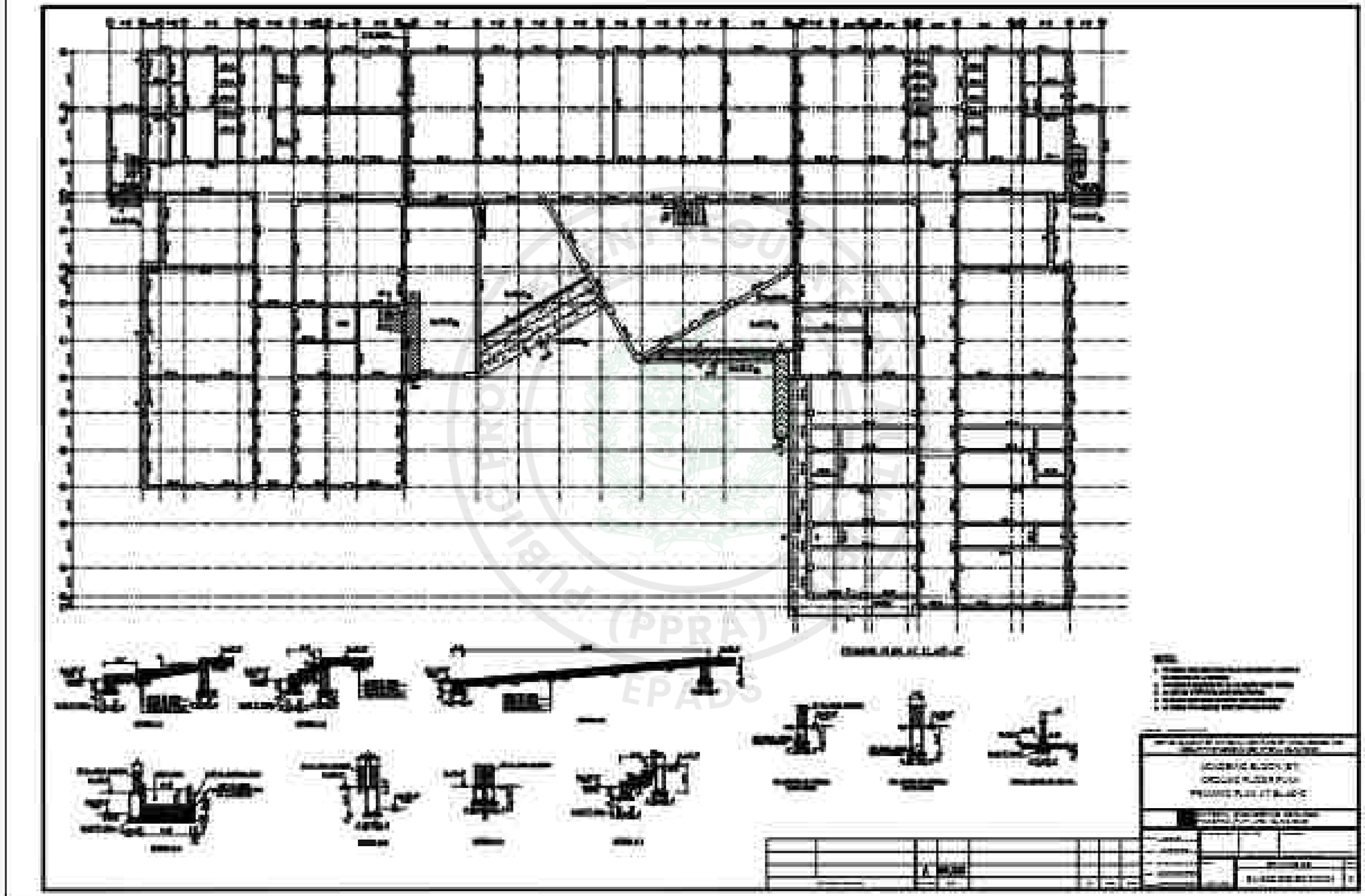
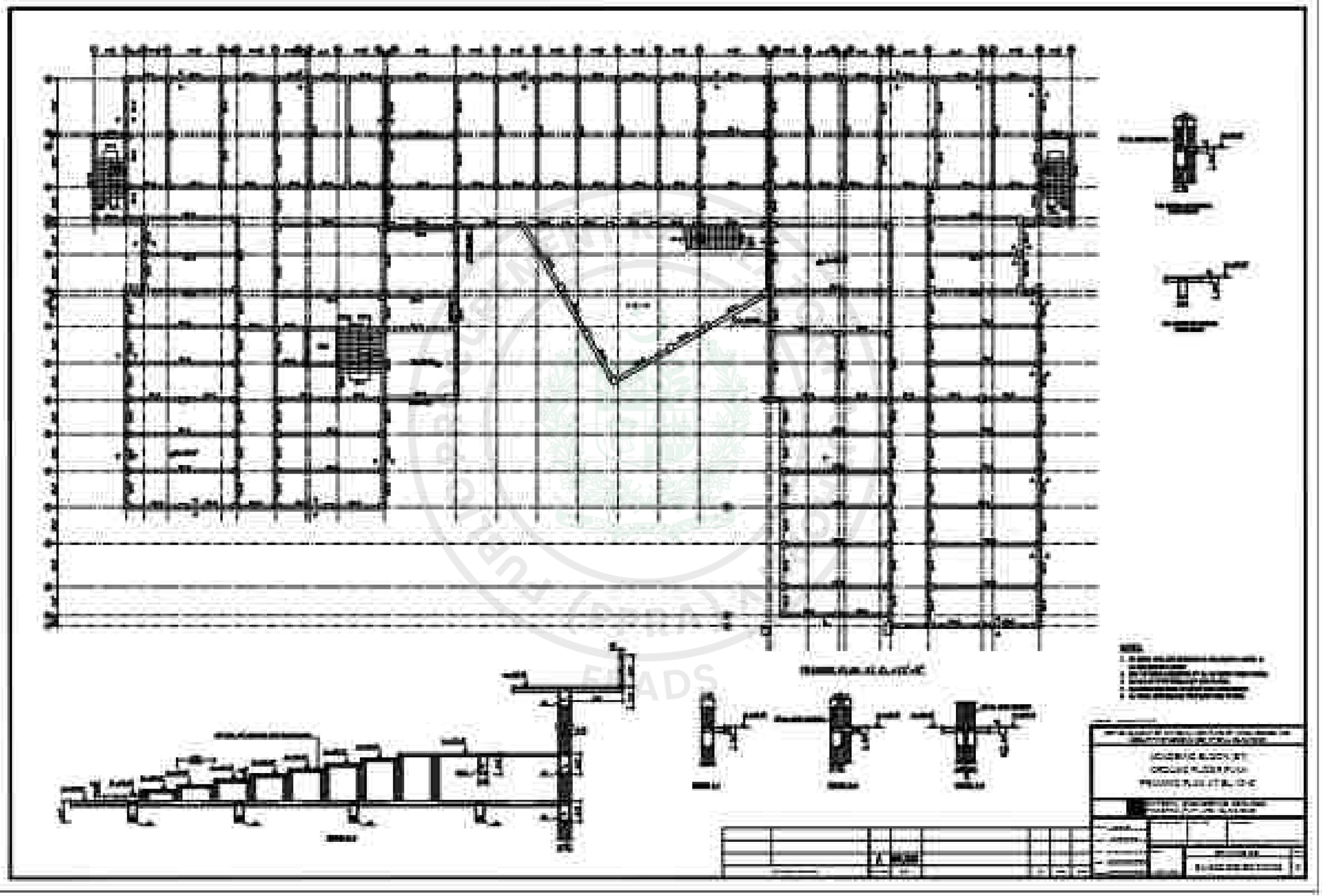


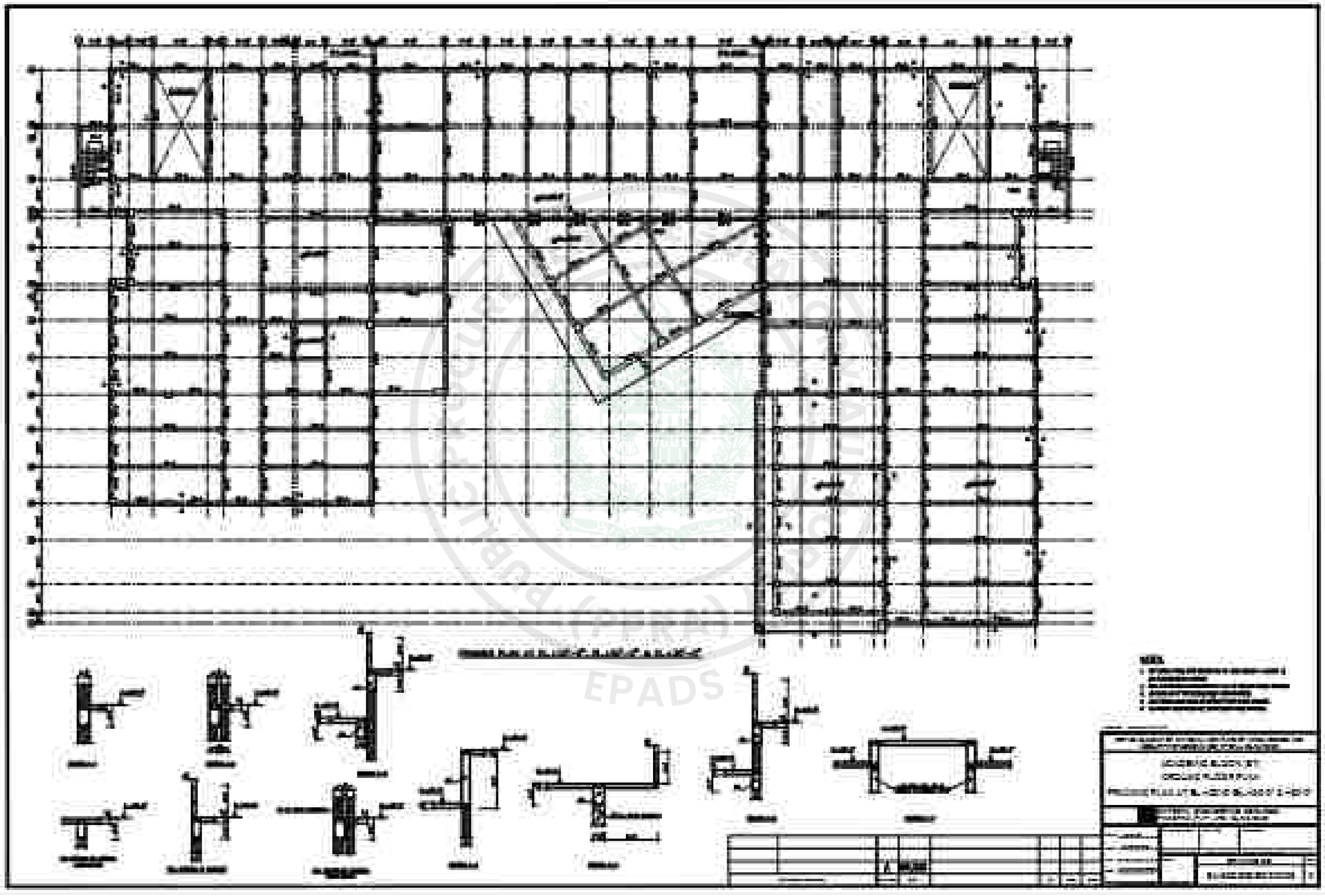


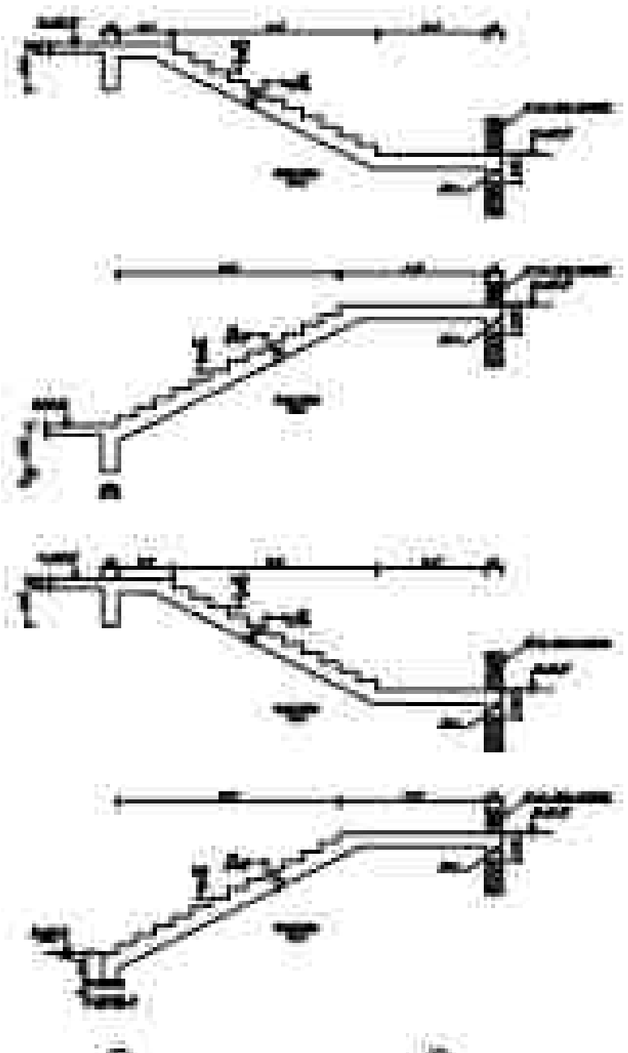
PPRA PUBLIC PROCUREMENT REGULATORY AUTHORITY EPADS

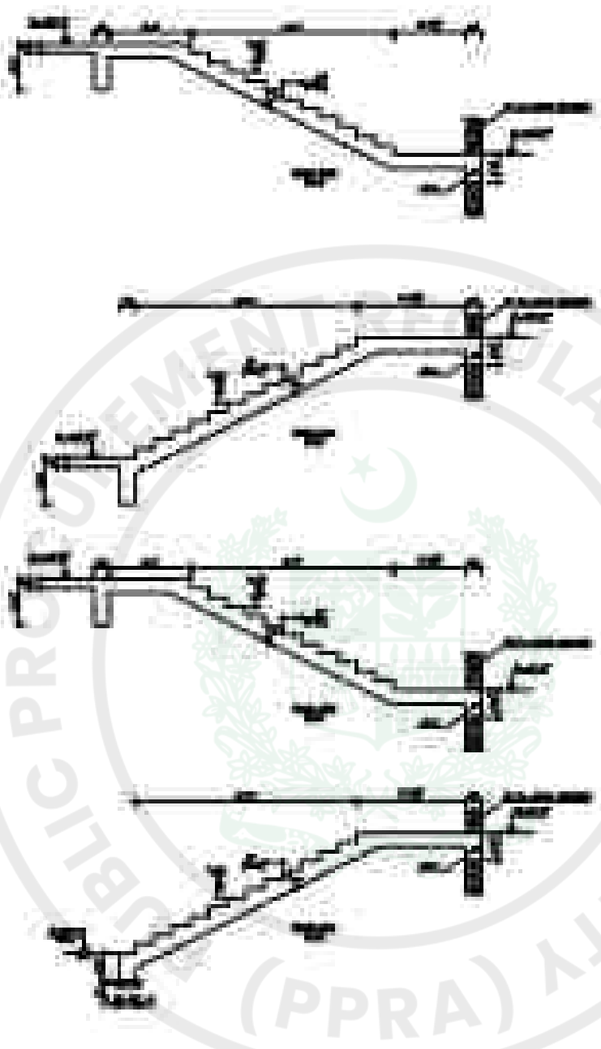


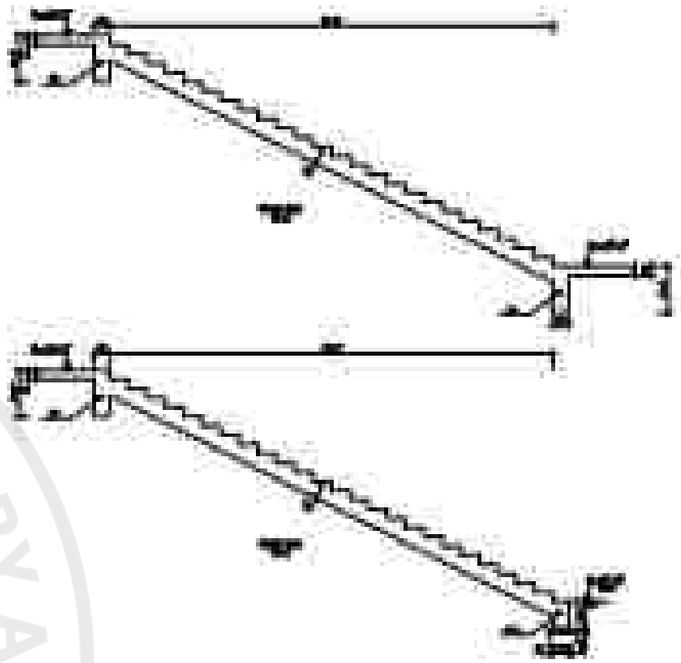


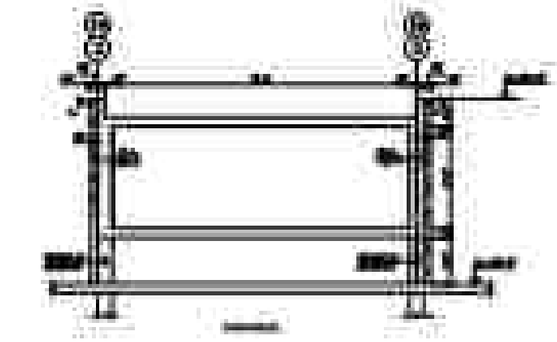




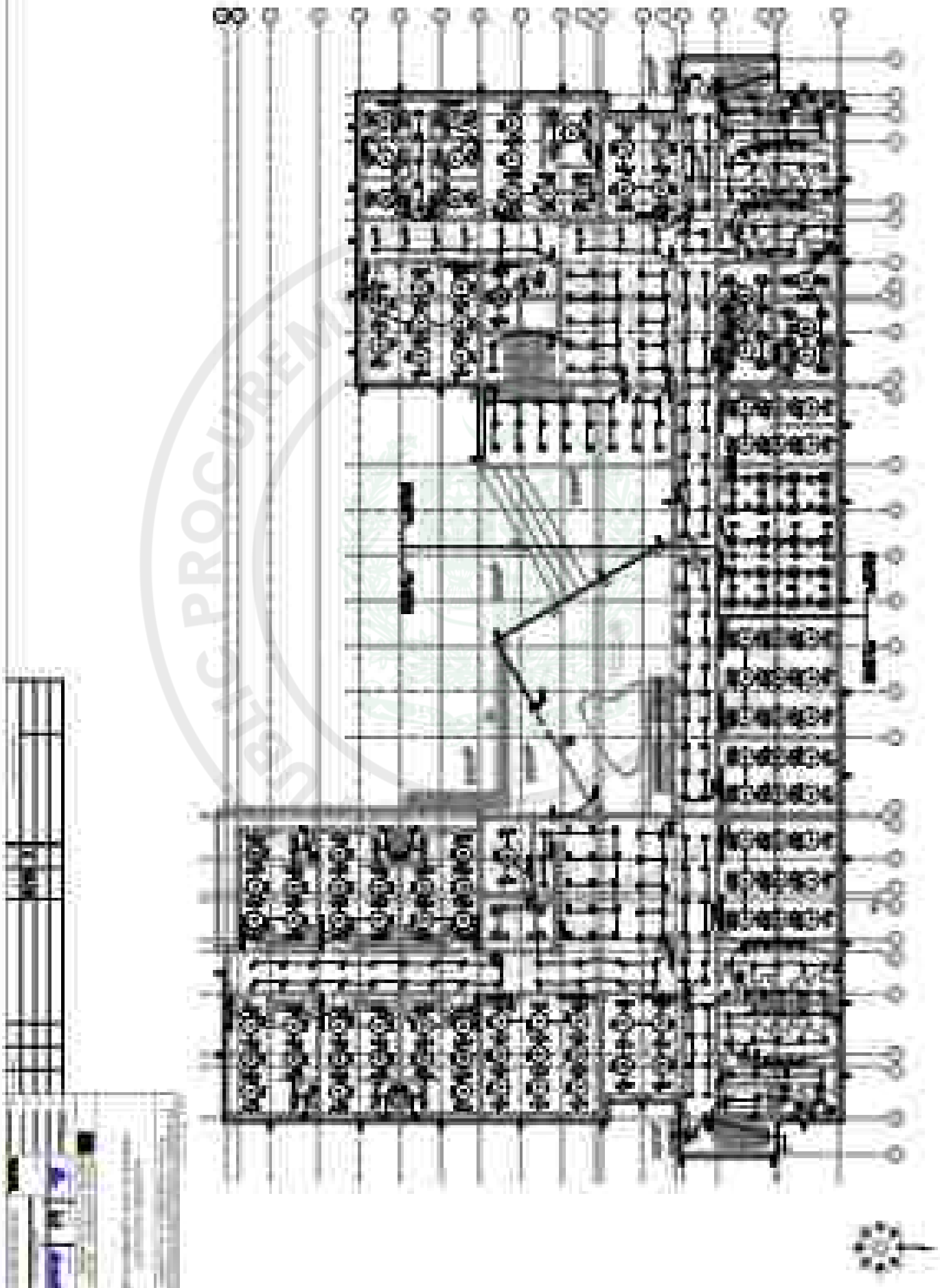


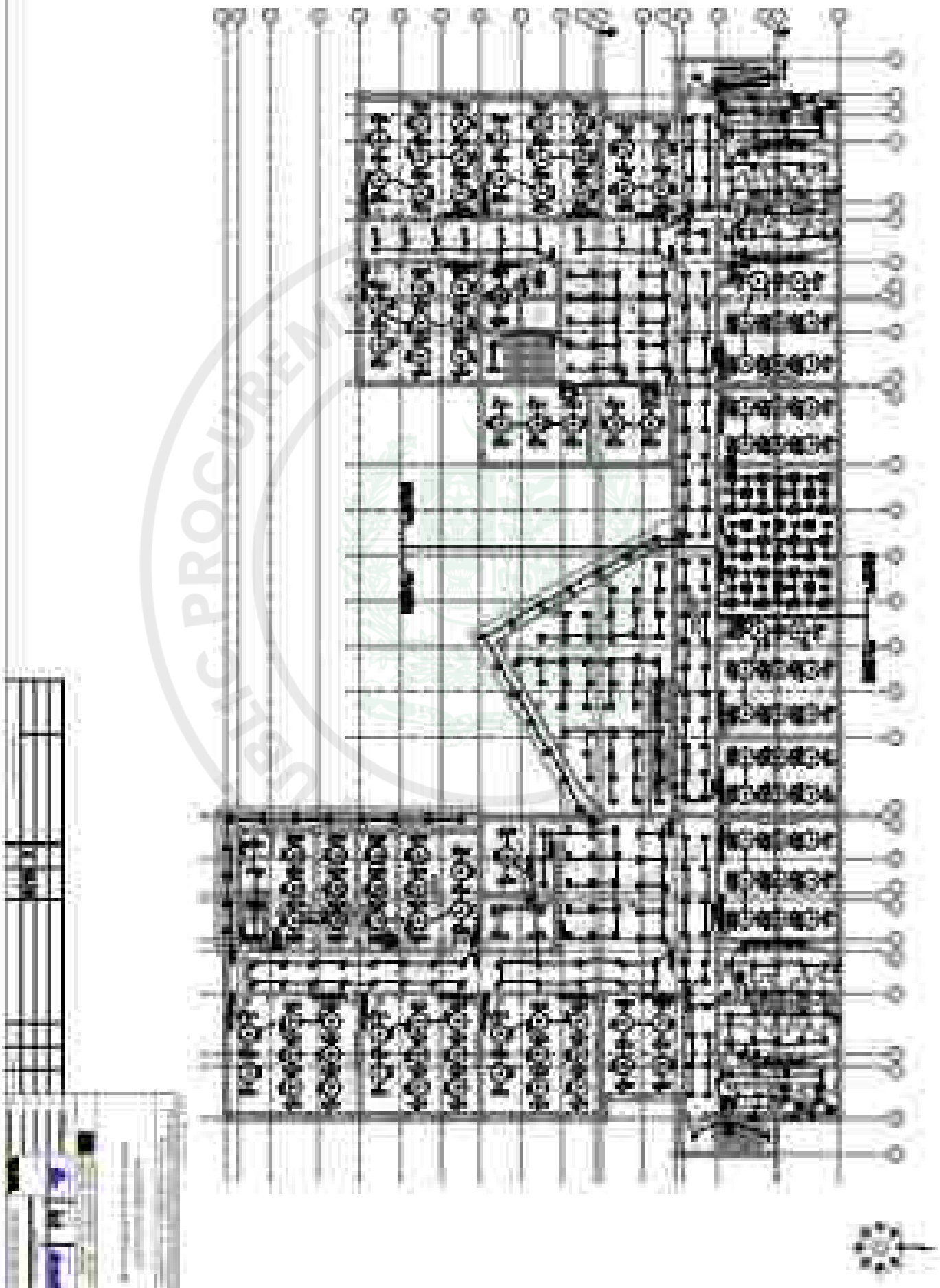


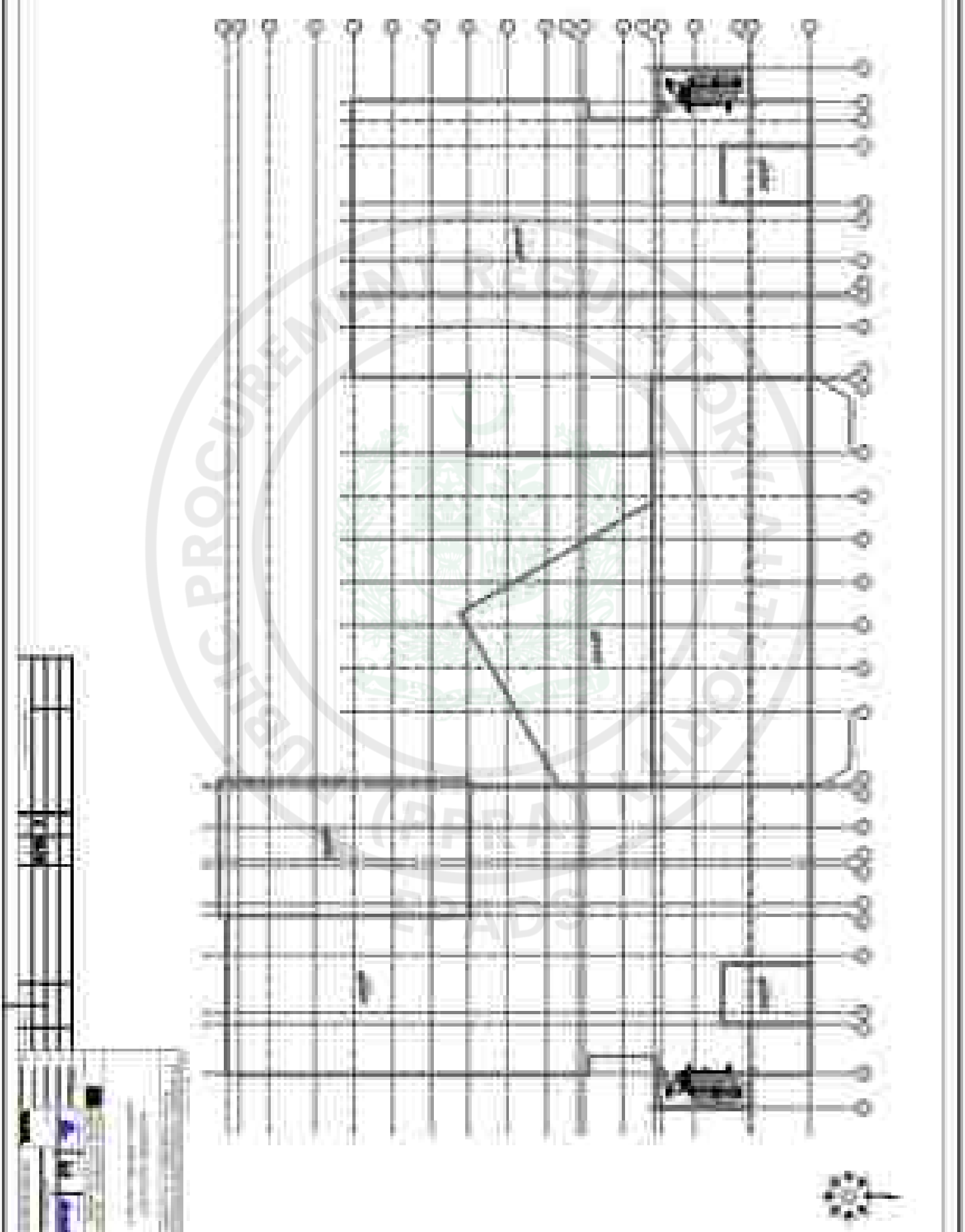




PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS







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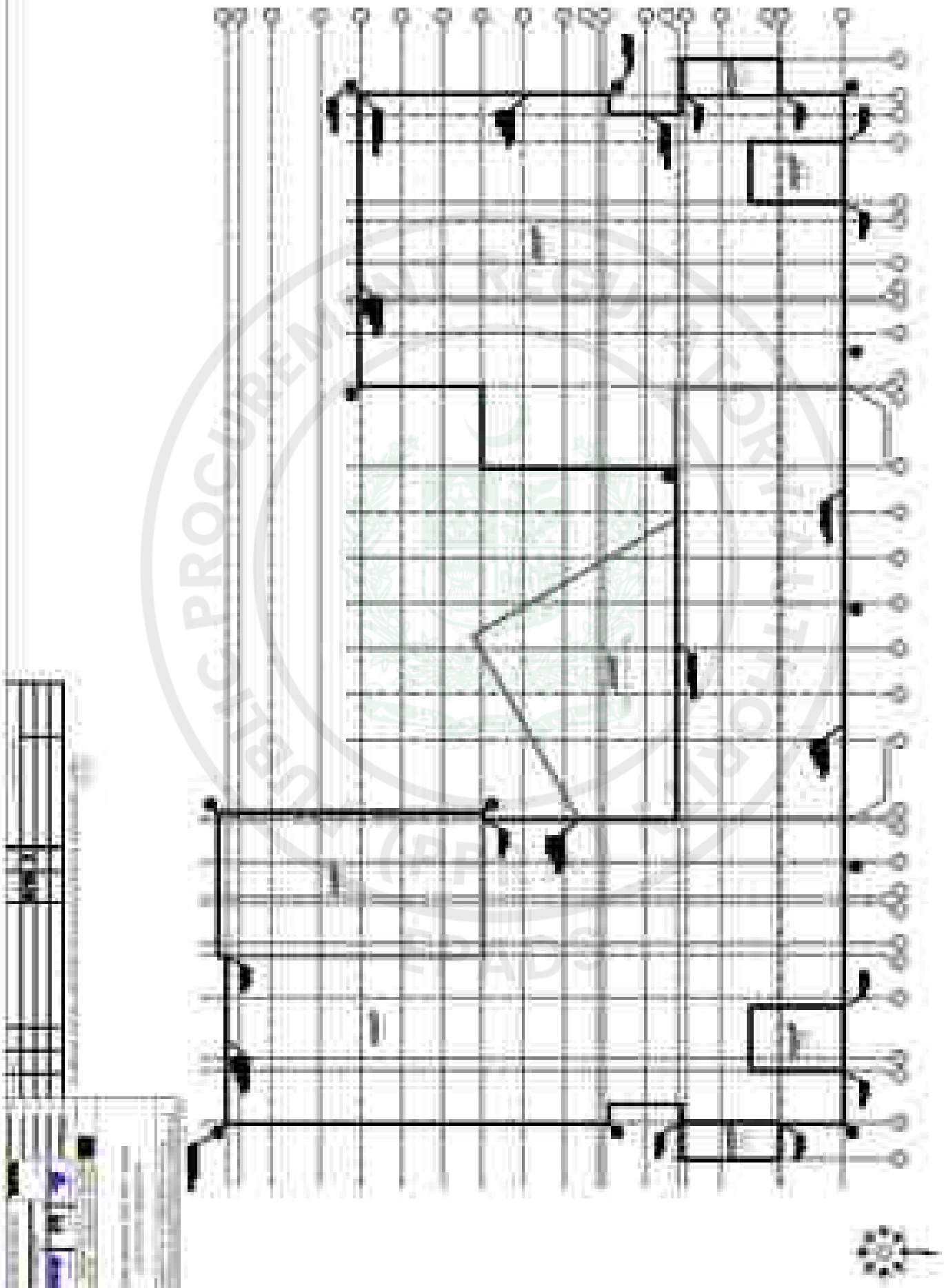

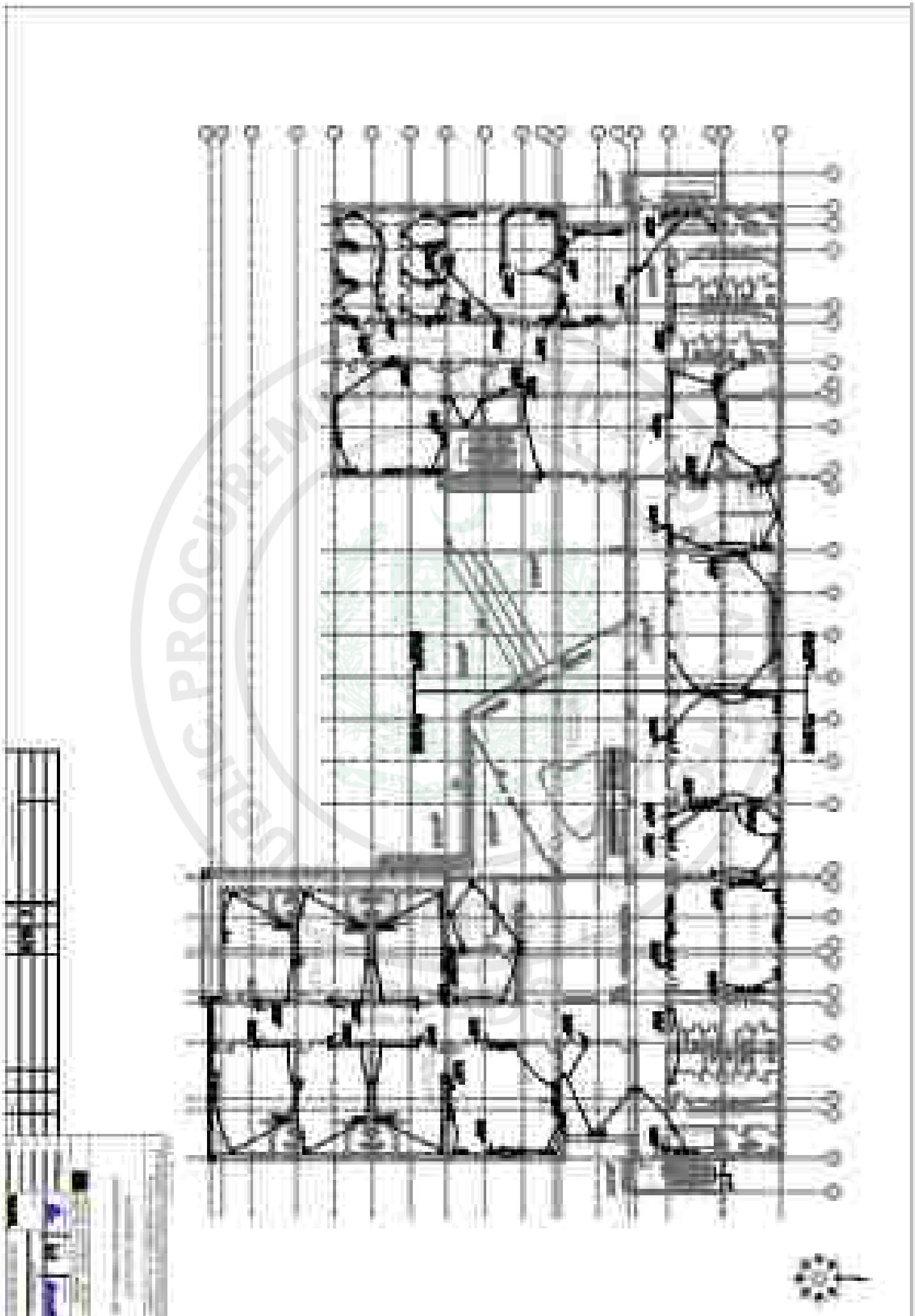

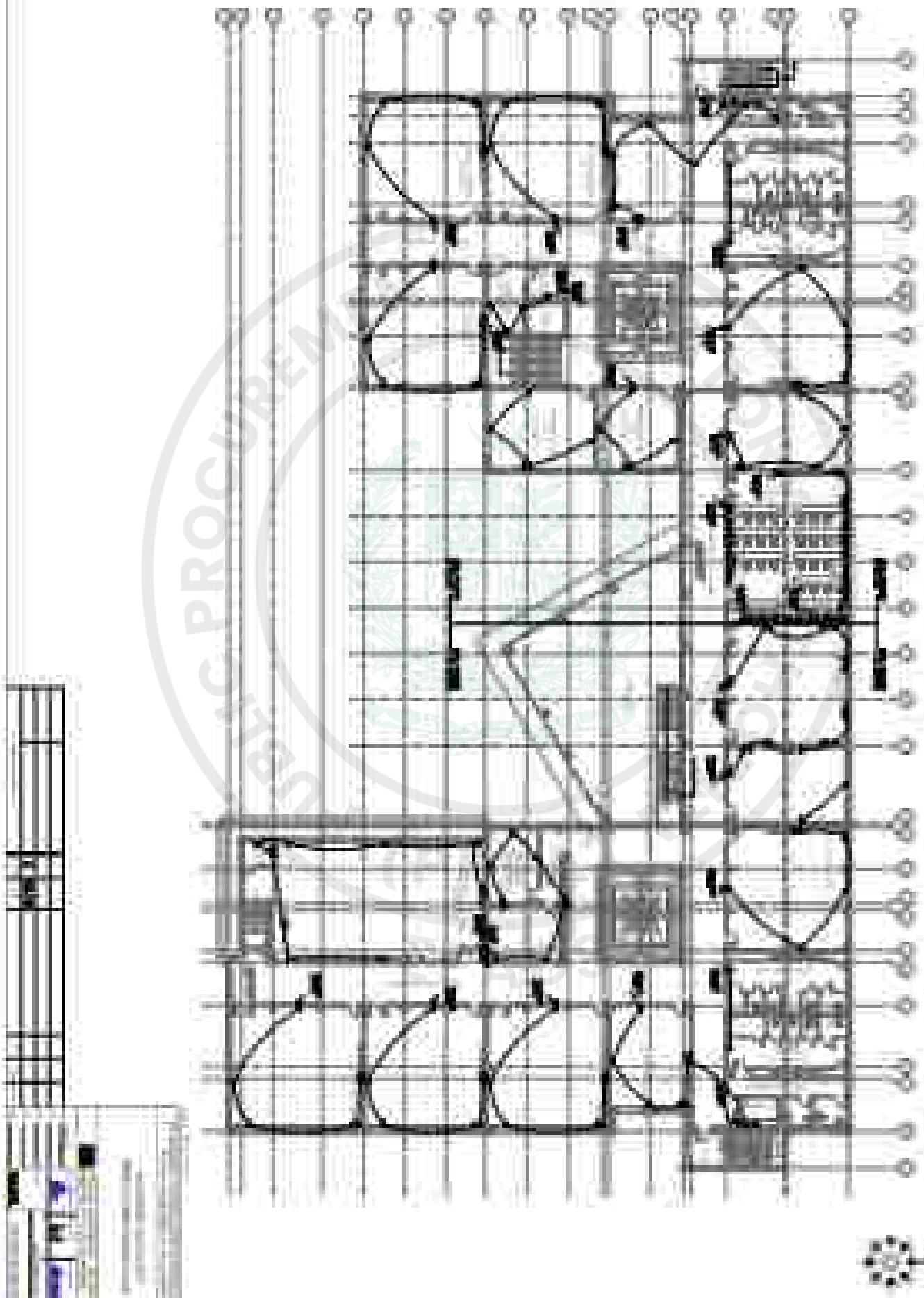

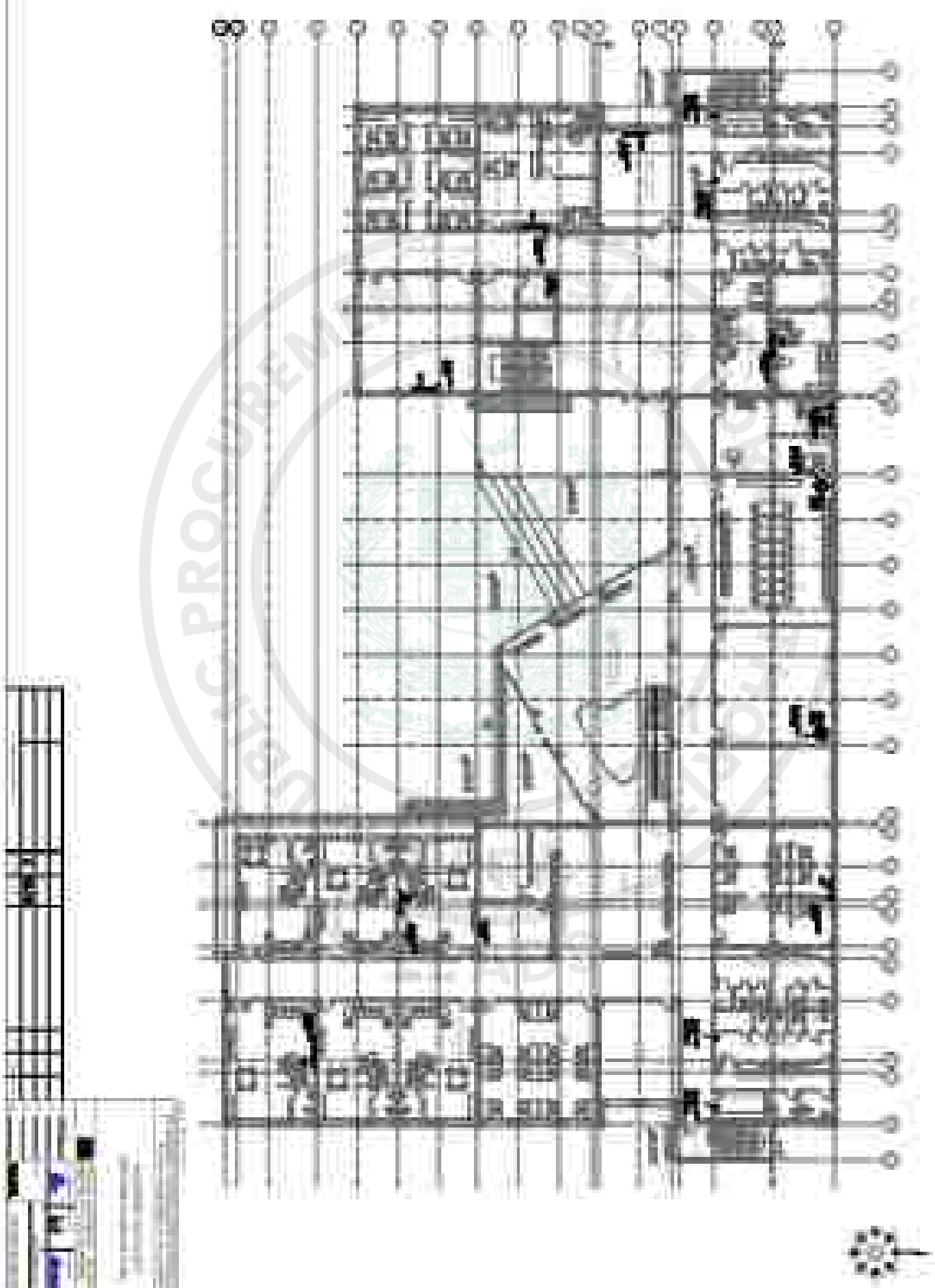

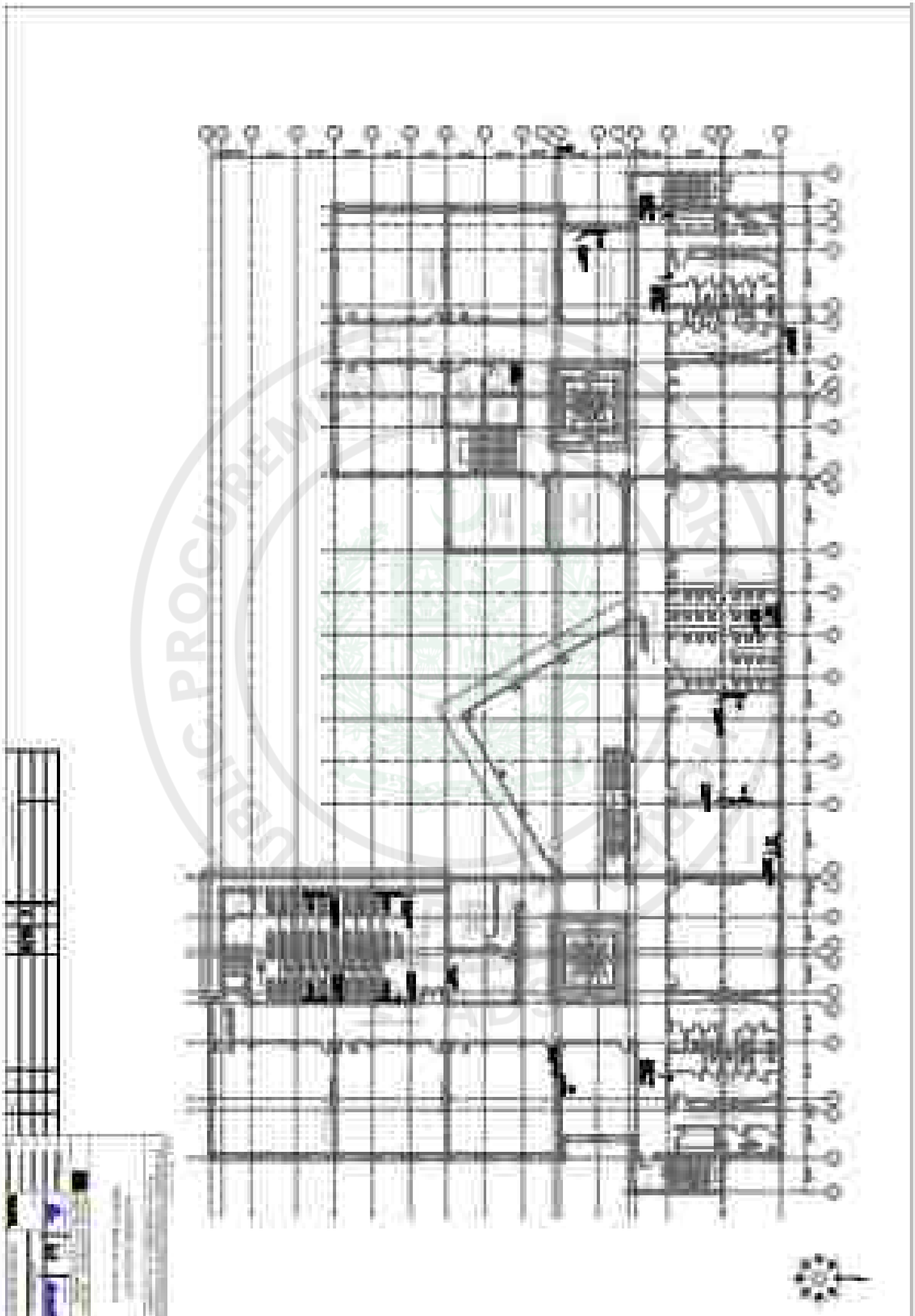

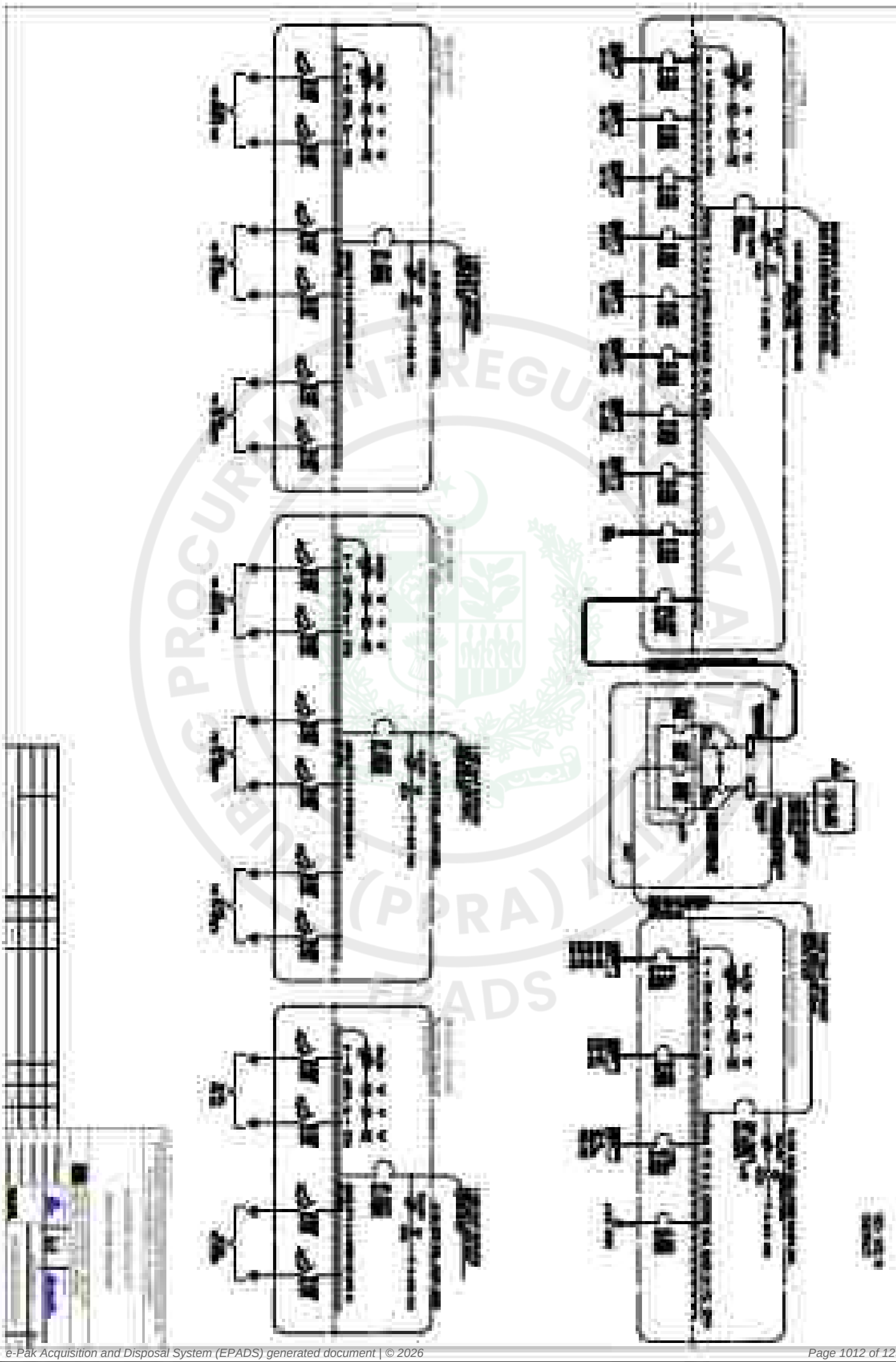

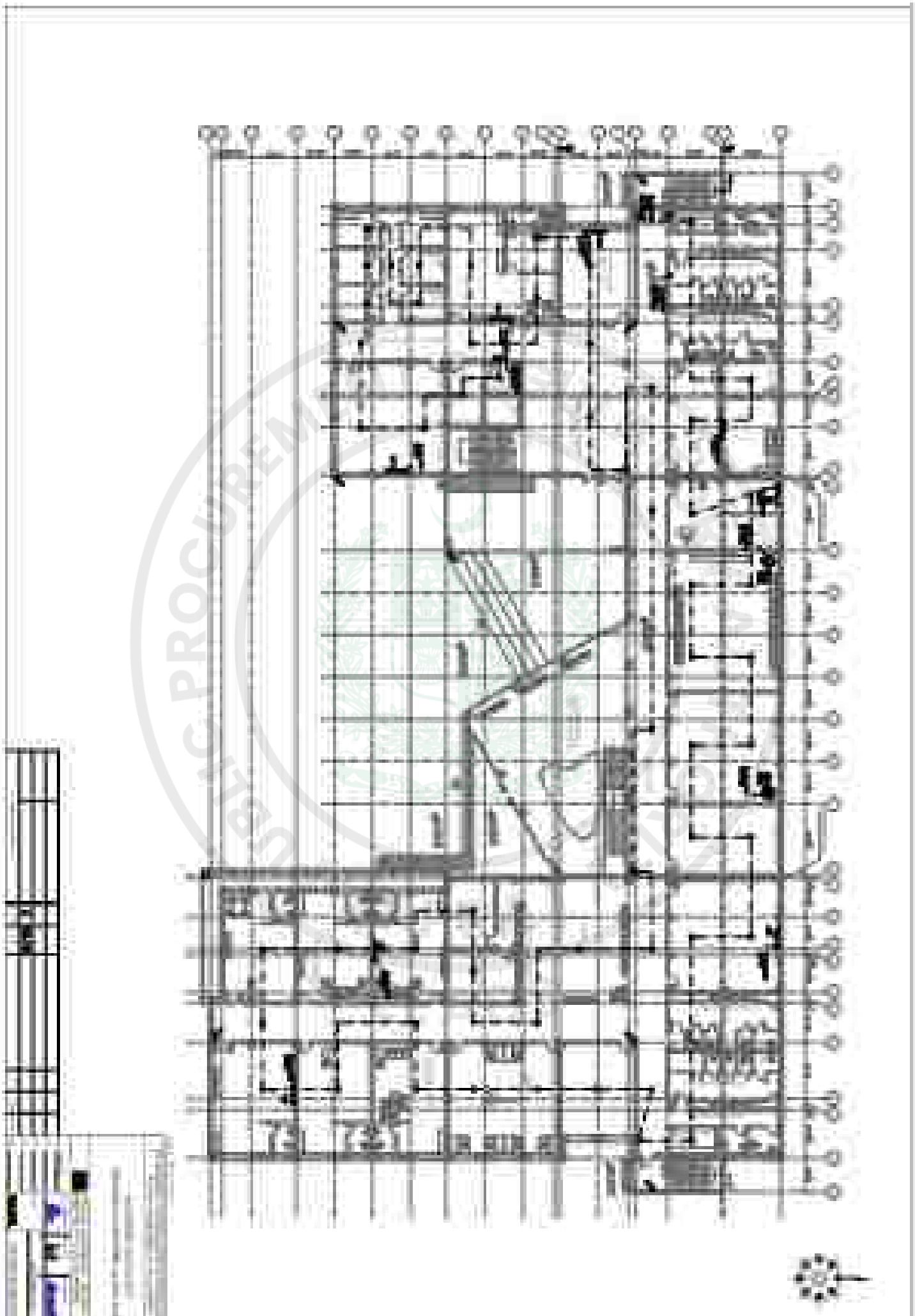

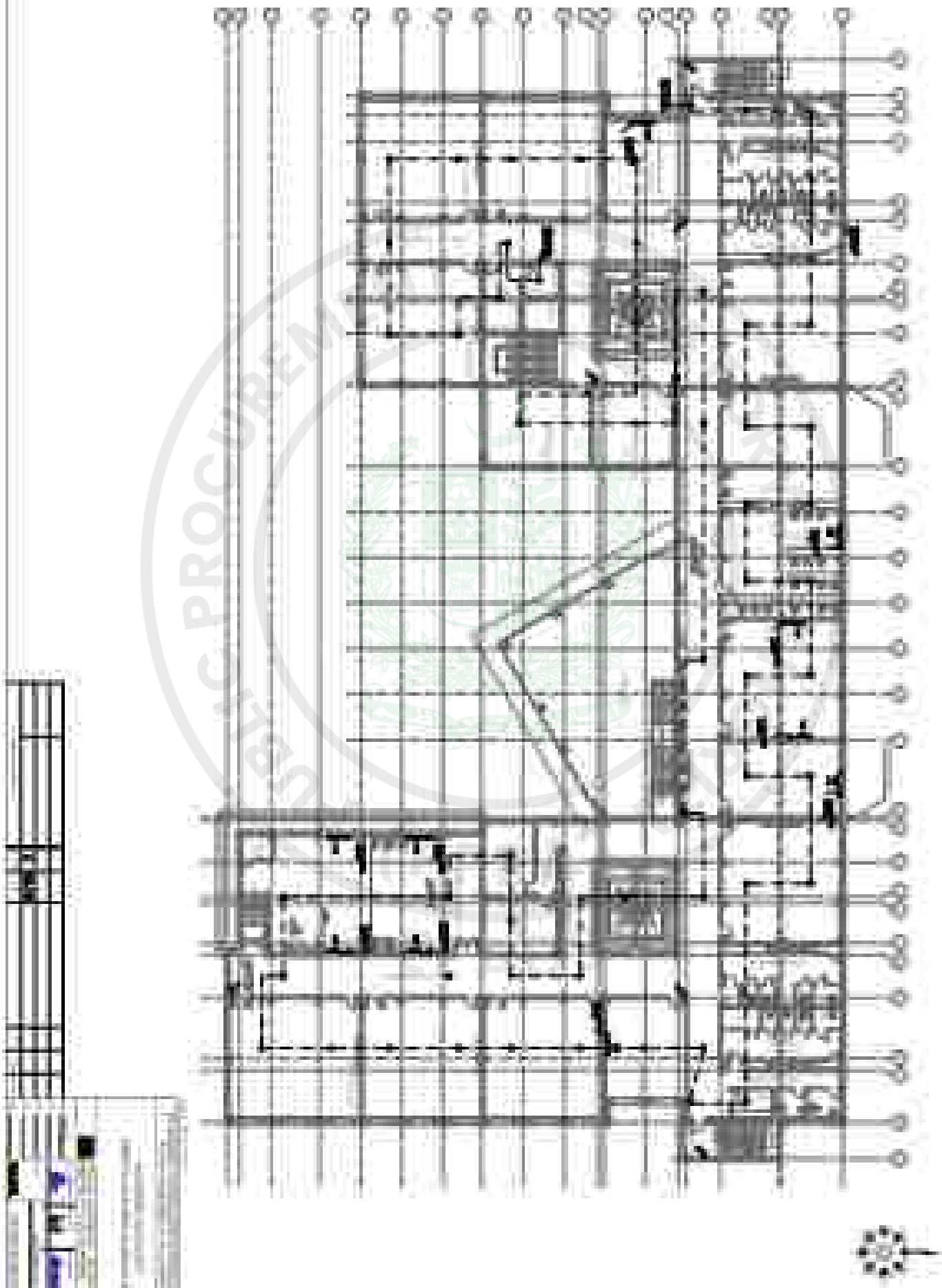

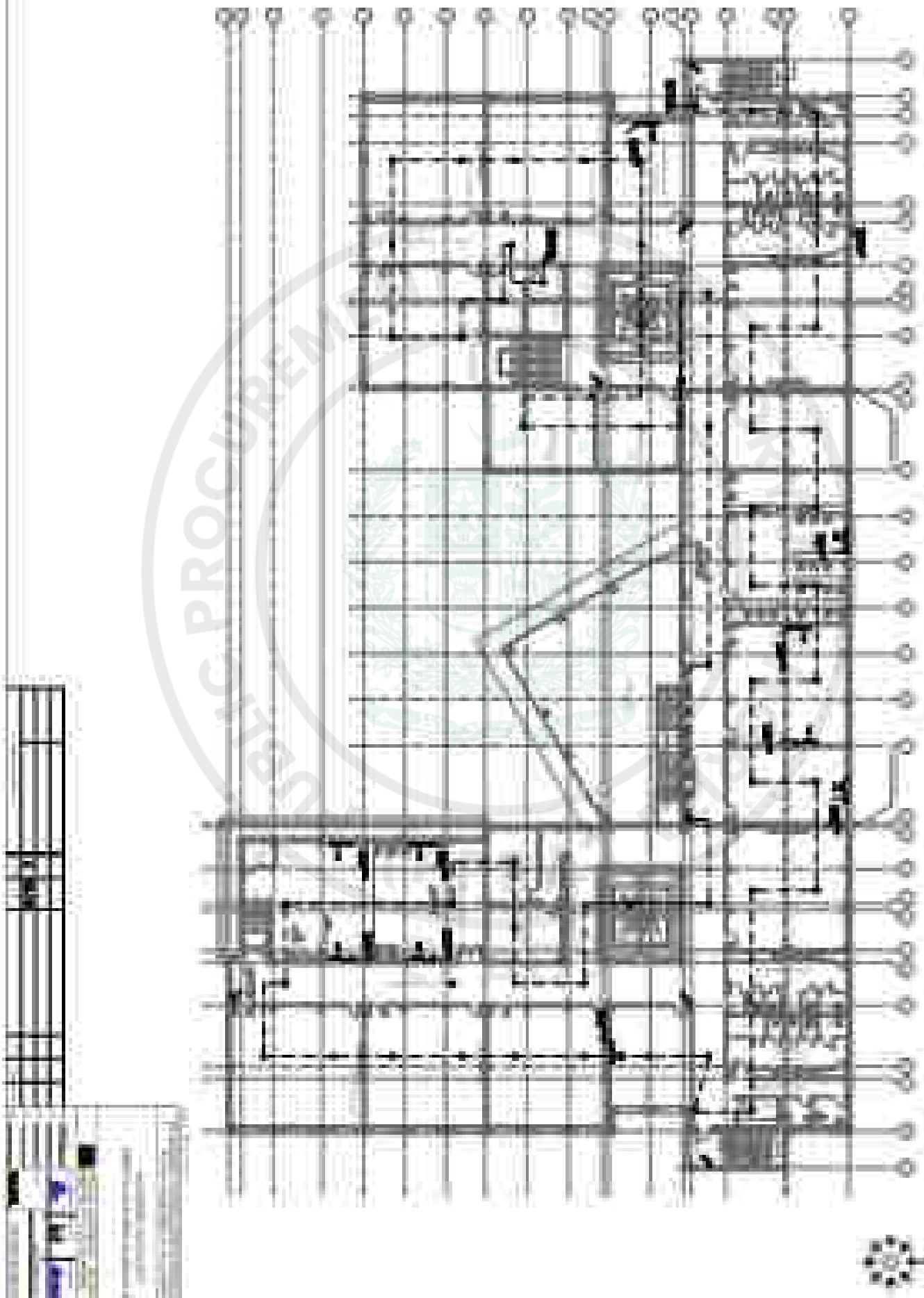

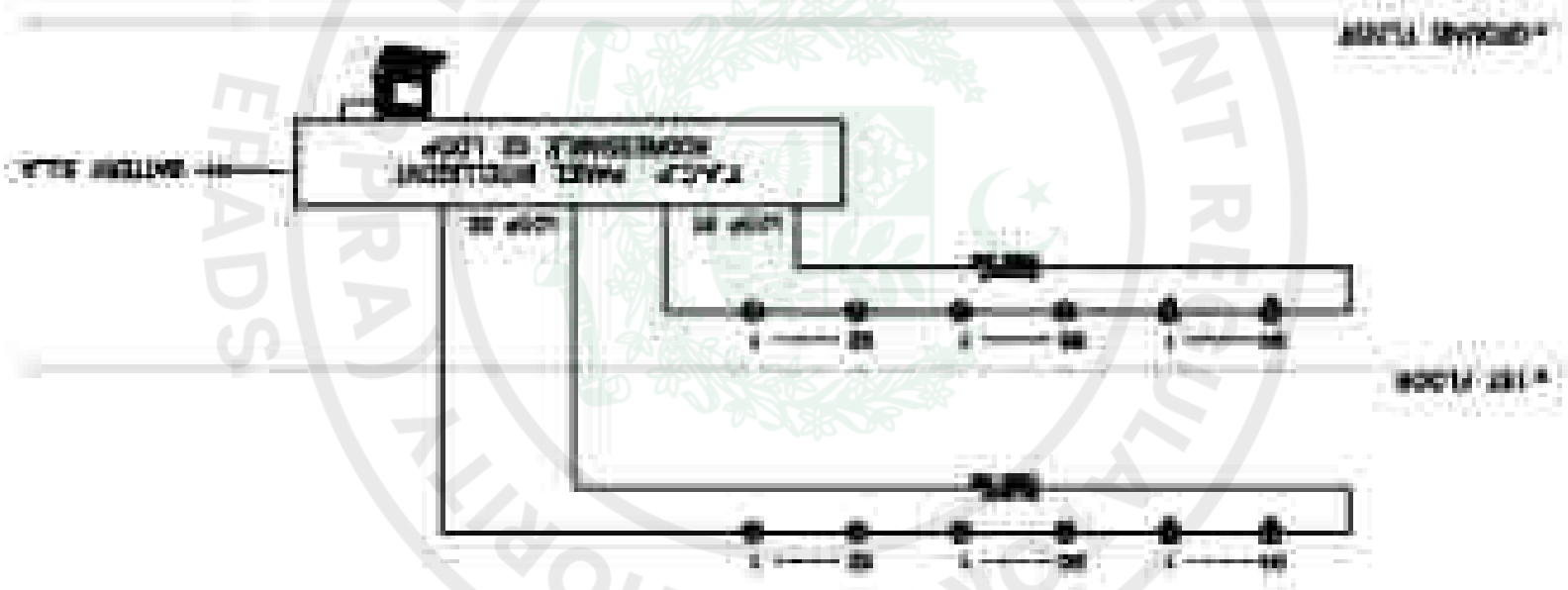

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ABBREVIATION	DESCRIPTION
Ø	DIAMETER OF PIPE
CW	COLD WATER PIPE
HW	HOT WATER PIPE
CW/HW	COLD WATER & HOT WATER PIPE
SP	SOIL PIPE
WP	WASTE PIPE
VP	VENT PIPE
S/S	SOIL STACK
W/S	WASTE STACK
V/S	VENT STACK
T/A	TO ABOVE
T/B	TO BELOW
F/A	FROM ABOVE
F/B	FROM BELOW
WT	WATER TAP
U/C	UNDER CEILING
U/F	UNDER FLOOR
GWH	GAS WATER HEATER
EWH	ELECTRIC WATER HEATER
EWC	ELECTRIC WATER COOLER

ABBREVIATION	DESCRIPTION
[illegible]	[illegible] 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
[illegible]	[illegible]
[illegible]	[illegible]
WC	WATER CLOSET
[illegible]	[illegible]
(TYP)	TYPICAL
FT	FLOOR TRAP
[illegible]	[illegible] LEVEL
U/F	UNDER FLOOR / CEILING
FHC	FIRE HOSE CABINET
WC	WATER CLOSET
NTS	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
	[illegible]
	WATER TAP
	GULLY TRAP
	GAS WATER HEATER
	[illegible]
	SHOWER
	WATER COOLER
	ASIAN WATER CLOSET
	ENGLISH WATER CLOSET
	KITCHEN SINK
	VANITY
	WASH HAND BASIN

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 [illegible]
4- DRAINAGE STACKS SHALL BE CONNECTED TO [illegible]
5- [illegible]
6- [illegible]
7- [illegible]
8- [illegible]
9- [illegible]

GENERAL NOTES:

10- [illegible]
11- [illegible]
12- [illegible]
13- [illegible]
14- [illegible]
15- [illegible]
16- [illegible]
17- [illegible]

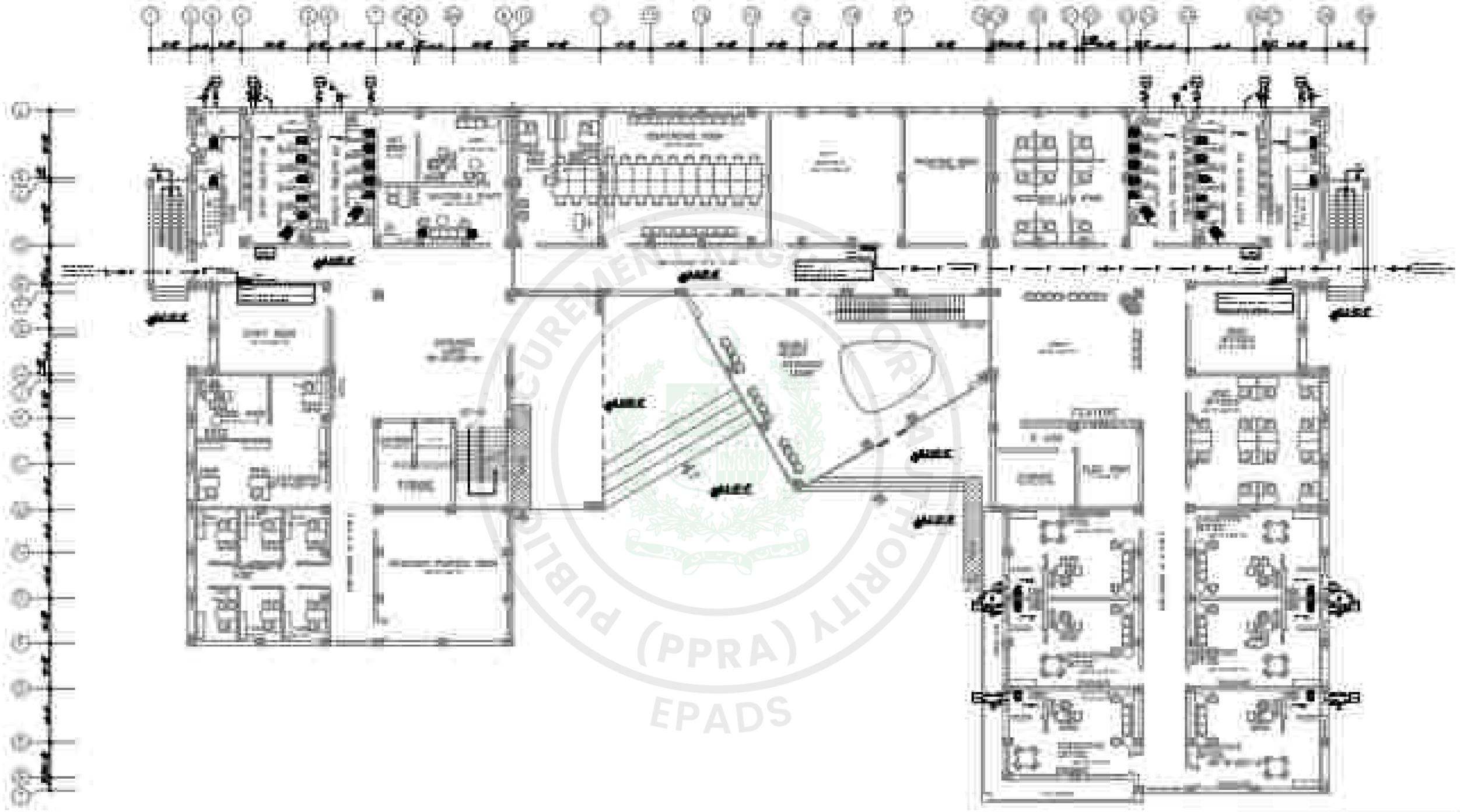
NOTES:

[illegible]

[illegible]

LEGENDS & GENERAL NOTES

PLUMBING WORKS



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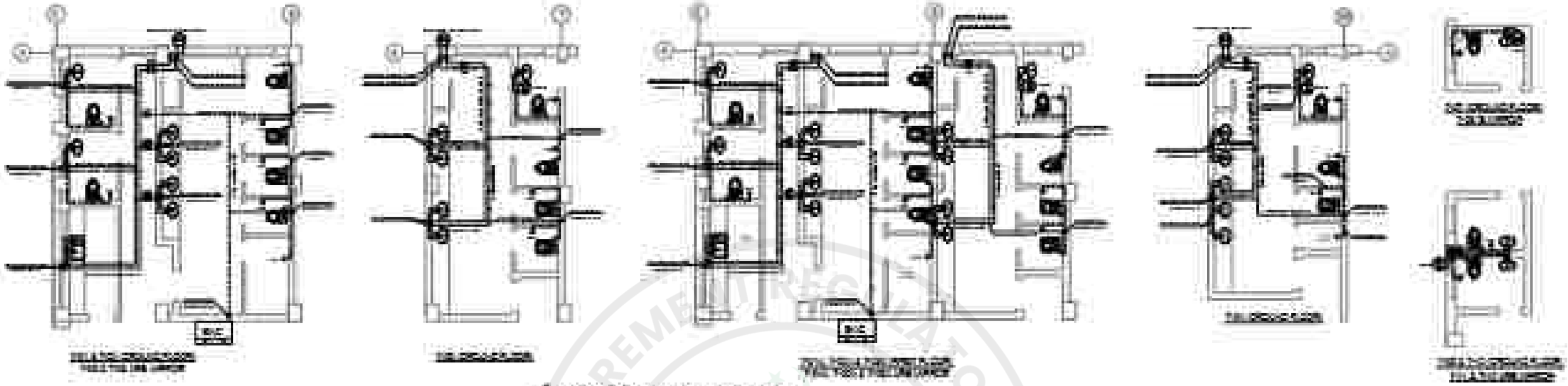

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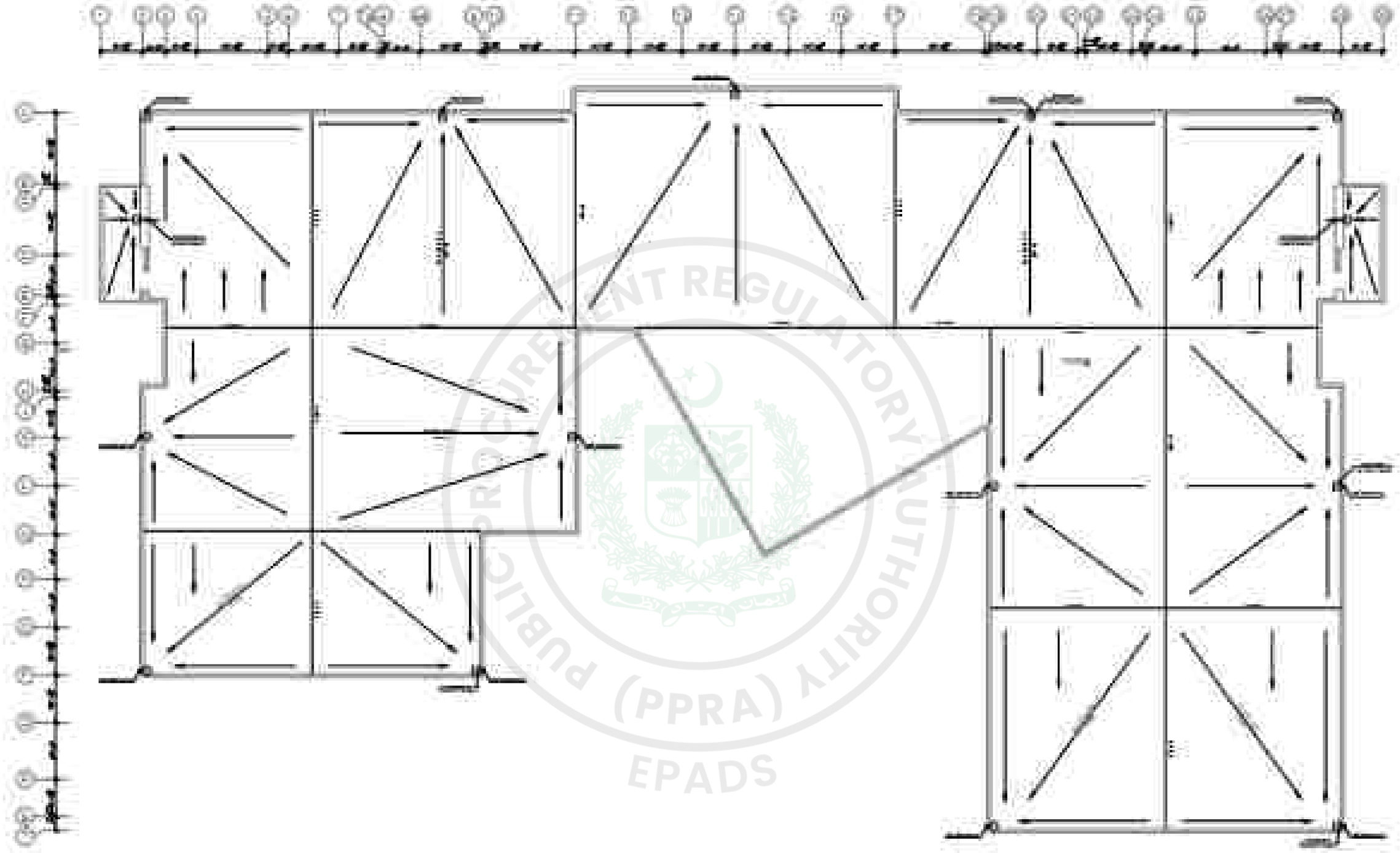

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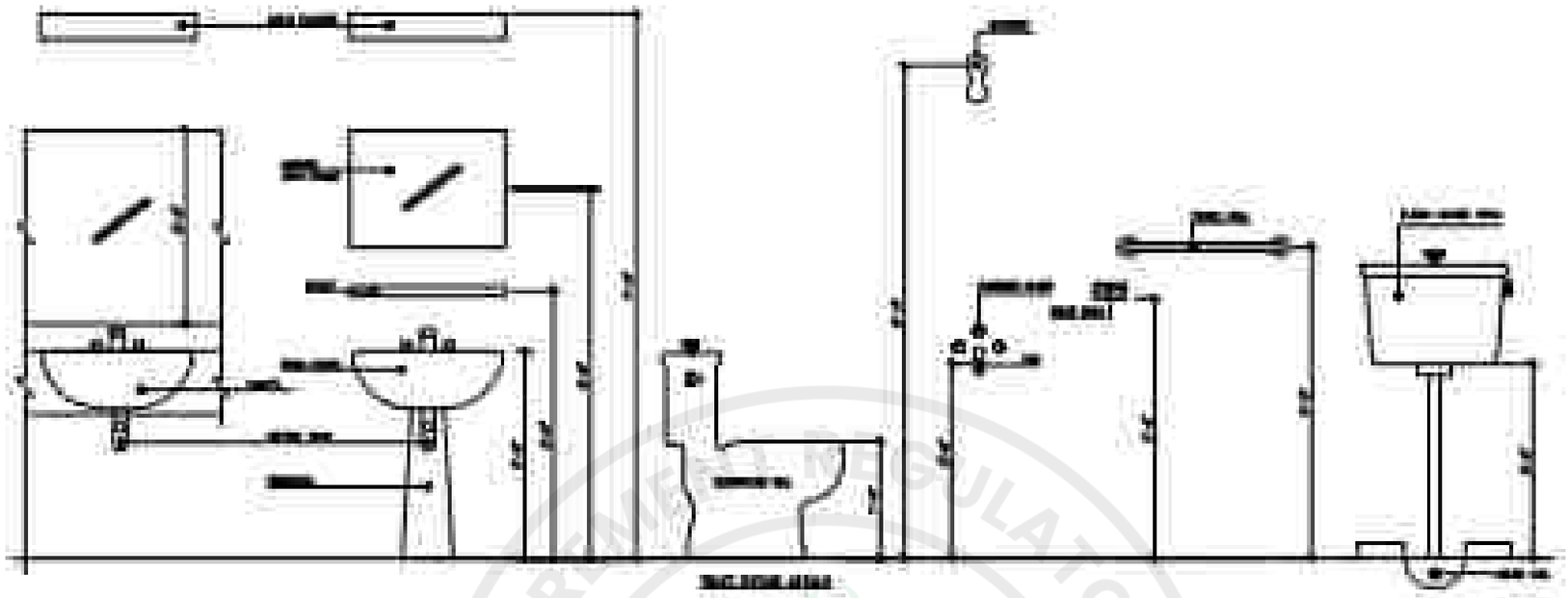

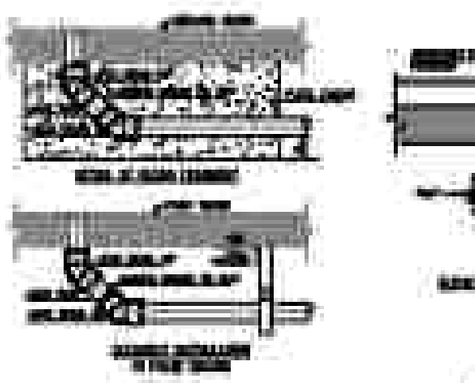

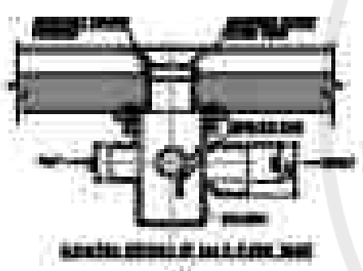

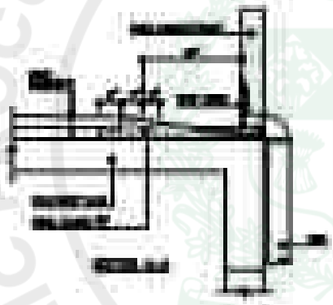

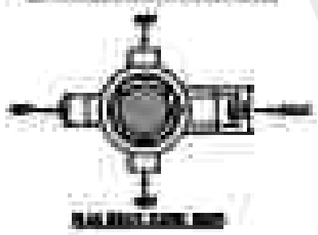

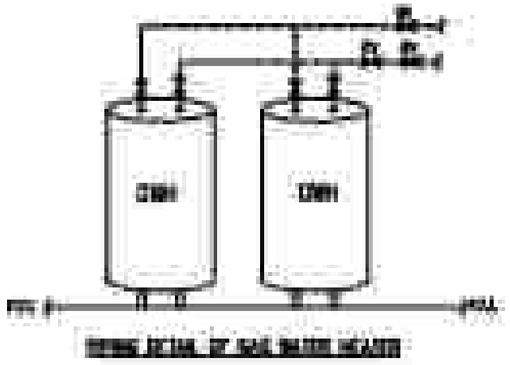

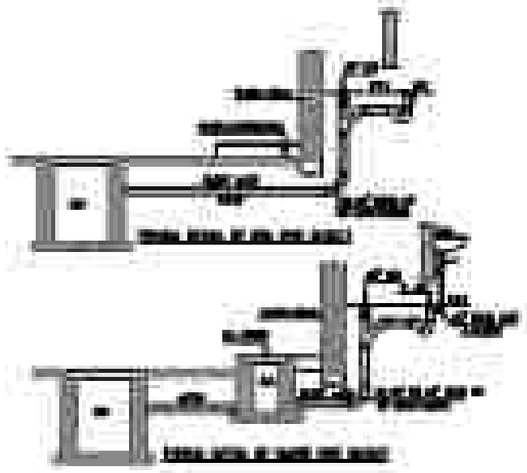

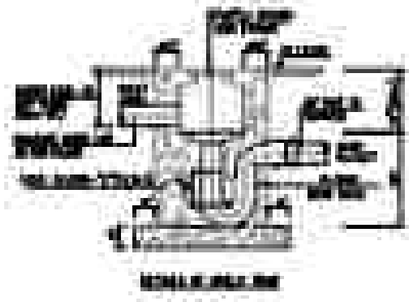

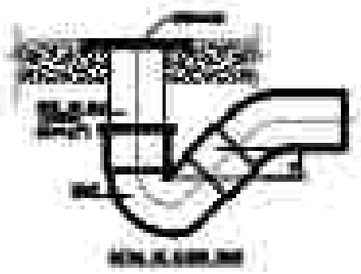

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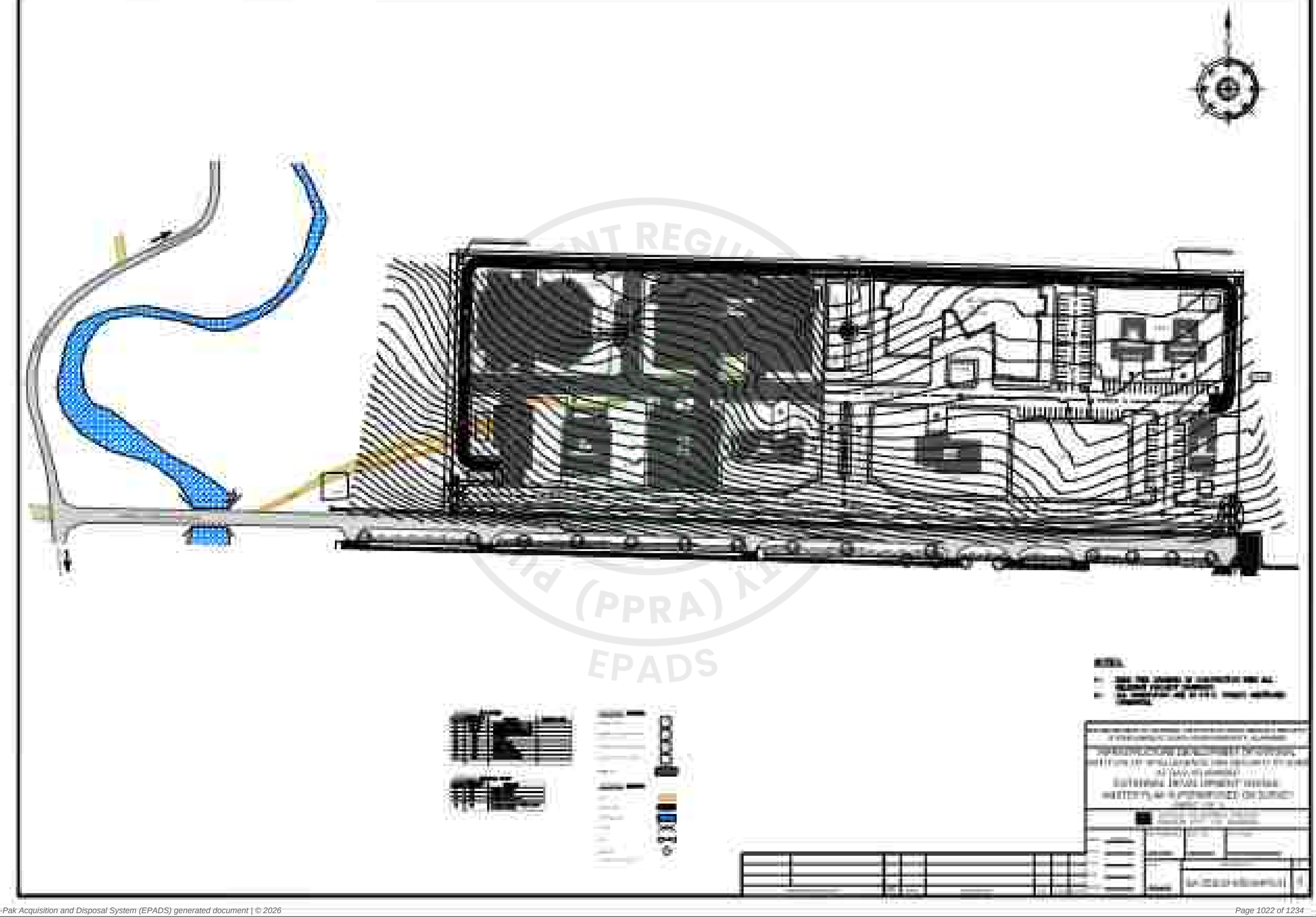

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA)
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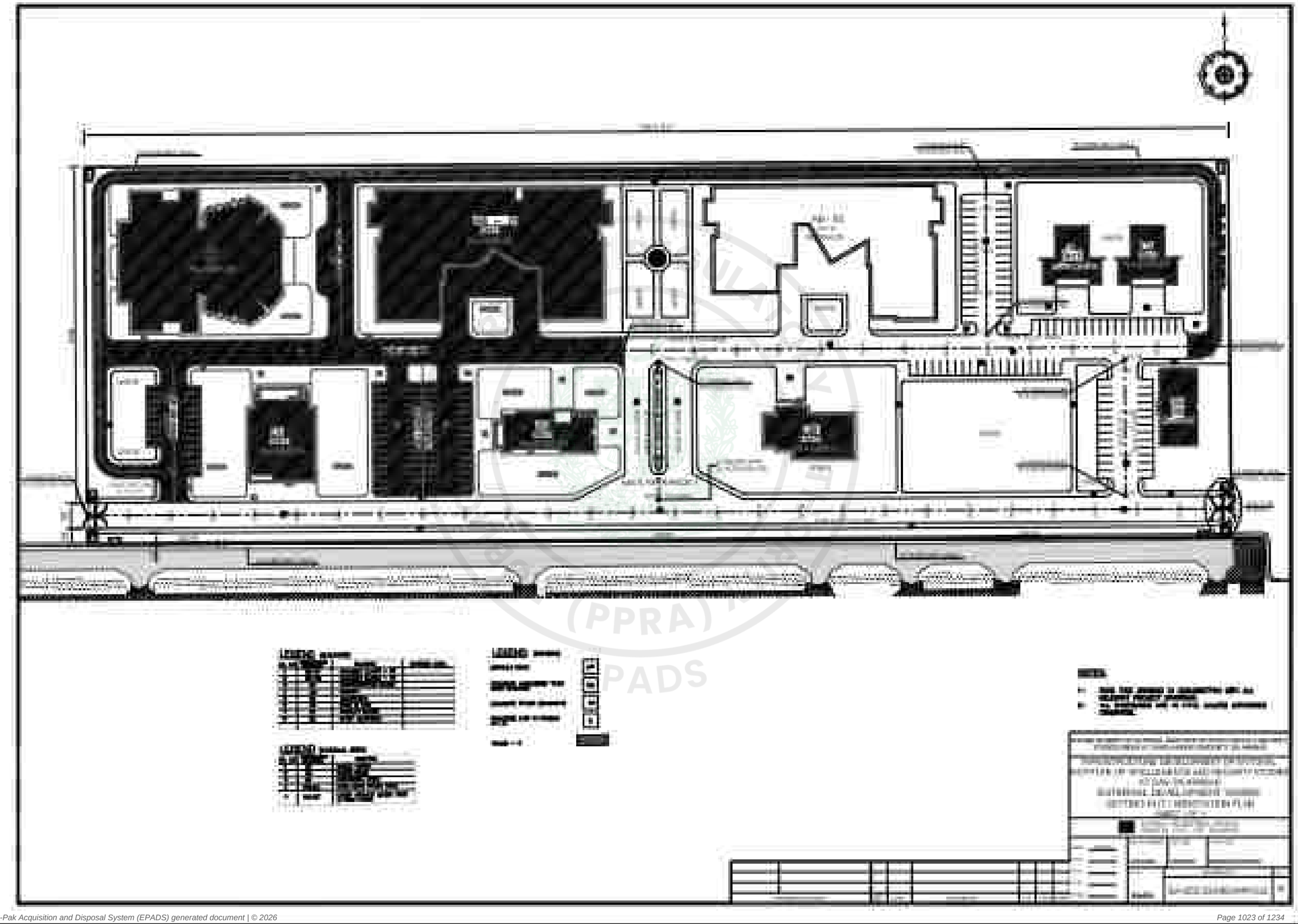

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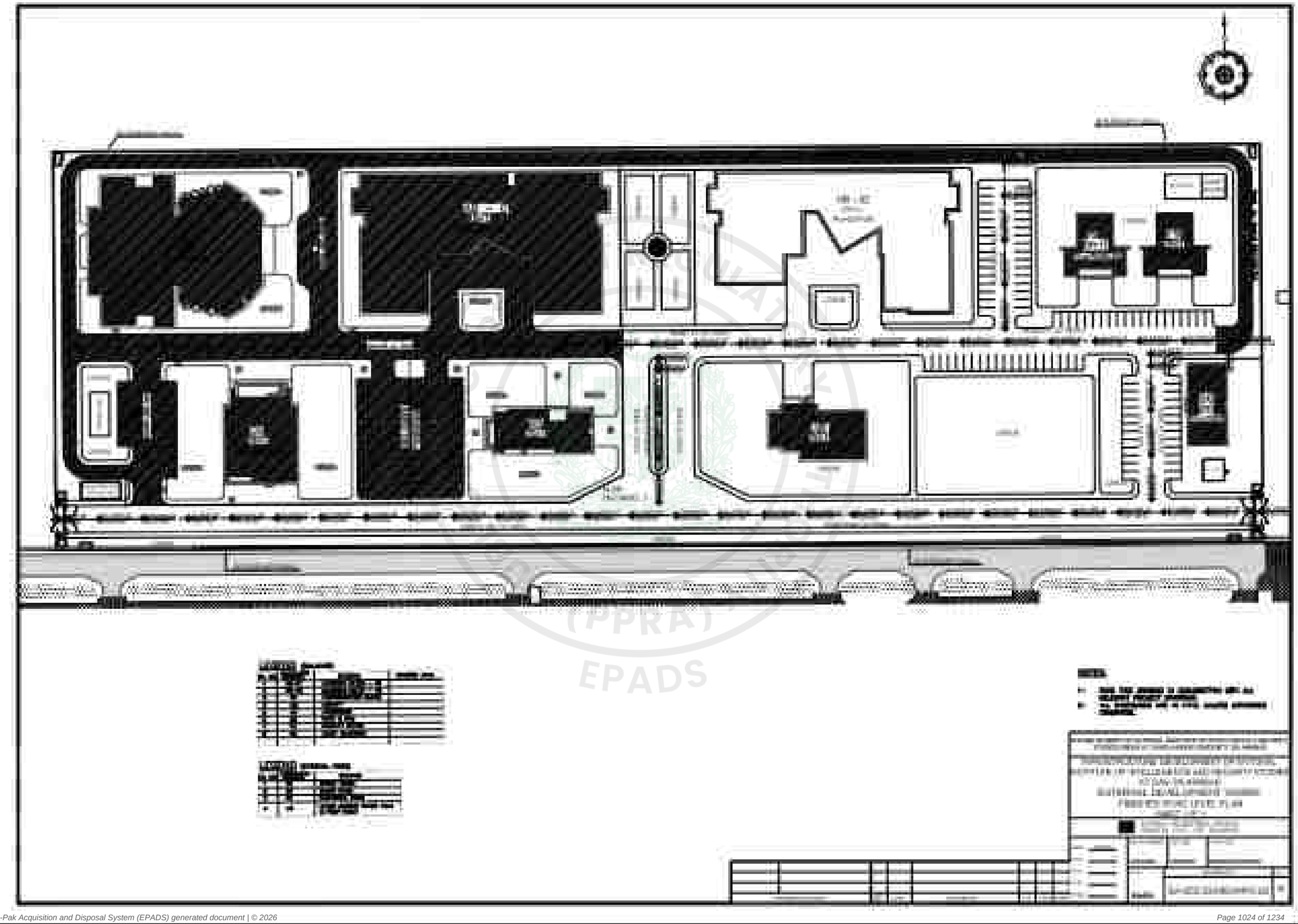

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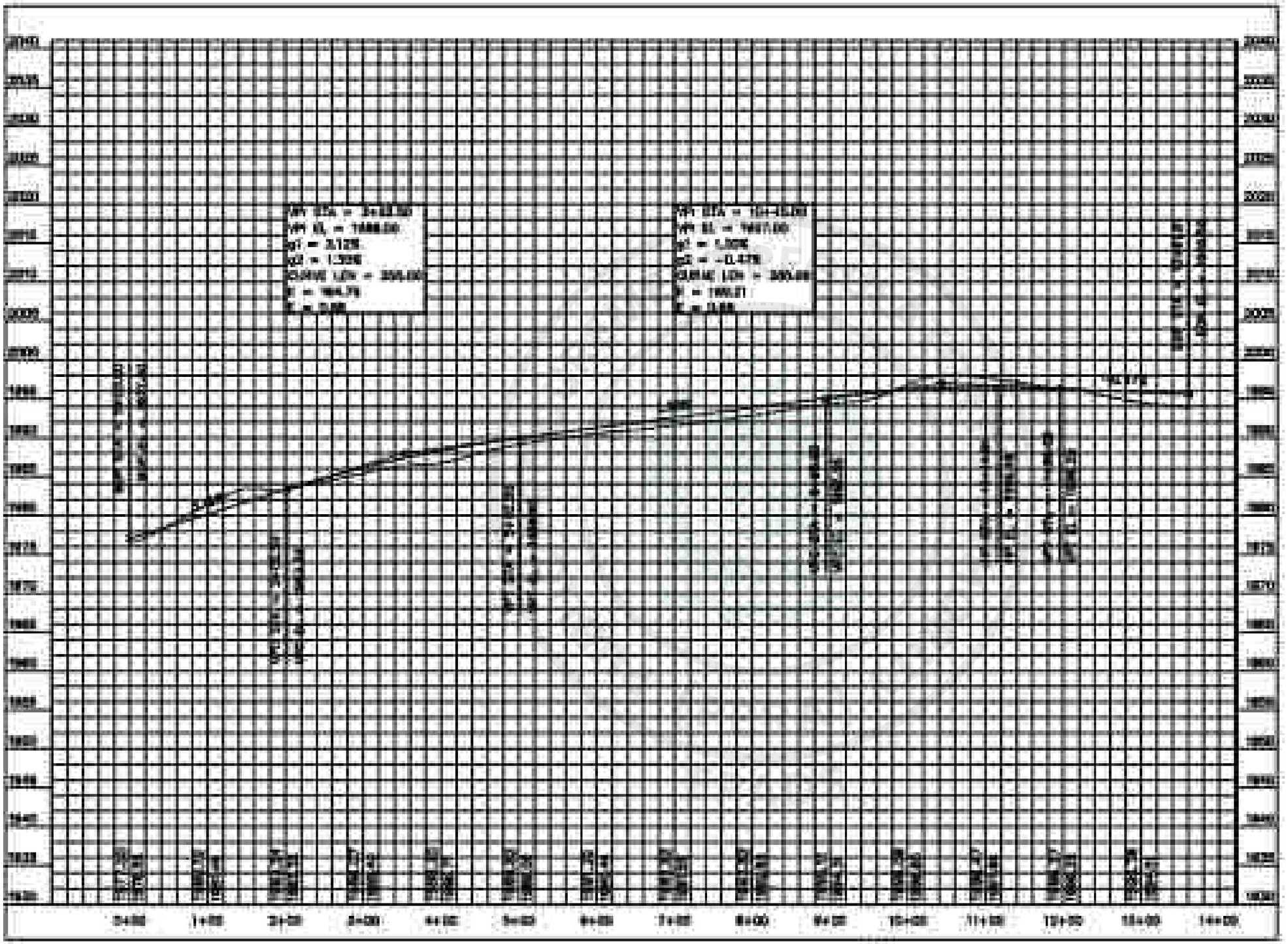

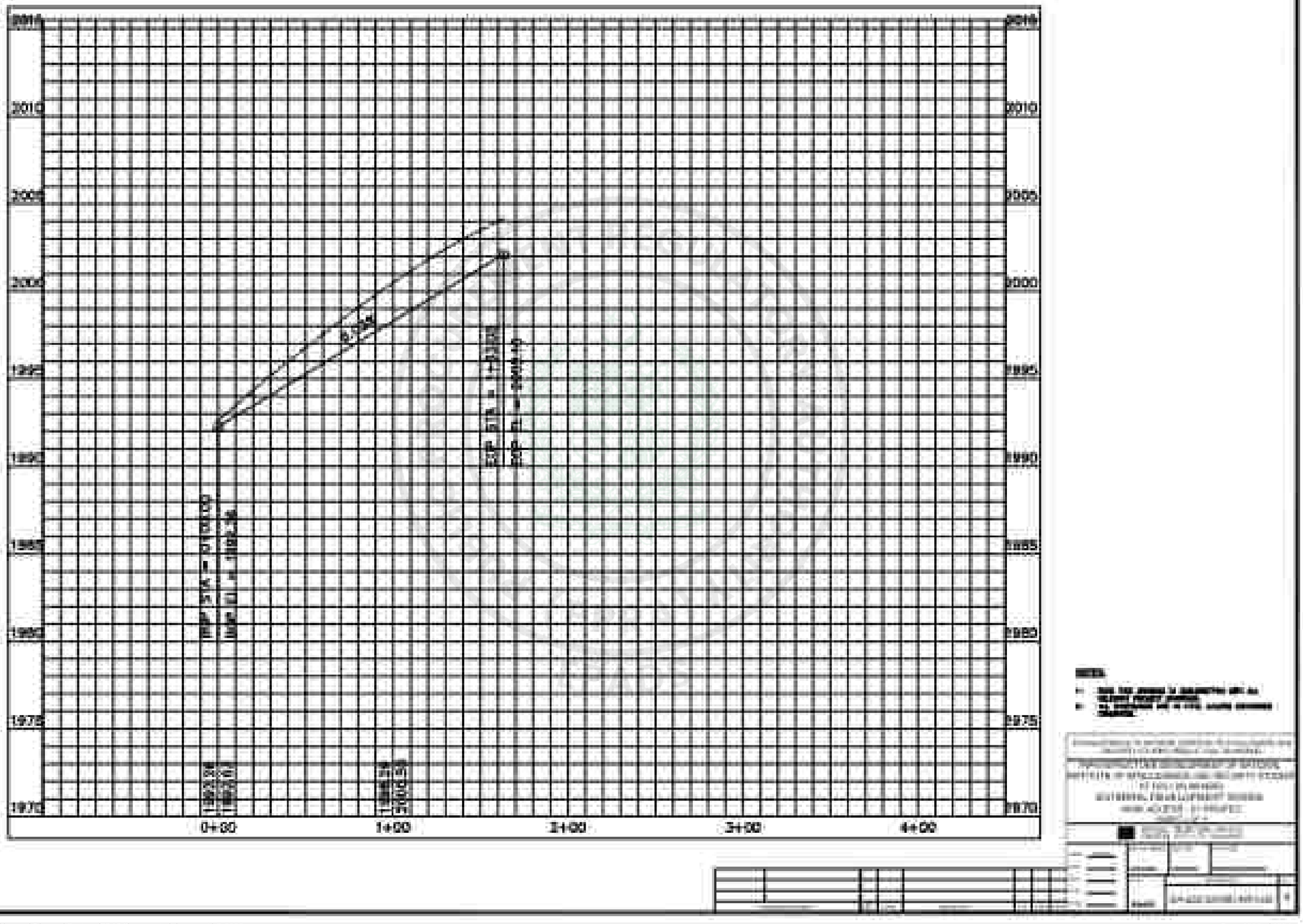
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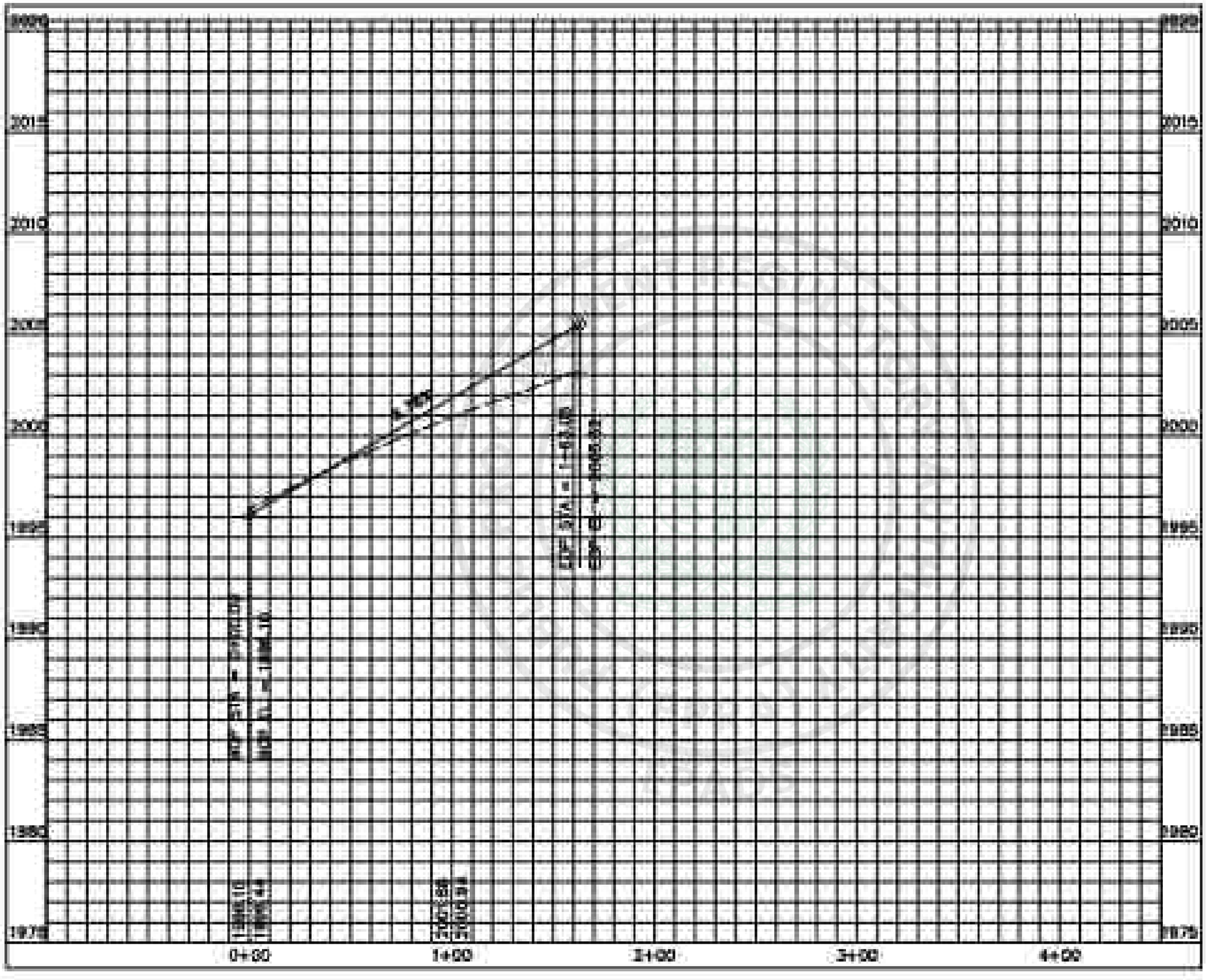
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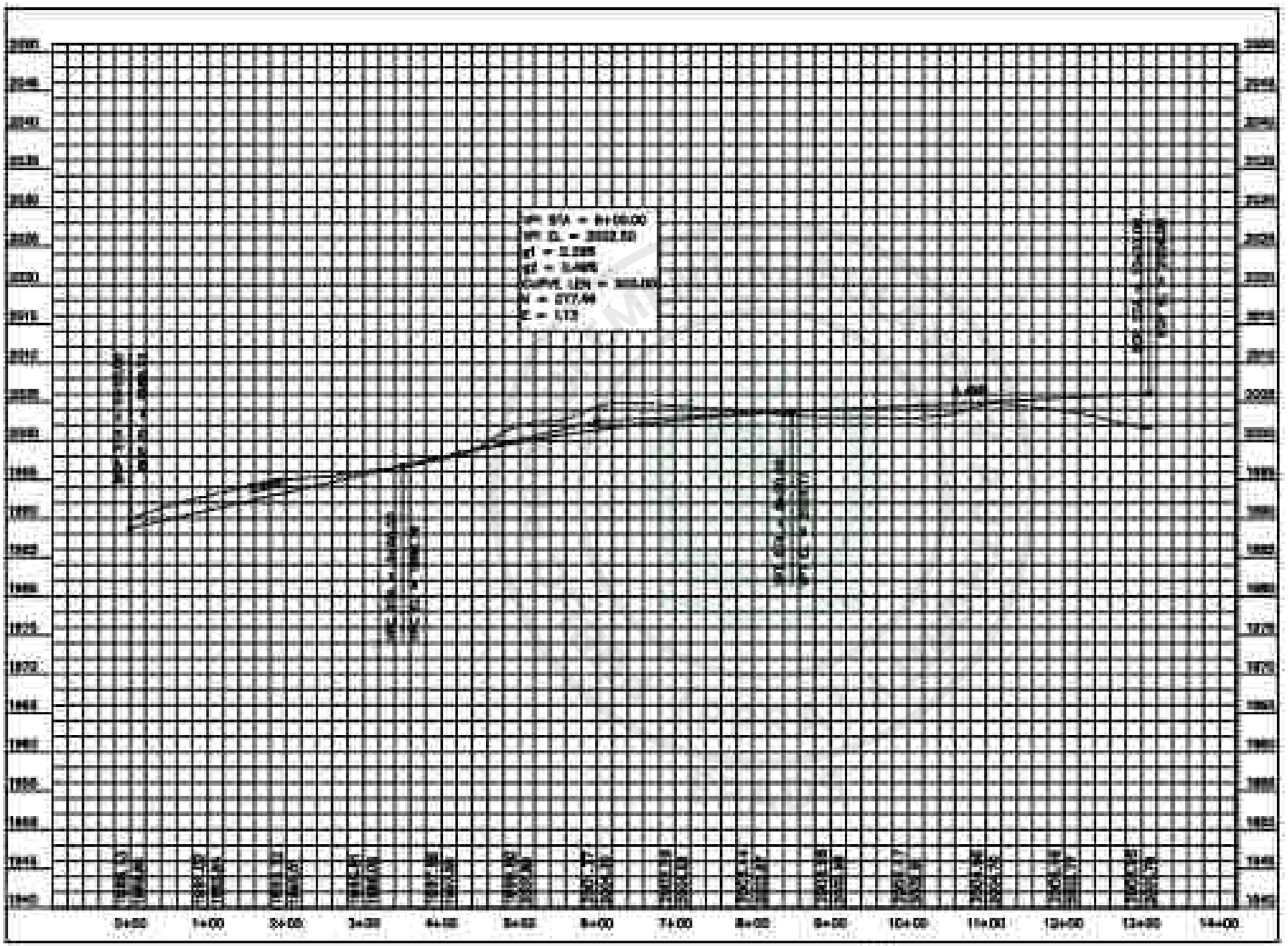

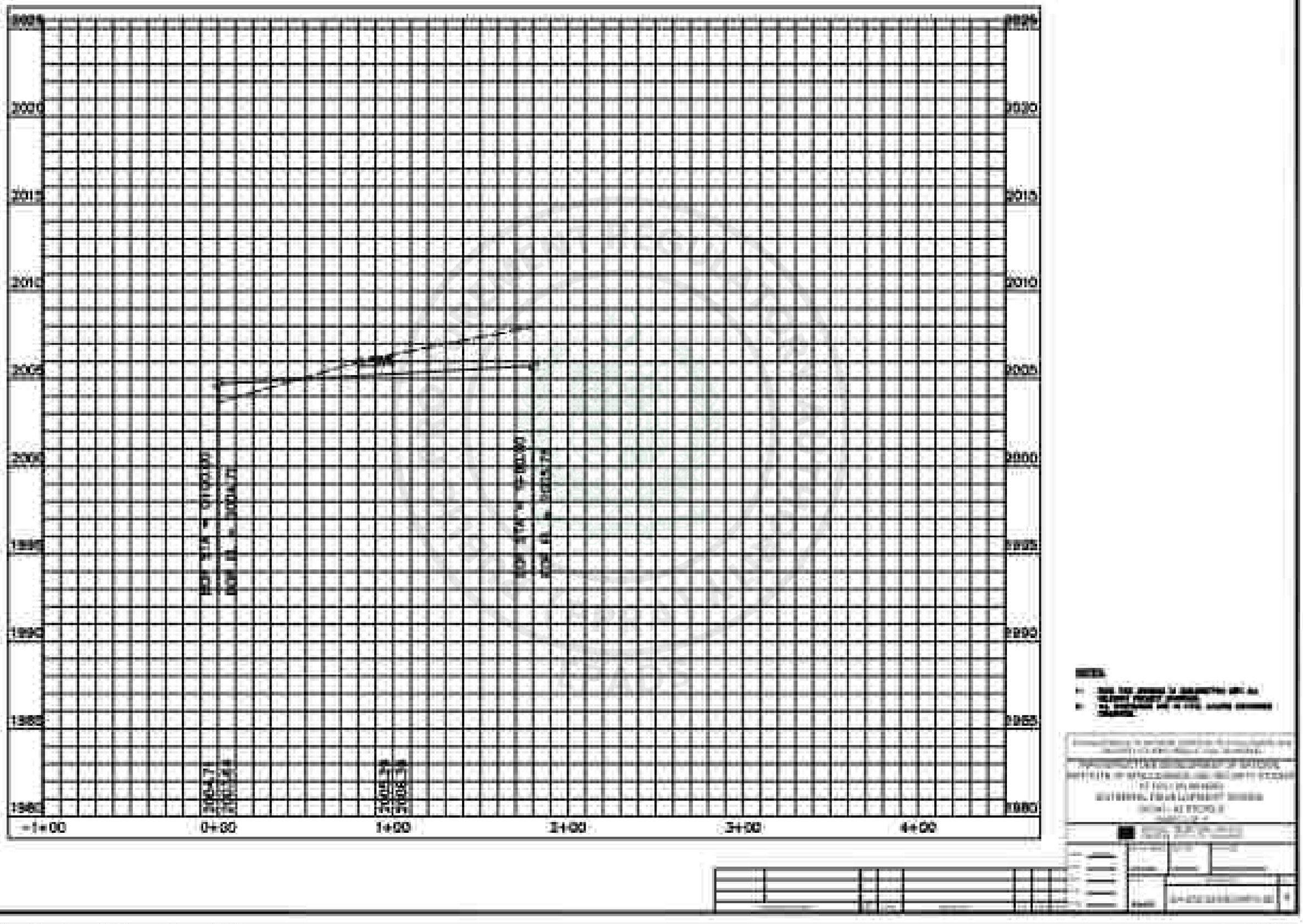
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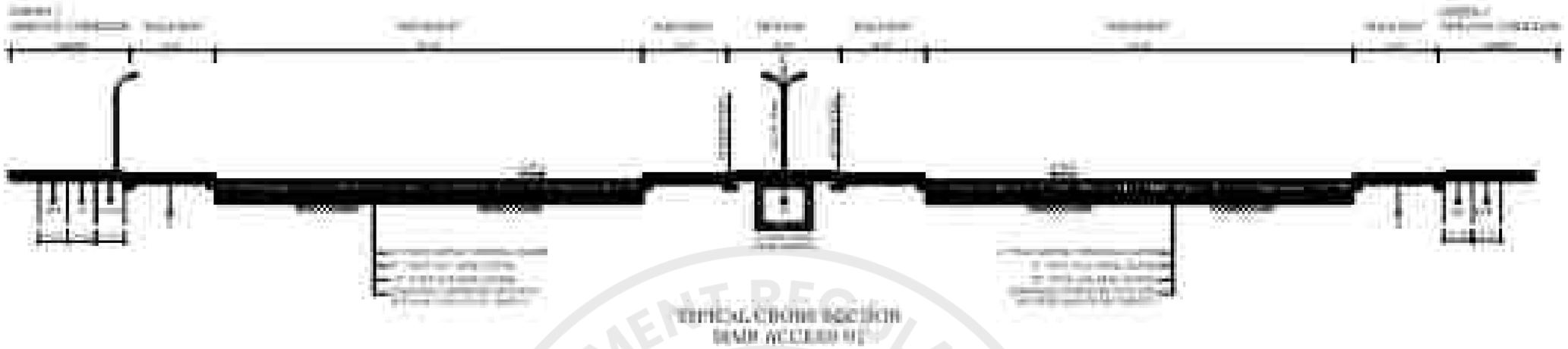

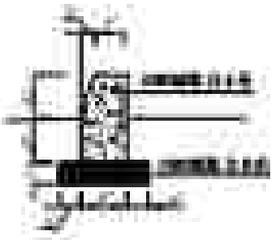

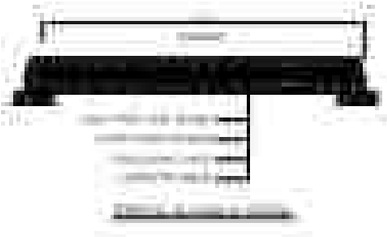

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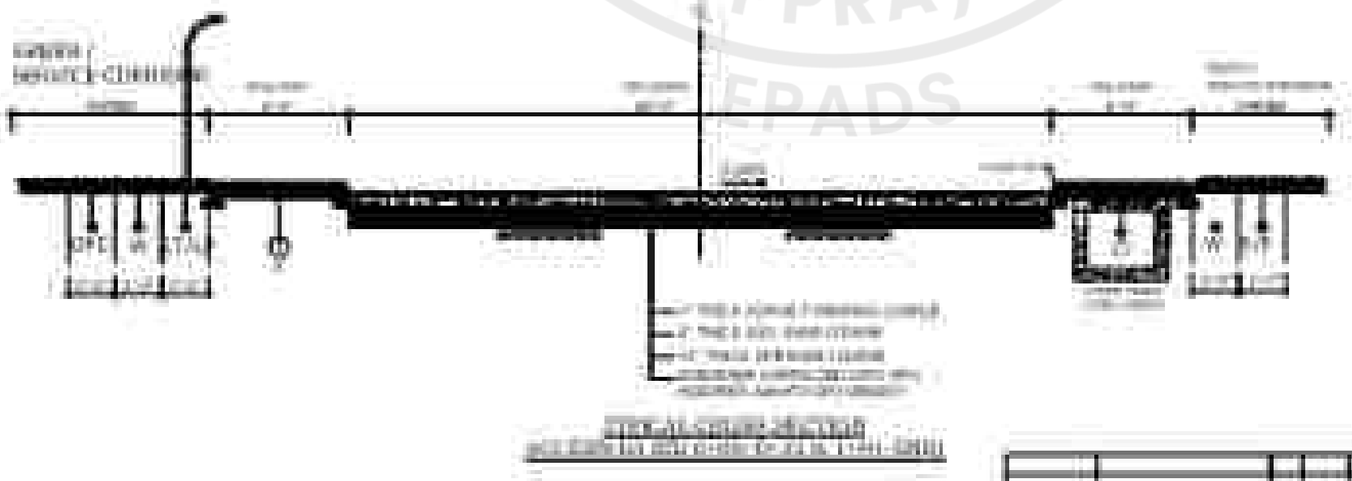

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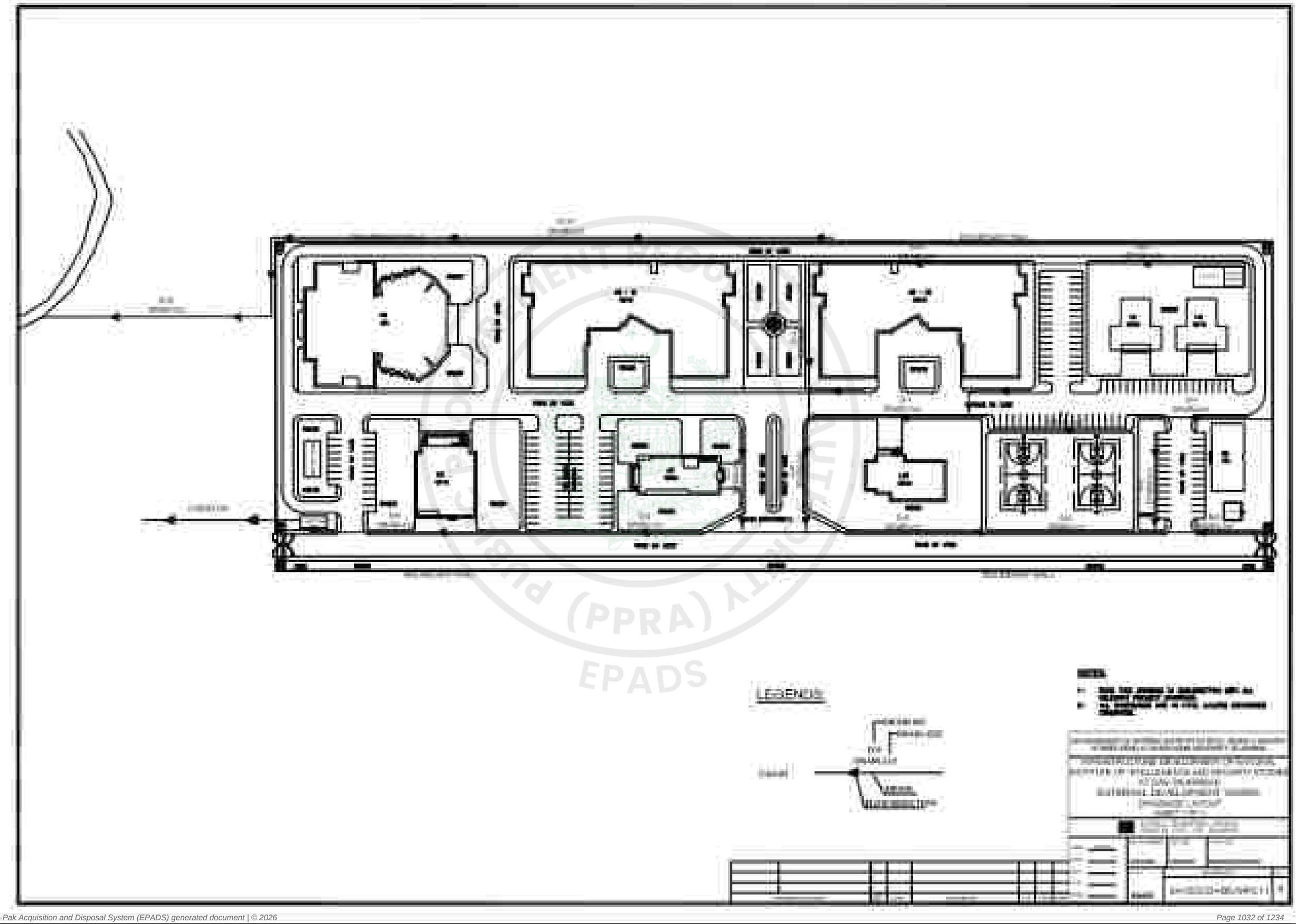

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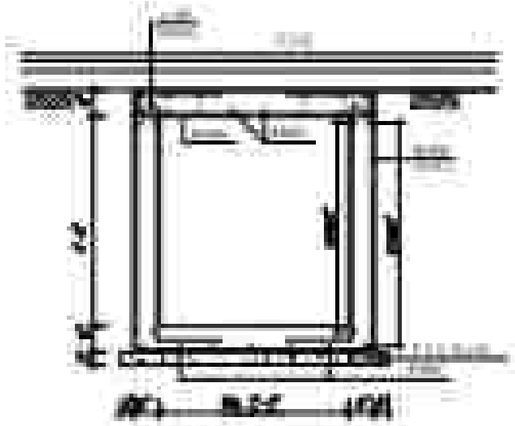

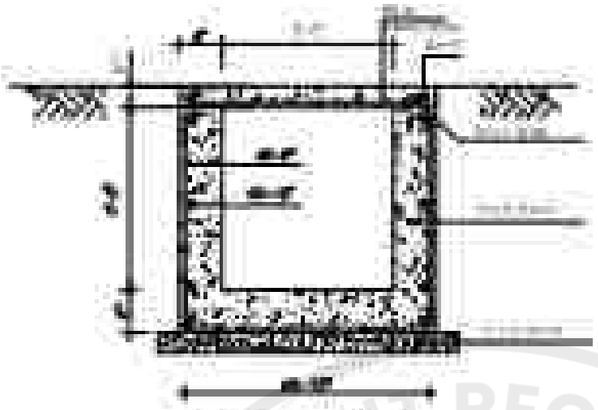

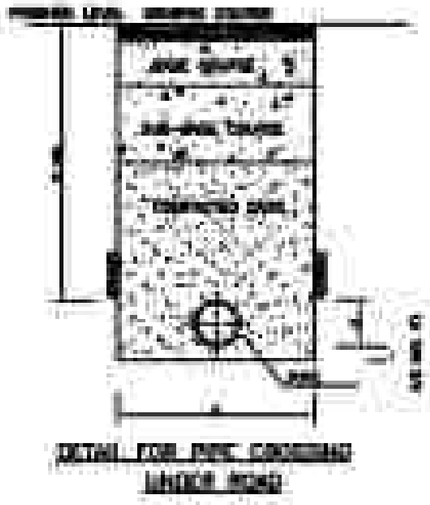

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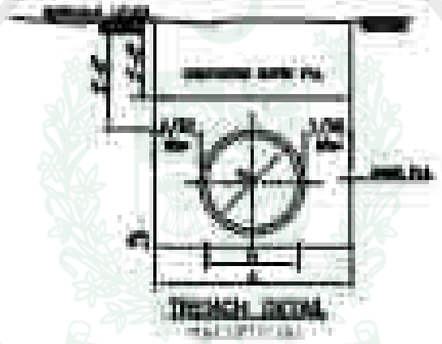

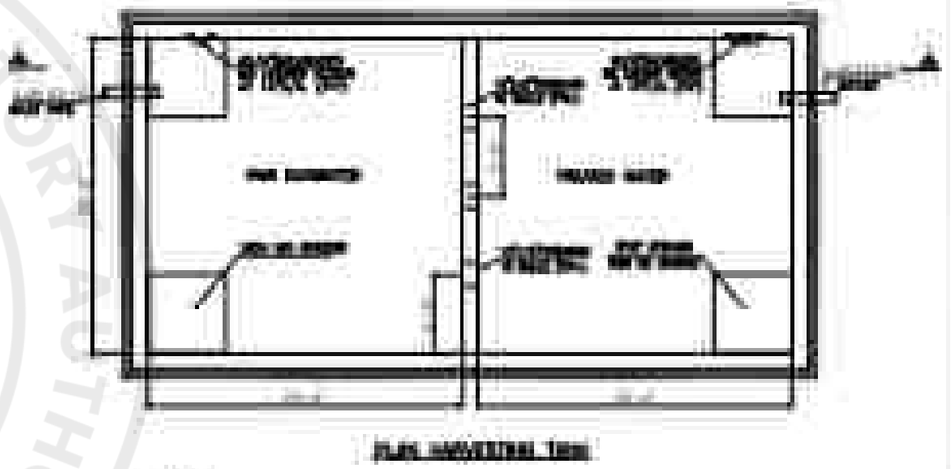

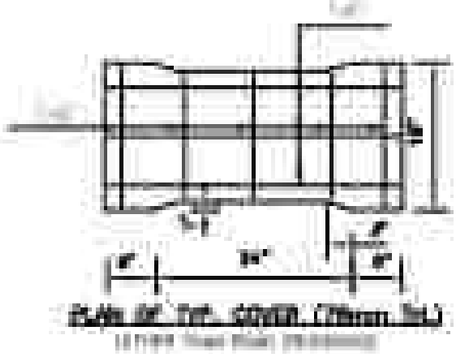

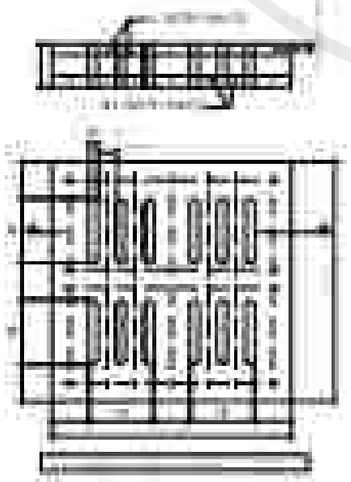

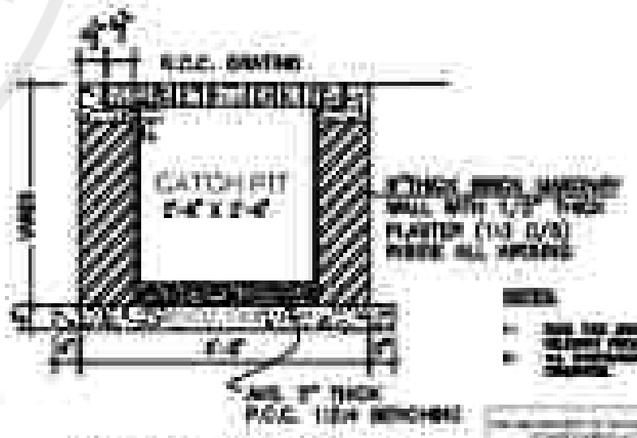

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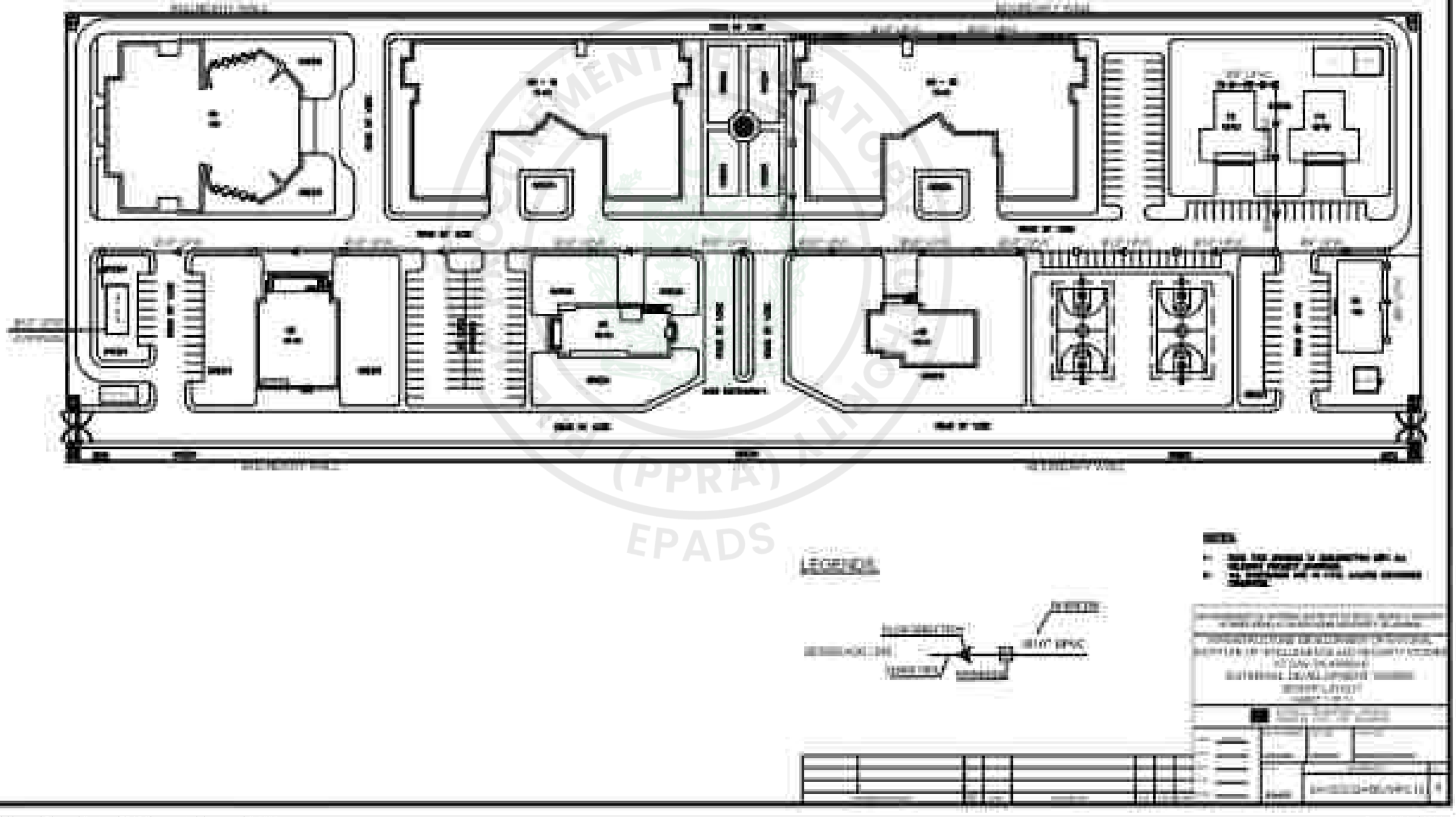

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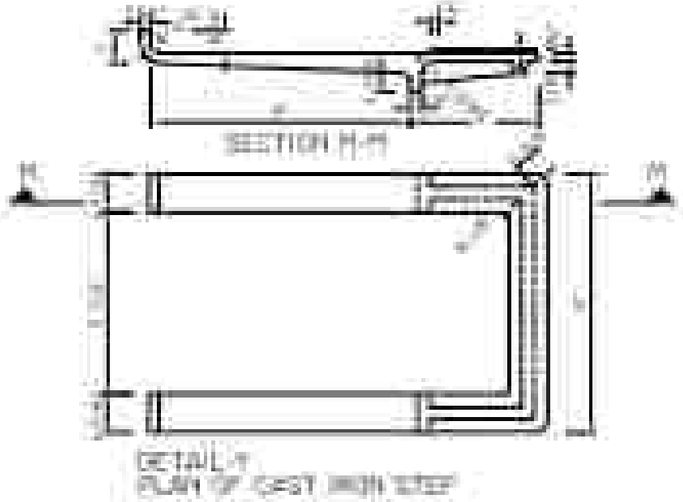
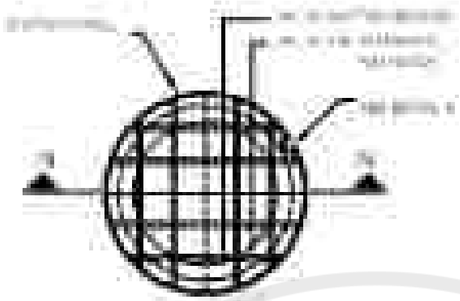
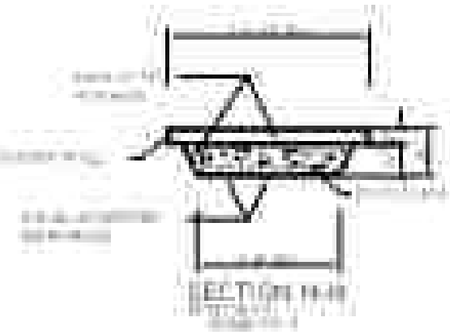
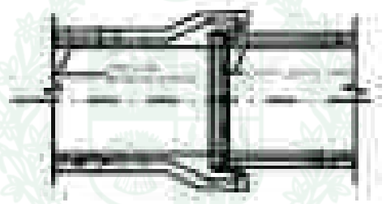
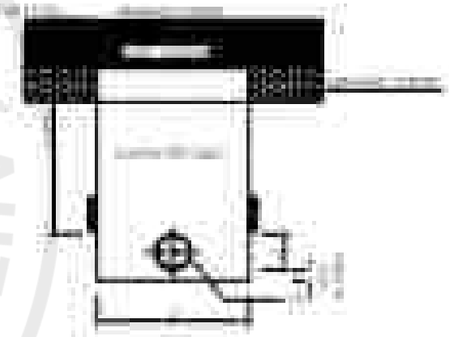




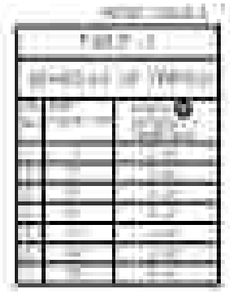


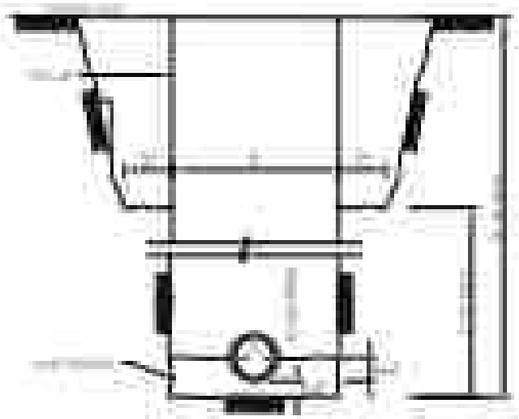


SPECIFIC SOCKET AND SPIGOT JOINT AND REINFORCEMENT DETAILS



DETAIL FOR PIPE CROSSING UNDER PAVED AREA





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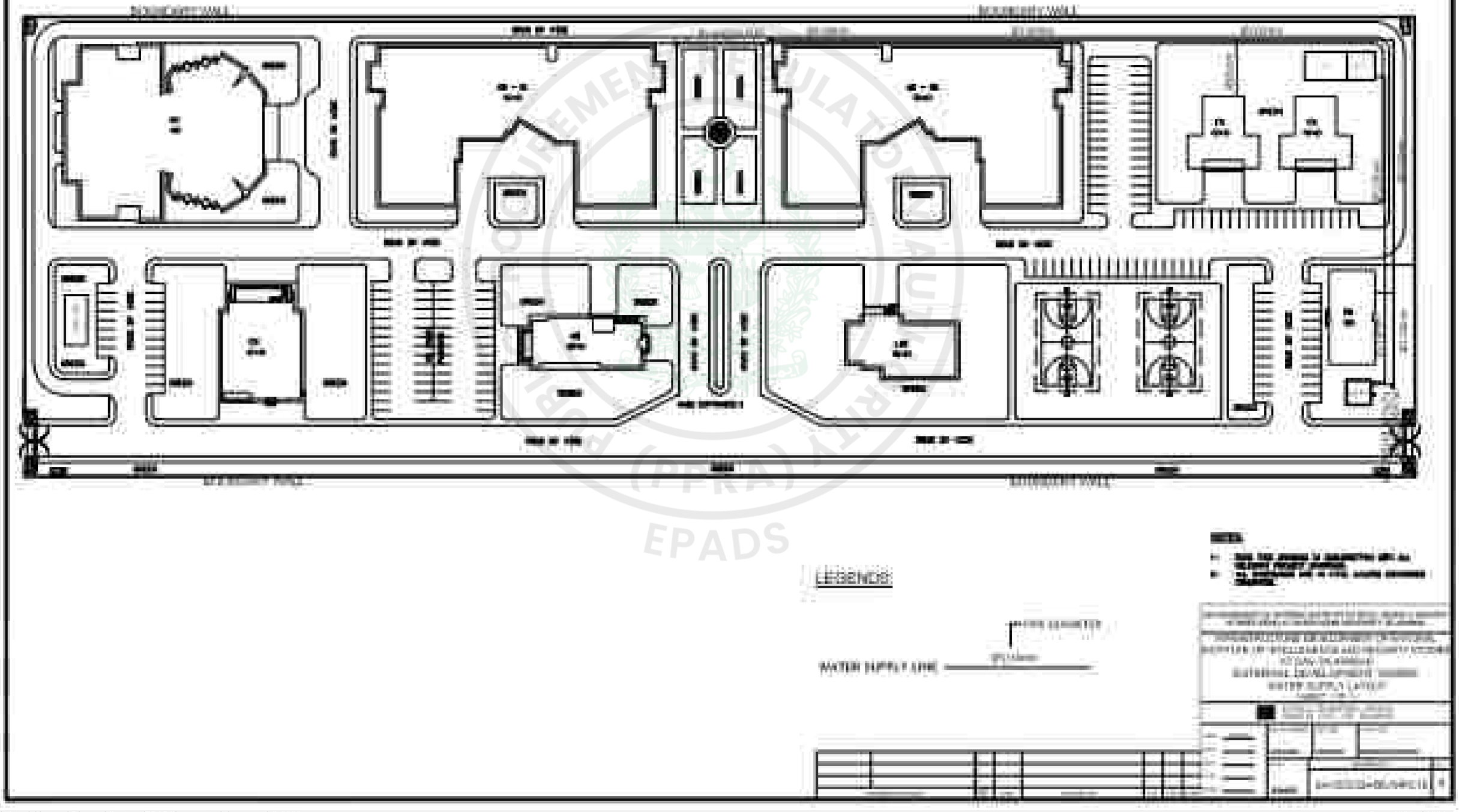

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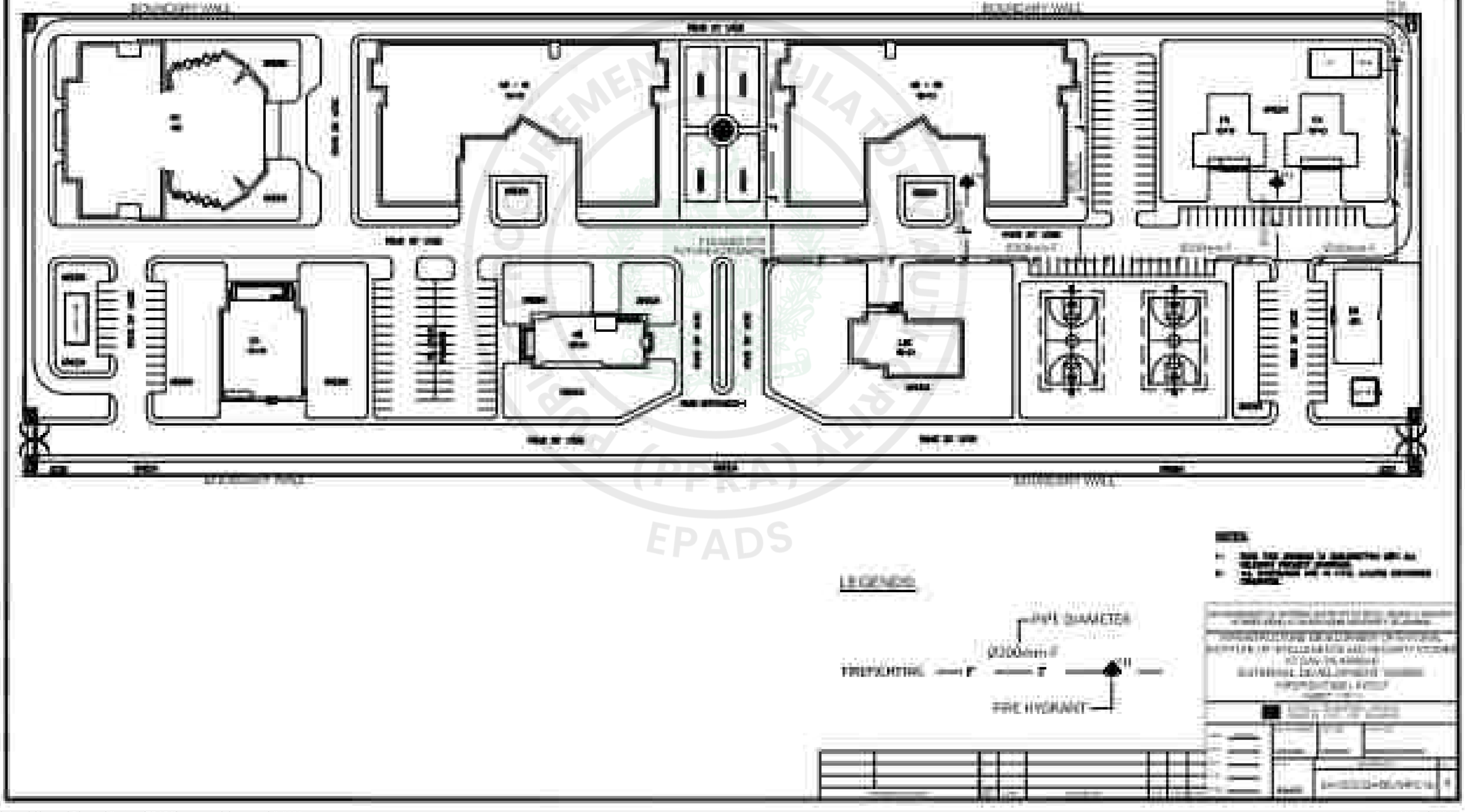

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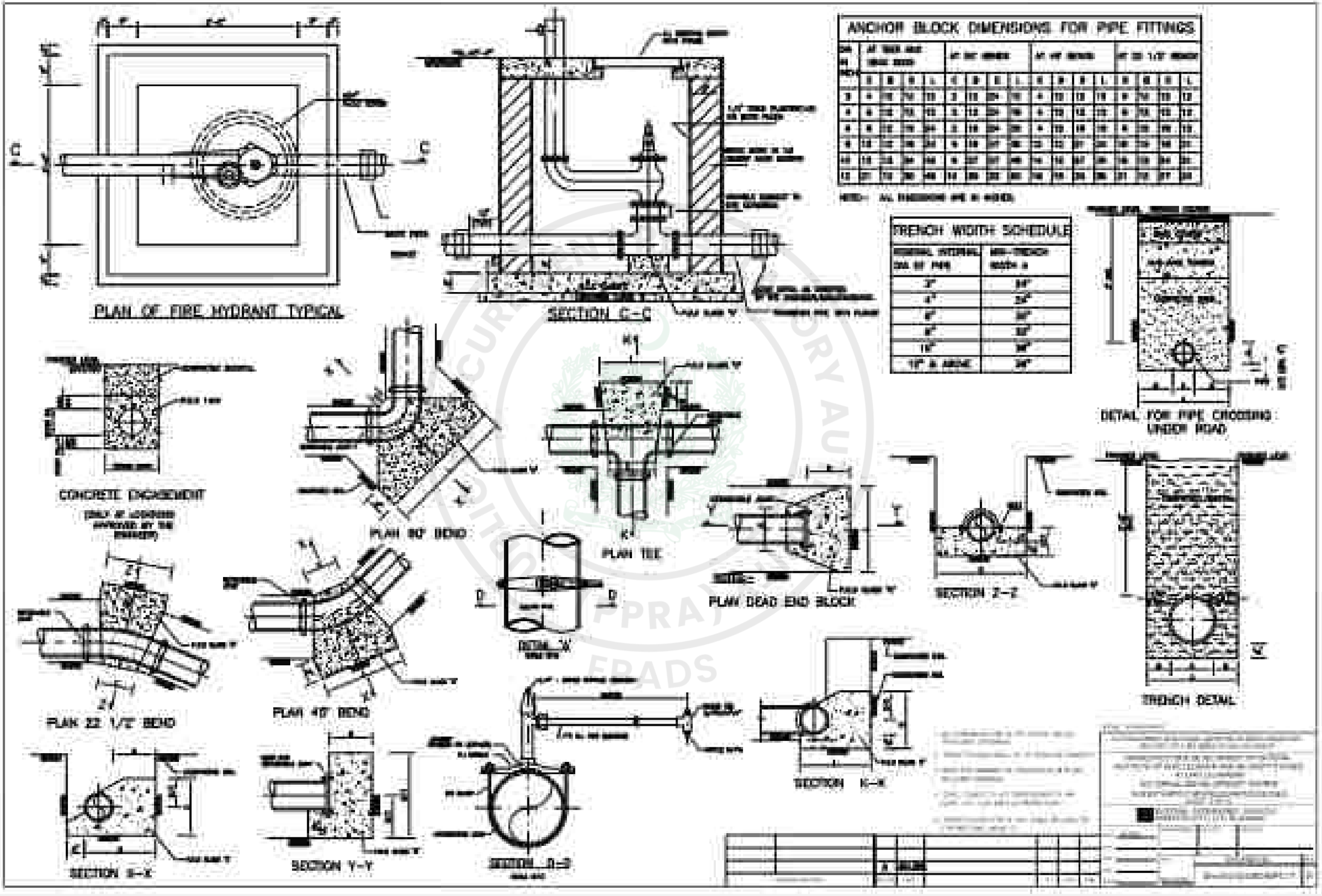
PLAN OF FIRE HYDRANT TYPICAL
SECTION C-C
ANCHOR BLOCK DIMENSIONS FOR PIPE FITTINGS
TRENCH WIDTH SCHEDULE
DETAIL FOR PIPE CROSSING UNDER ROAD
CONCRETE ENCASEMENT
PLAN 90° BEND
PLAN TEE
PLAN DEAD END BLOCK
SECTION Z-Z
TRENCH DETAIL
PLAN 22 1/2° BEND
PLAN 45° BEND
DETAIL 'A'
SECTION K-K
SECTION S-X
SECTION Y-Y
SECTION D-D

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD

ACADEMIC BLOCK (ST)

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

BIDDING DRAWINGS

VOLUME - III (B)

MISCELLANEOUS DETAILS

MAY, 2026

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

ARCHITECTURAL DETAILS

ABBREVIATIONS

AD	ALUMINIUM DOOR
AL	ALUMINIUM
ANO	ANODIZED
CG	CLEAR GLASS 5mm THICK
CP	COMMERCIAL PLY
D	DOOR
DH	DOOR HANDLE
DG	DOUBEL GLAZED
DL	DOUBLE LEAF
DS	DOUBLE SWING
DW	DEODAR WOOD
EL	STRUCTURAL LEVEL
EQ	EQUAL
F	FIXED GLASS
FD	FLUSH DOOR
FFL	FINISHED FLOOR LEVEL
FG	FROSTED GLASS
FL	FAN LIGHT
FO	FOLDING DOOR
FP	FLY PROOFING
FV	FORMICA VENEERED
GI	GALVANIZED IRON SHEET
GL	GLASS
GW	GLASS WINDOW
SW	SPIDERWEB
RG	REFLECTIVE GLASS
LP	POLISH
LD	L DROP (SLIDING BOLT)
LW	LASANI WOOD
MDF	MEDIUM DENSITY FIBER BOARD
MS	MILD STEEL
O	OPENABLE
P	PAINT
PC	POWDER COATED
PD	PANELED DOOR
PW	PARTAL WOOD
RS	ROOLUP SHUTTER
S	SLIDING
SBS	STEEL BOX SECTION
SD	STEEL DOOR
SDL	STEEL DOOR LOUVERED
SL	SINGLE LEAF
SS	STAINLESS STEEL
TH	TOP HUNG
TG	TINTED GLASS
TS	TWO SHUTTERS (ONE PANELED & ONE FLY PROOF)
V	VENTILATOR
VG	VIEWING GLASS
W	WINDOW

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE	ABBREVIATIONS
NATIONAL ENGINEERING SERVICES SECTOR G-5/2 ISLAMABAD.		SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J01 / REV. 0

ARCHITECTURAL DETAILS

HARDWARE

F1	1/8" x 1 1/2" x 10" CRANK SHAPED HOLD FAST
H1	BRASS HINGE 5" LONG WITH STEEL BEARING
H2	STEEL HINGE 6" LONG (HEAVY DUTY) WITH STEEL BEARING
H3	FLOOR MOUNTED DOOR CLOSER(CONCEALED TYPE)
H4	STRIP HINGE
TB	6" LONG BRASS TOWER BOLT HEAVY DUTY
KP	6" x WIDTH OF DOOR SHUTTER KICK PLATE BOTH SIDES(BRUSHED STAINLESS STEEL)
PP	4"x 8" PUSH PLATE BRUSHED STAINLESS STEEL.
PB	PUSH BAR 6" HIGH WIDTH OF SHUTTER
L1	HEAVY DUTY CYLINDRICAL LOCK SETS,WITH HANDLES KEY OPENABLE OPERATION OUTSIDE (IMPORTED OF EUROPEAN ORIGIN)
L2	HEAVY DUTY CYLINDRICAL LOCK SETS,WITH HANDLES KEY OPENABLE OPERATION OUTSIDE WITH PUSH BUTTON LOCKING ARRANGEMENT INSIDE (IMPORTED OF EUROPEAN ORIGIN)
L3	HEAVY DUTY CYLINDRICAL LOCK SETS,WITH HANDLES KEY OPENABLE OPERATION OUTSIDE/INSIDE (IMPORTED OF EUROPEAN ORIGIN)
L4	DOOR LATCH FOR TOILET DOORS
L5	SLIDING BOLT
DC	HYDRAULIC DOOR CLOSER
DH	DOOR HANDLE

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE	HARDWARE
NATIONAL ENGINEERING SERVICES SECTOR G-5/2 ISLAMABAD.		SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J02 / REV. 0

ARCHITECTURAL DETAILS

TYPE	DESCRIPTION	MASONRY OPENING		MATERIAL		FINISHES		HARDWARE								
		WIDTH	HEIGHT	FRAME	SHUTTER	FRAME	SHUTTER	HOLD FAST	HINGES	LOCKS	TOWER BOLTS	PUSH PLATE	KICK PLATE	DOOR CLOSER	DOOR HANDLE	L DROP
D1	AL-DL-GL	10'-0"	8'-0"													
D2	FD-DL-VG	5'-0"	8'-0"													
D3	FD-SL-VG	3'-6"	8'-0"													
D4	FD-SL	3'-6"	8'-0"													
D5	FD-SL	3'-0"	8'-0"													
D6	UPVC	2'-6	7'-0"													
DW1	AL-GL	33'-2"	10'-0"													
DW2	AL-GL	10'-0"	10'-0"													
DW3	AL-GL	6'-6"	10'-0"													
SD1	SD-DL	3'-6"	8'-0"													
CW1	AL-GL	44'-0"	20'-0"													
CW2	AL-GL	43'-0"	20'-0"													
CW2	AL-GL	42'-9"	10'-6"													
W1	AL-GL-TG	16'-0"	5'-0"	AL	AL-GL	ANO	ANO-TG									
W2	AL-GL-TG	8'-0"	5'-0"	AL	AL-GL	ANO	ANO-TG									
W3	AL-GL-TG	6'-9"	5'-0"	AL	AL-GL	ANO	ANO-TG									
W4	AL-GL-TG	6'-0"	5'-0"	AL	AL-GL	ANO	ANO-TG									
W5	AL-GL-TG	6'-0"	24'-0"	AL	AL-GL	ANO	ANO-TG									
W6	AL-GL-TG	5'-0"	5'-0"	AL	AL-GL	ANO	ANO-TG									
W7	AL-GL-TG	4'-0"	5'-0"	AL	AL-GL	ANO	ANO-TG									
V1	AL-S	3'-0"	3'-0"	AL	AL-GL	ANO	ANO-TG									

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

PROJECT
ACADEMIC BLOCK (ST)
ESTABLISHMENT OF NATIONAL INSTITUTE
OF INTELLIGENCE AND SECURITY STUDIES
(NIISS) AT QAU, ISLAMABAD

TITLE
SCHEDULE OF OPENINGS
DOORS, DOORWINDOWS, VENTILATOR

NATIONAL ENGINEERING SERVICES
PAKISTAN (PVT.) LTD. ISLAMABAD

SCALE

DATE
MAY, 2026

NO.
SA-555/322/BD/02J03

REV.
0

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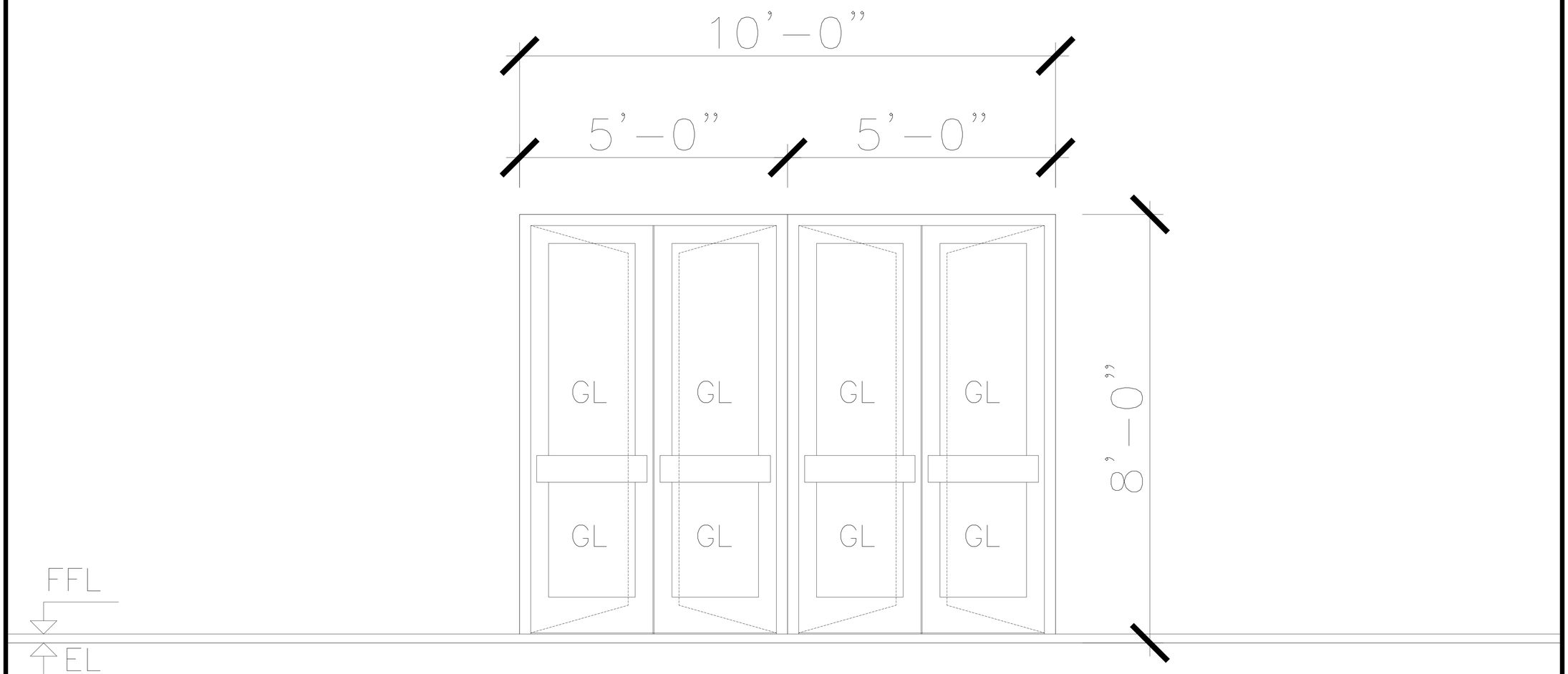

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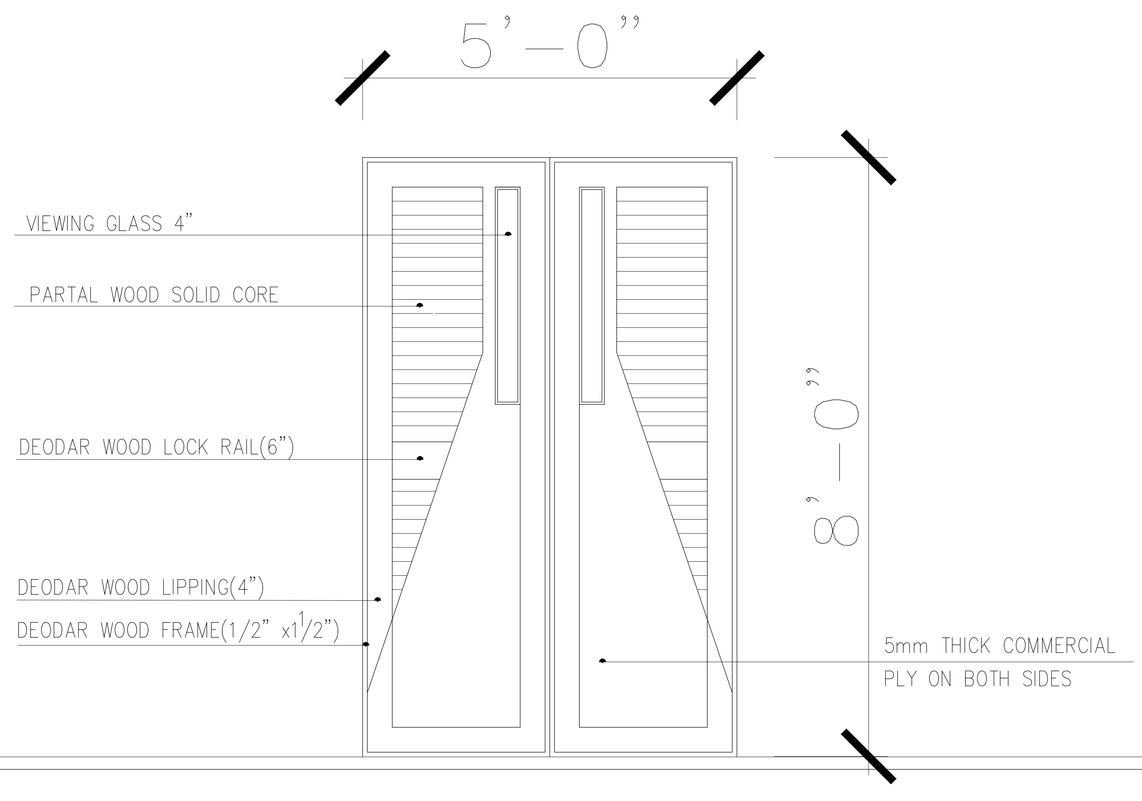

D2

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: DOOR ELEVATIONS D1 – D2	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J04 / REV.: 0

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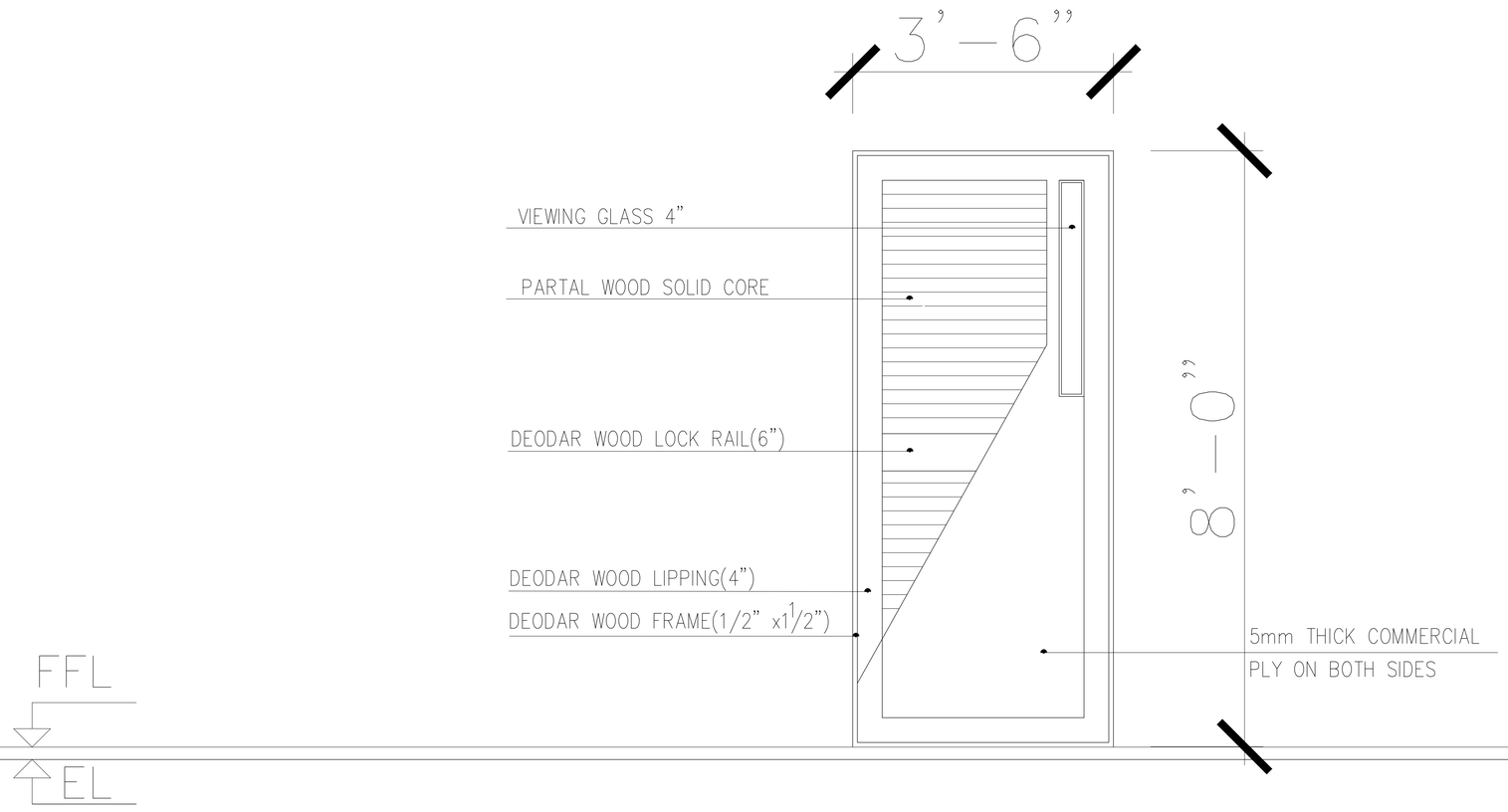

D3

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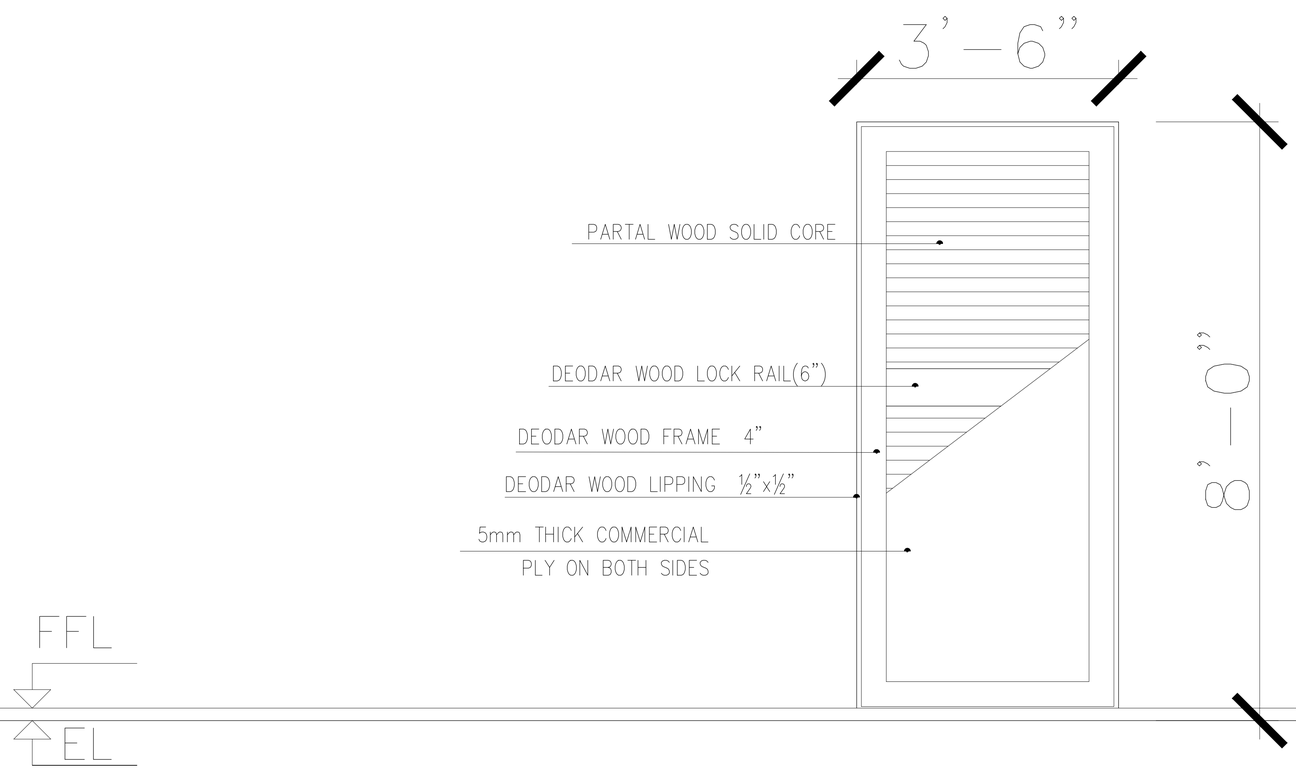

D4

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE: DOOR ELEVATIONS D3 – D4	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J05 REV.: 0

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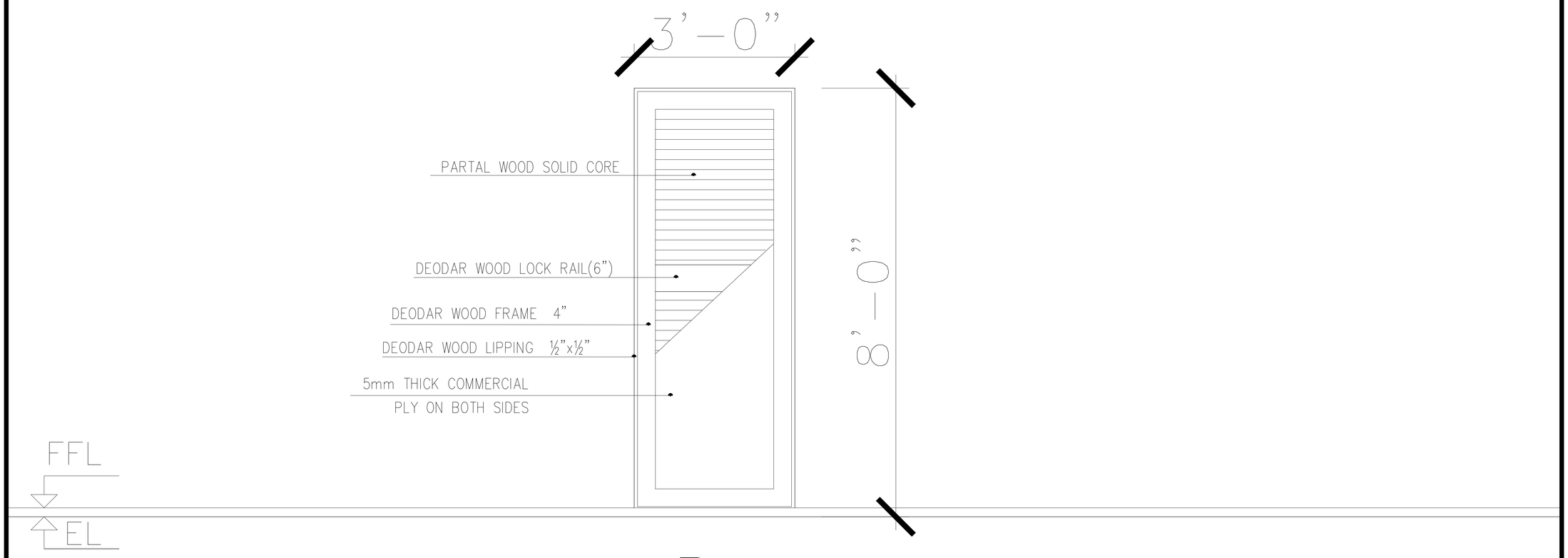

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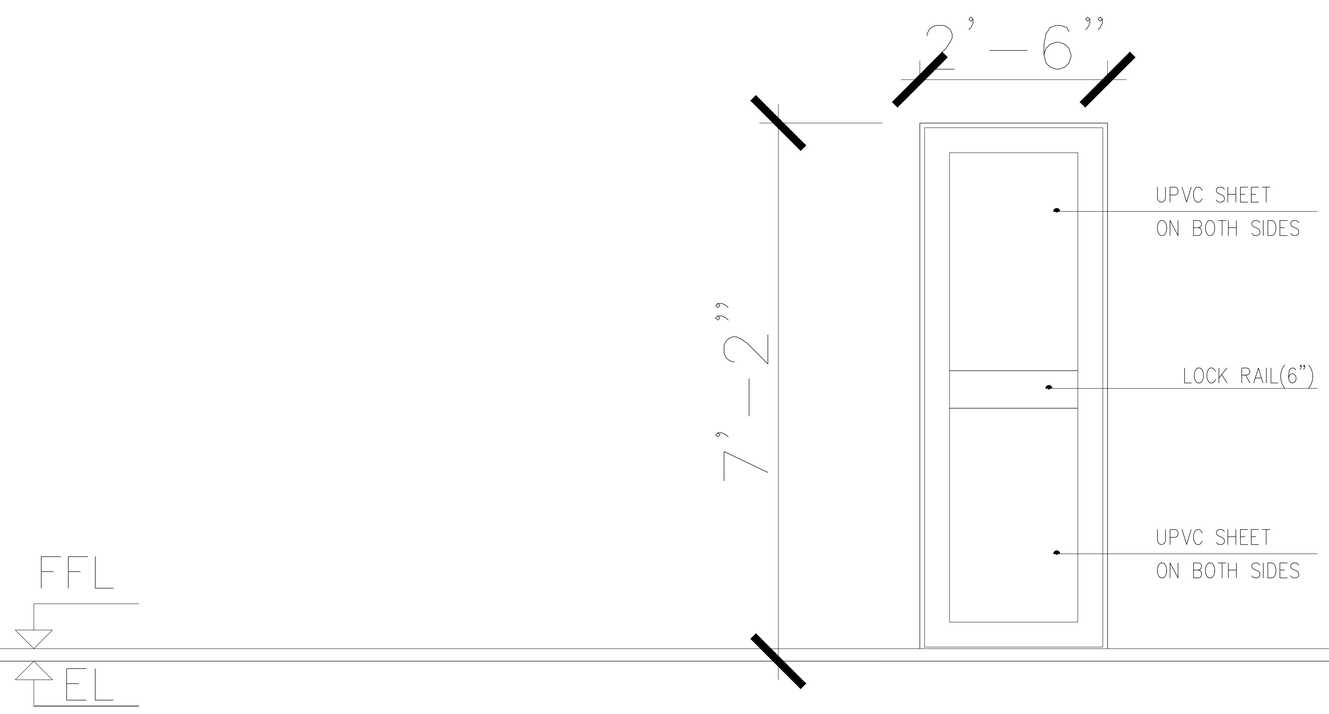
PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS



D6

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE: DOOR ELEVATIONS D5 – D6	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J06 REV.: 0

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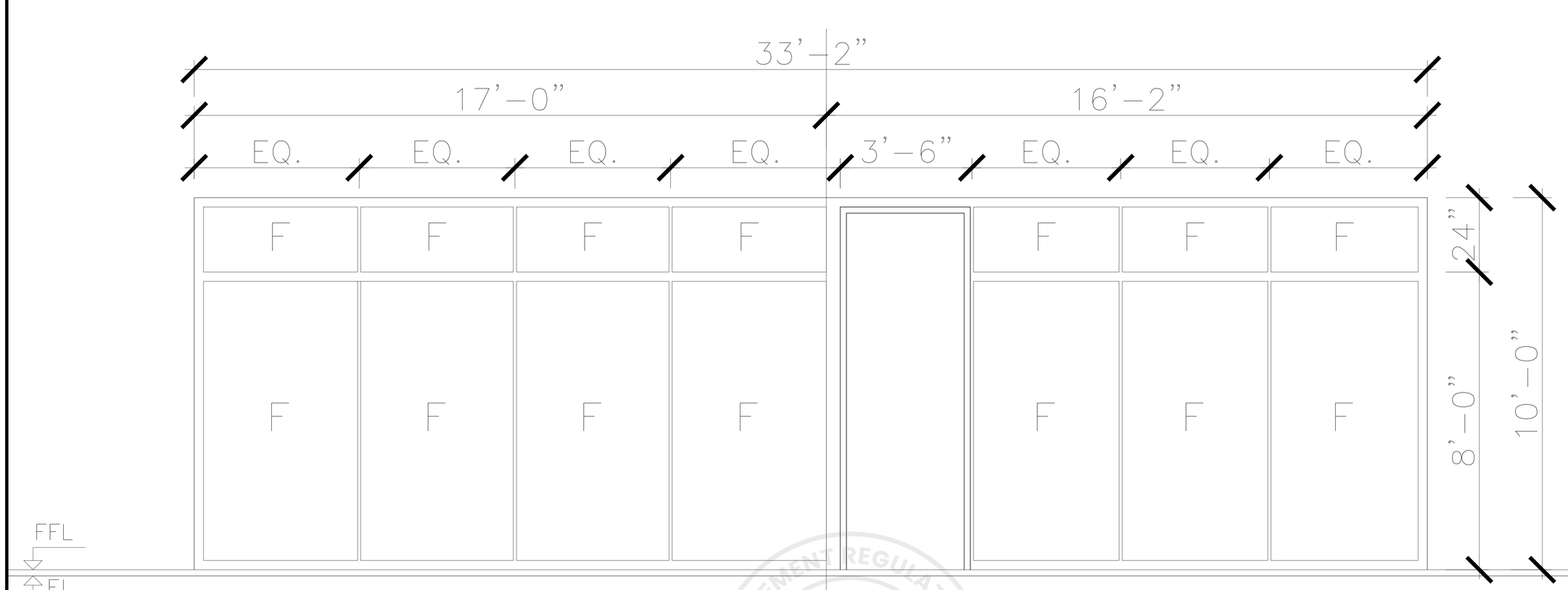

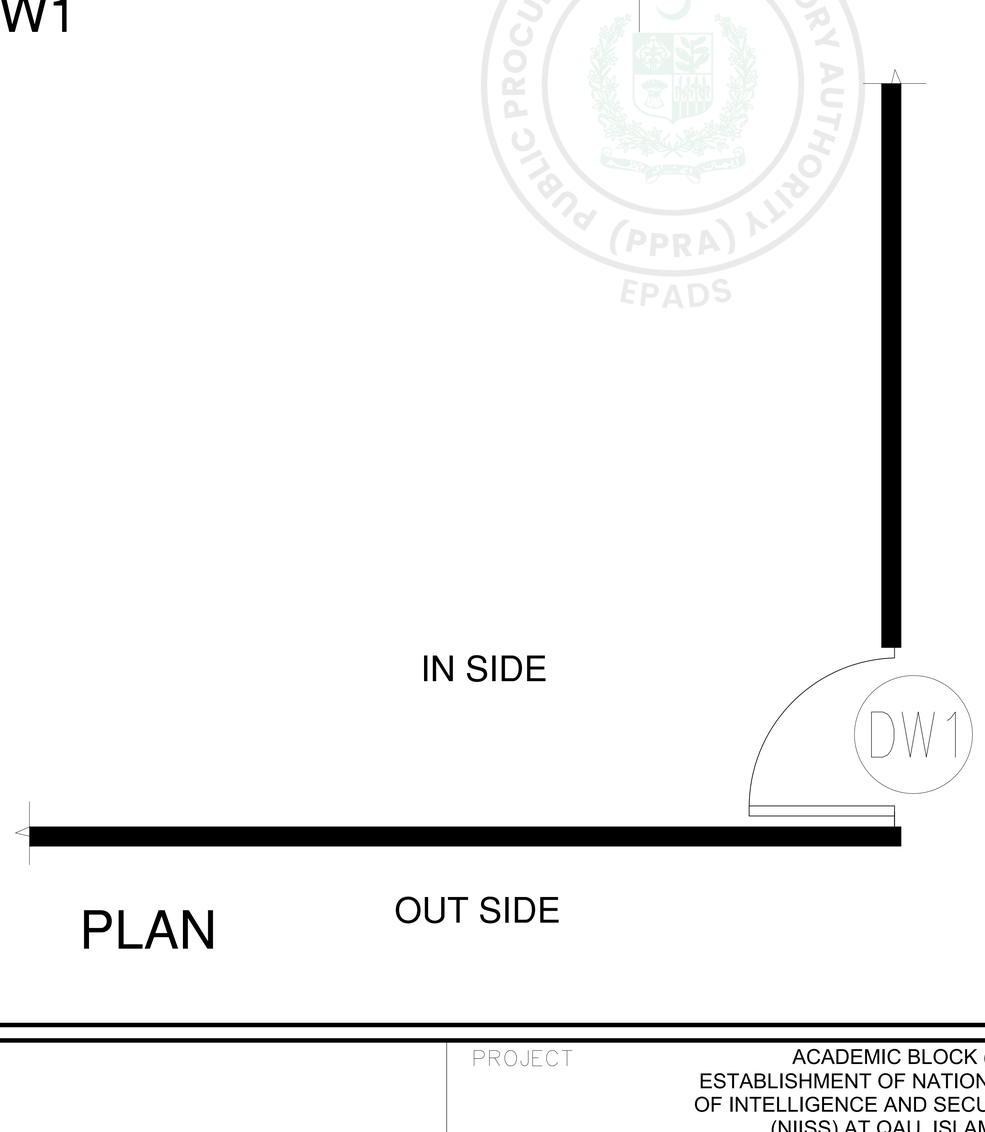

PLAN

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: CURTAIN WALL ELEVATION DW1	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J07 / REV.: 0

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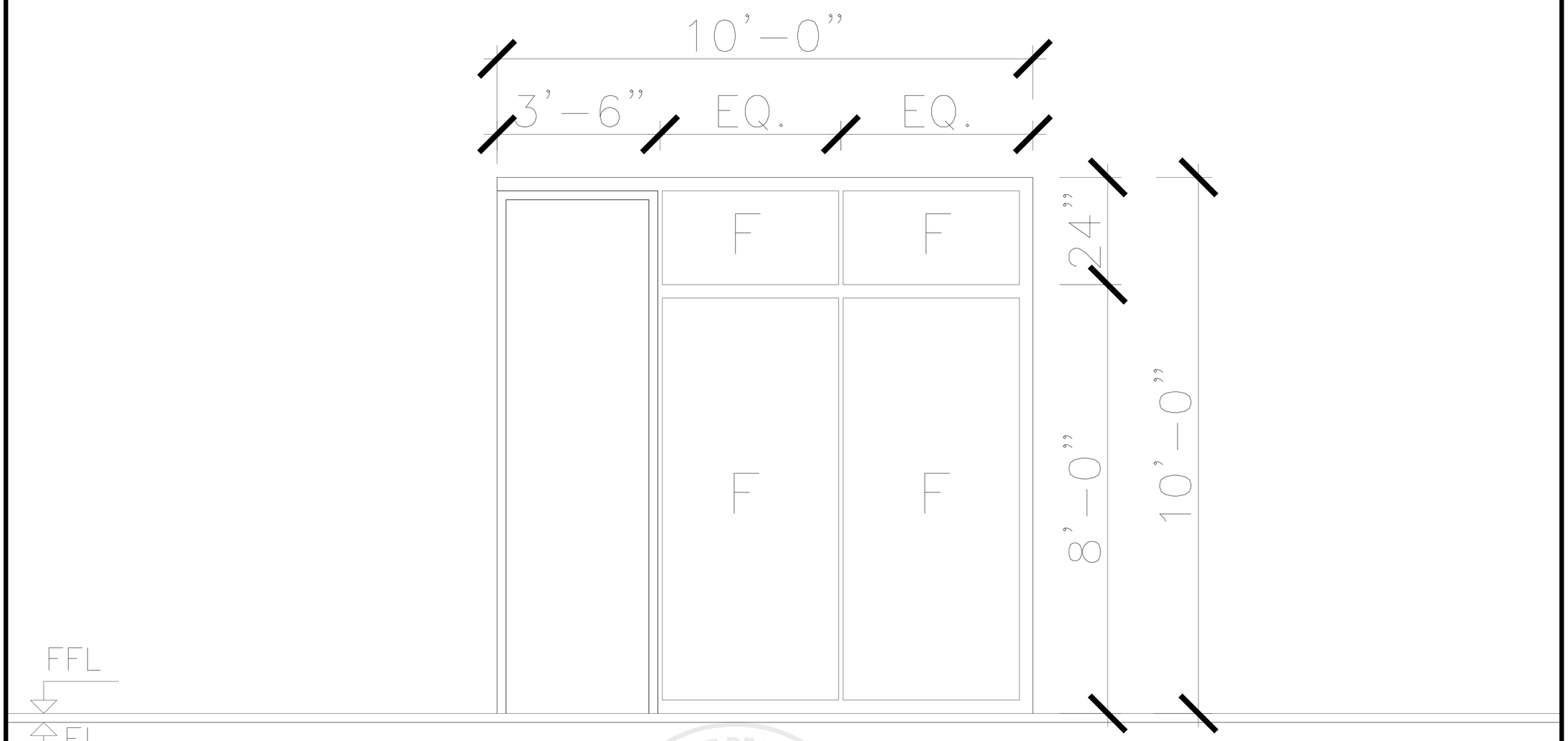

DW2

PLAN

PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE	DOOR ELEVATIONS DW2
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J08 REV. 0

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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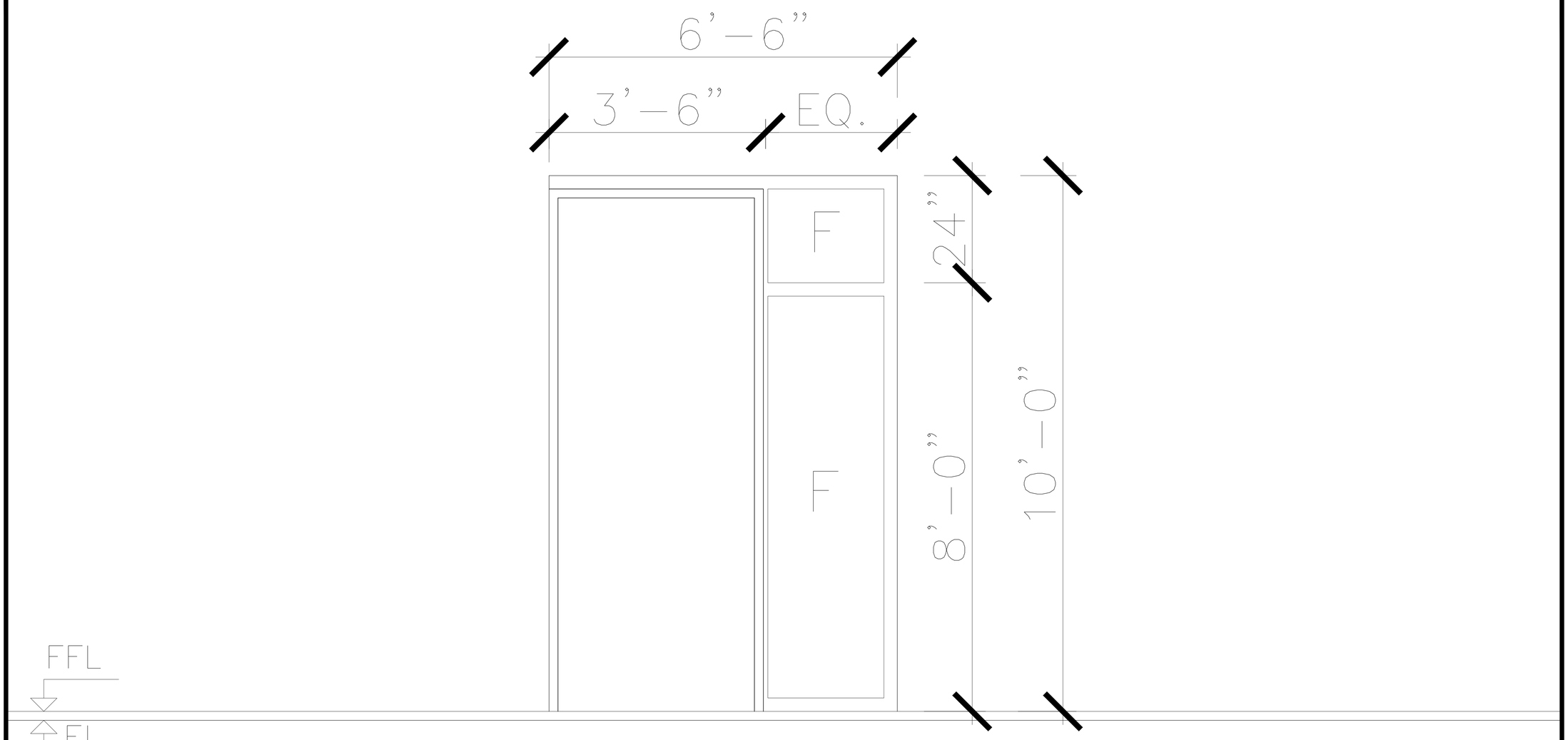

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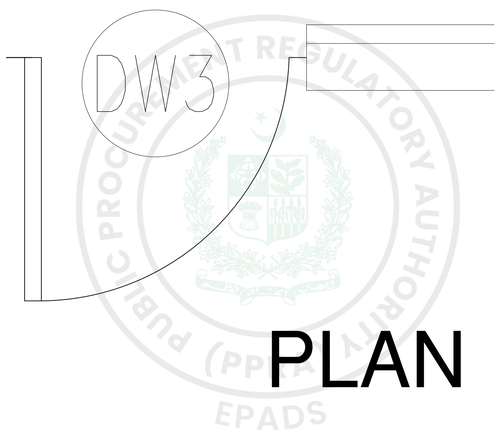
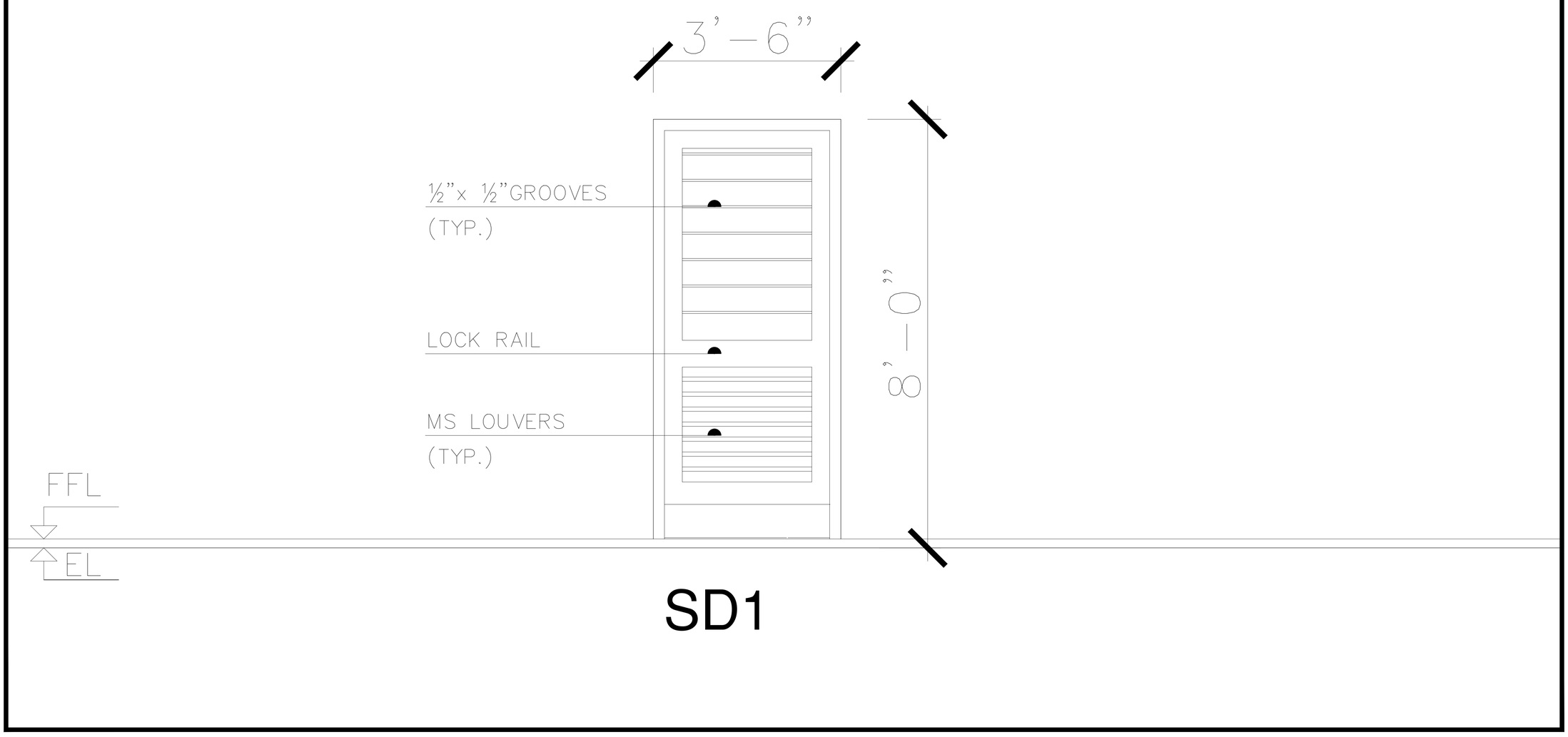


PLAN



SD1

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE: DOOR ELEVATIONS DW3 – SD1	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J09 REV.: 0

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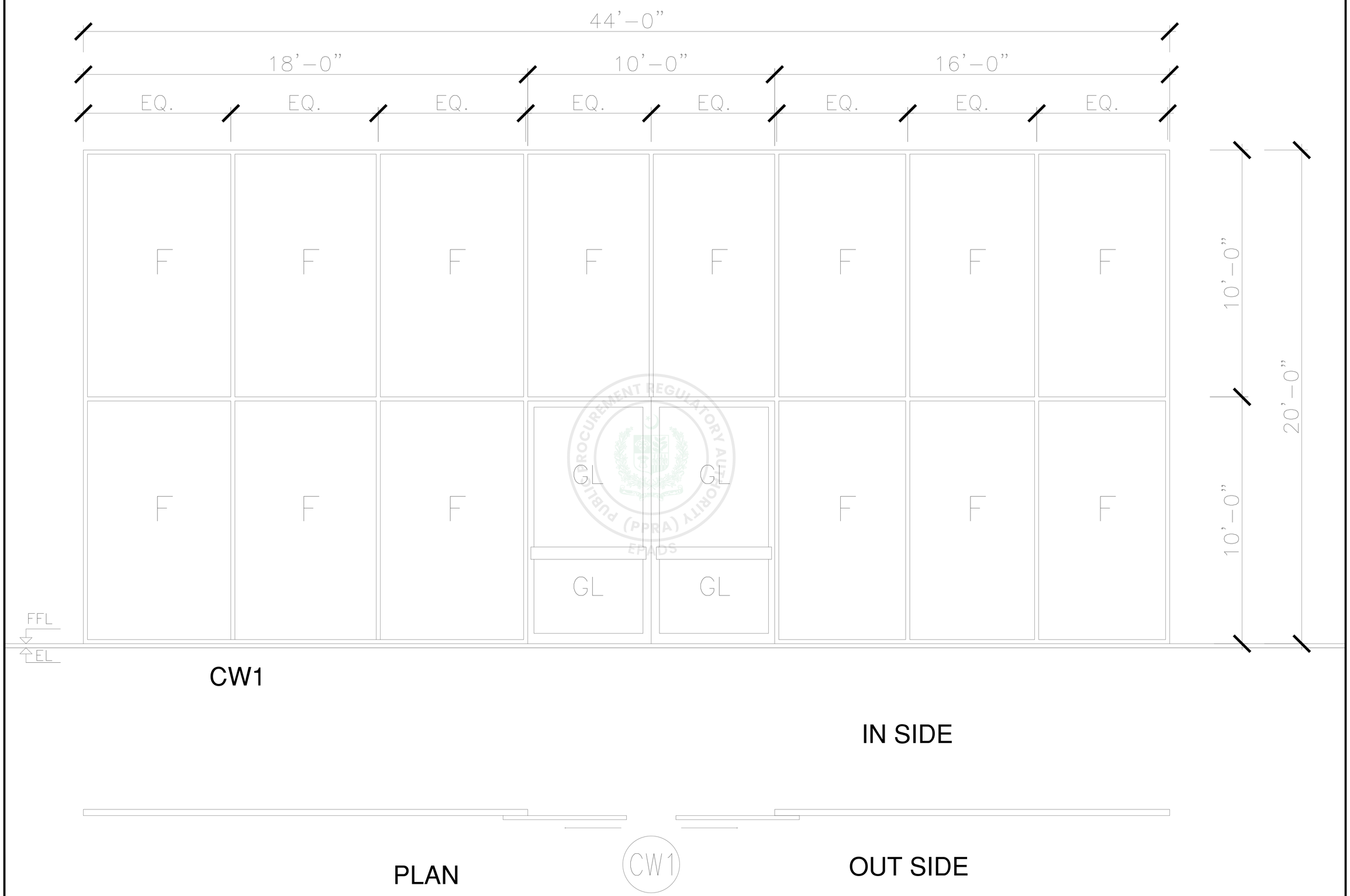

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: CURTAIN WALL ELEVATION CW1	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J10	REV.: 0

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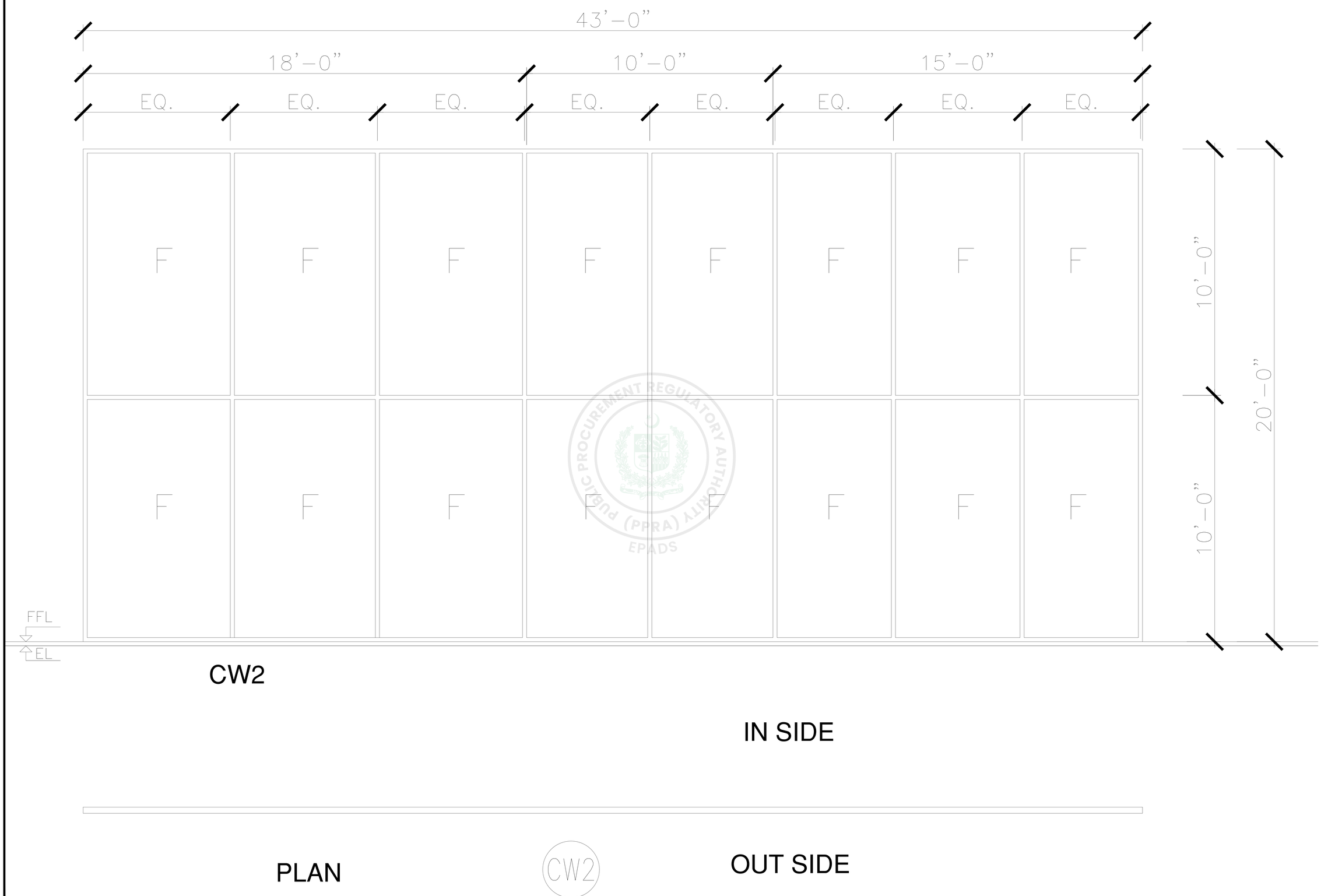

CW2

IN SIDE

PLAN

CW2

OUT SIDE

	PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE: CURTAIN WALL ELEVATION CW2
	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026 NO.: SA–555/322/BD/02J11 REV.: 0

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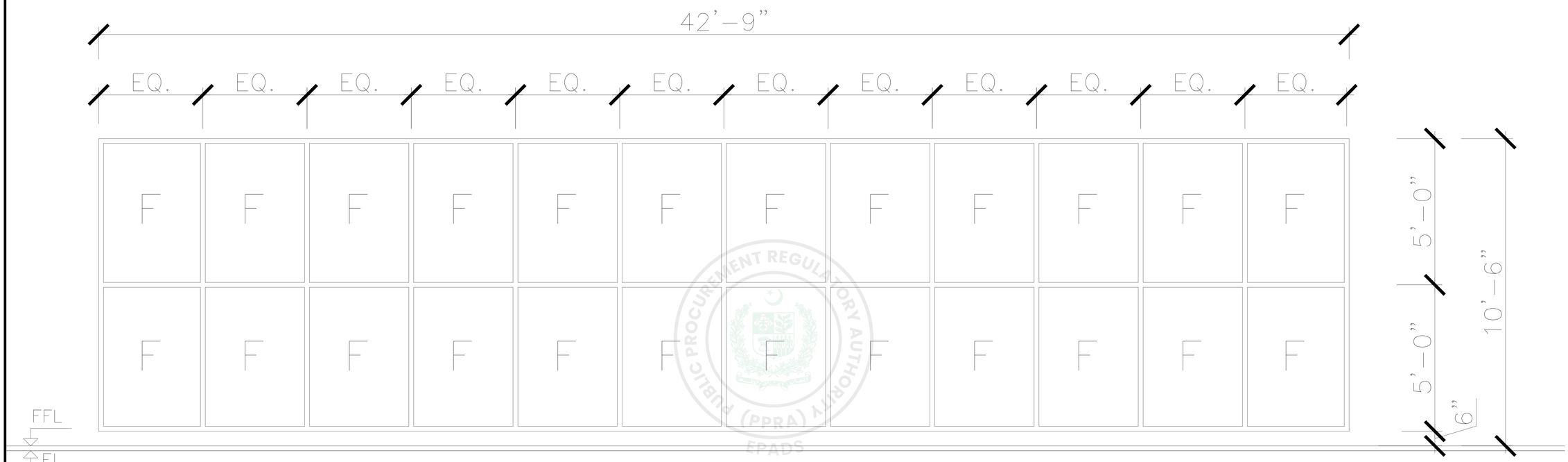

CW3

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: CURTAIN WALL ELEVATION CW3	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J12 / REV.: 0

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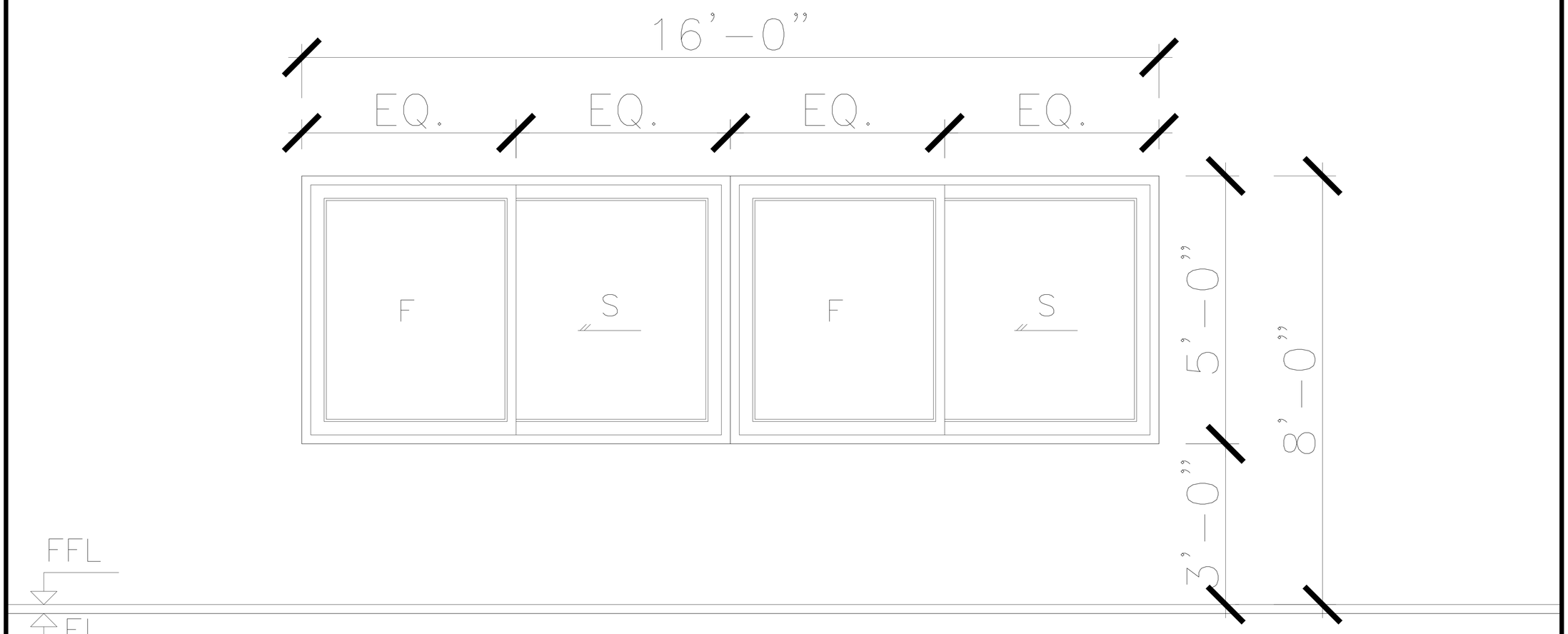
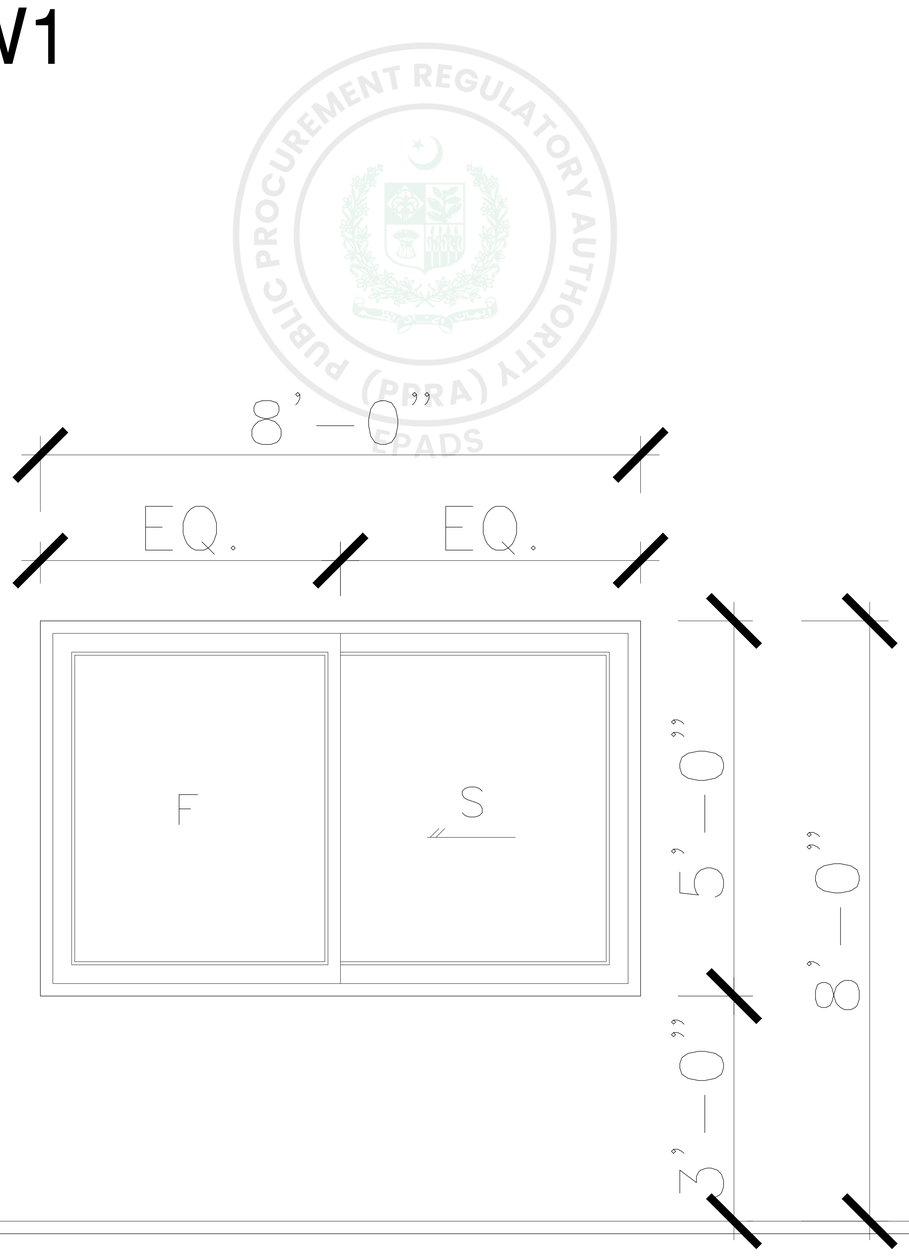
ARCHITECTURAL DETAILS



W1



W2

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: DOOR ELEVATIONS W1 – W2	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J13 / REV.: 0

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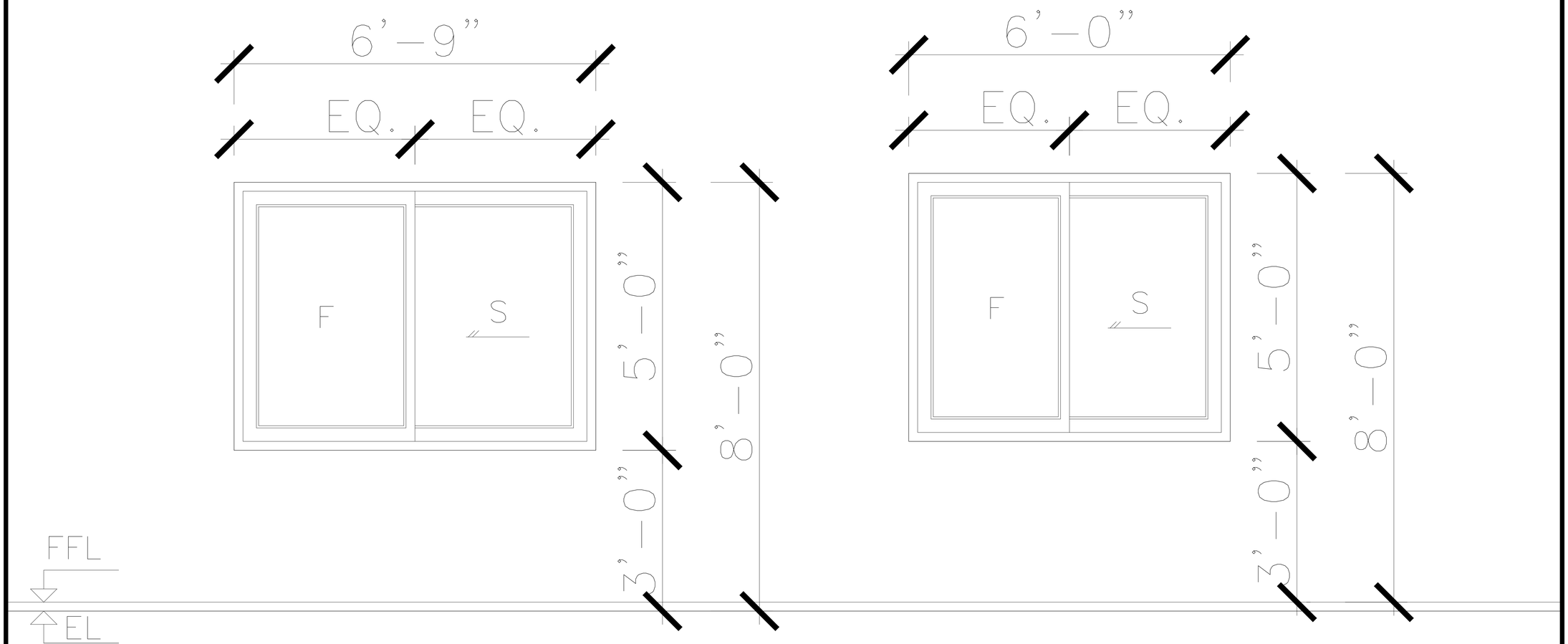

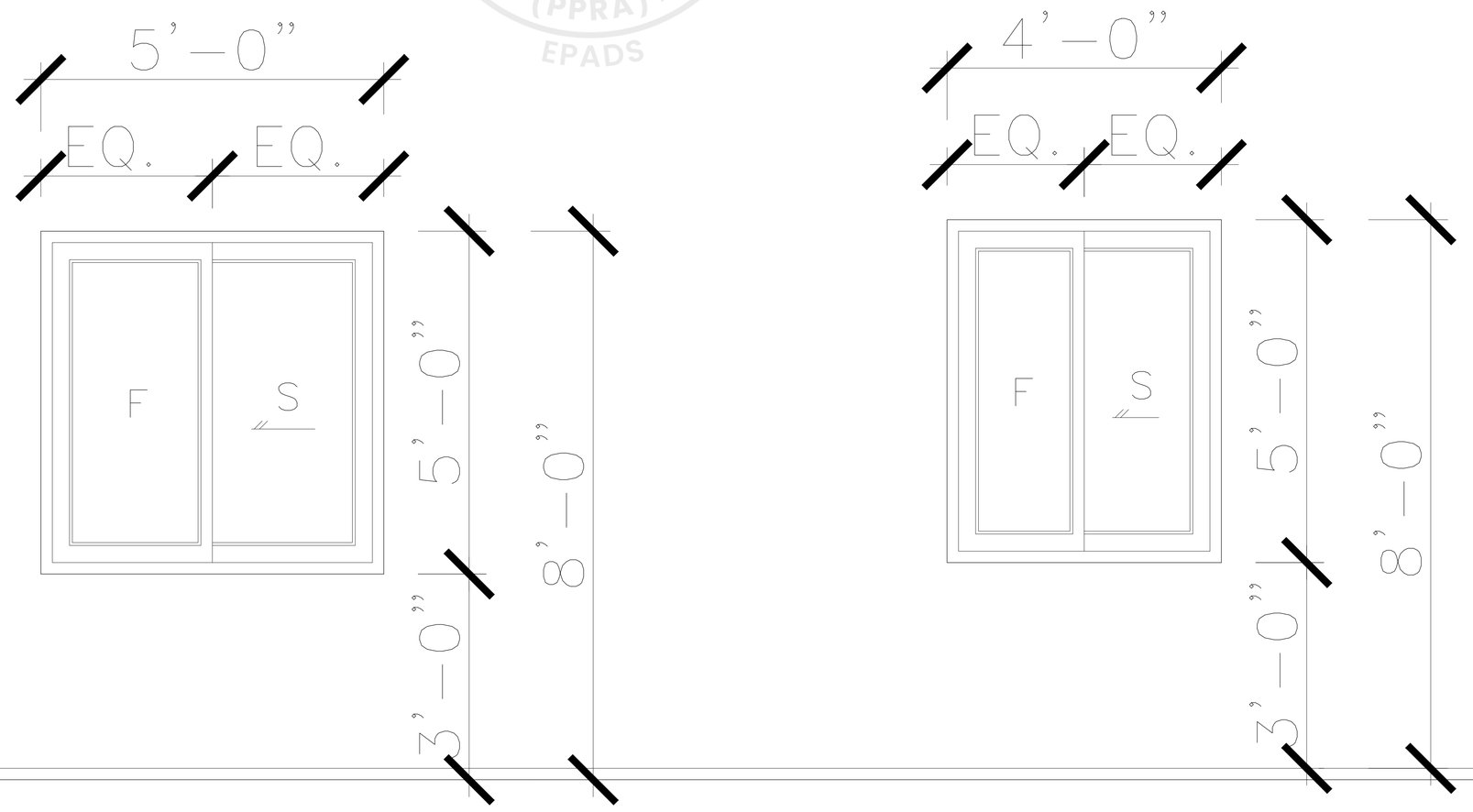

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: DOOR ELEVATIONS W3 – W4 – W6 – W7	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA–555/322/BD/02J14 / REV.: 0

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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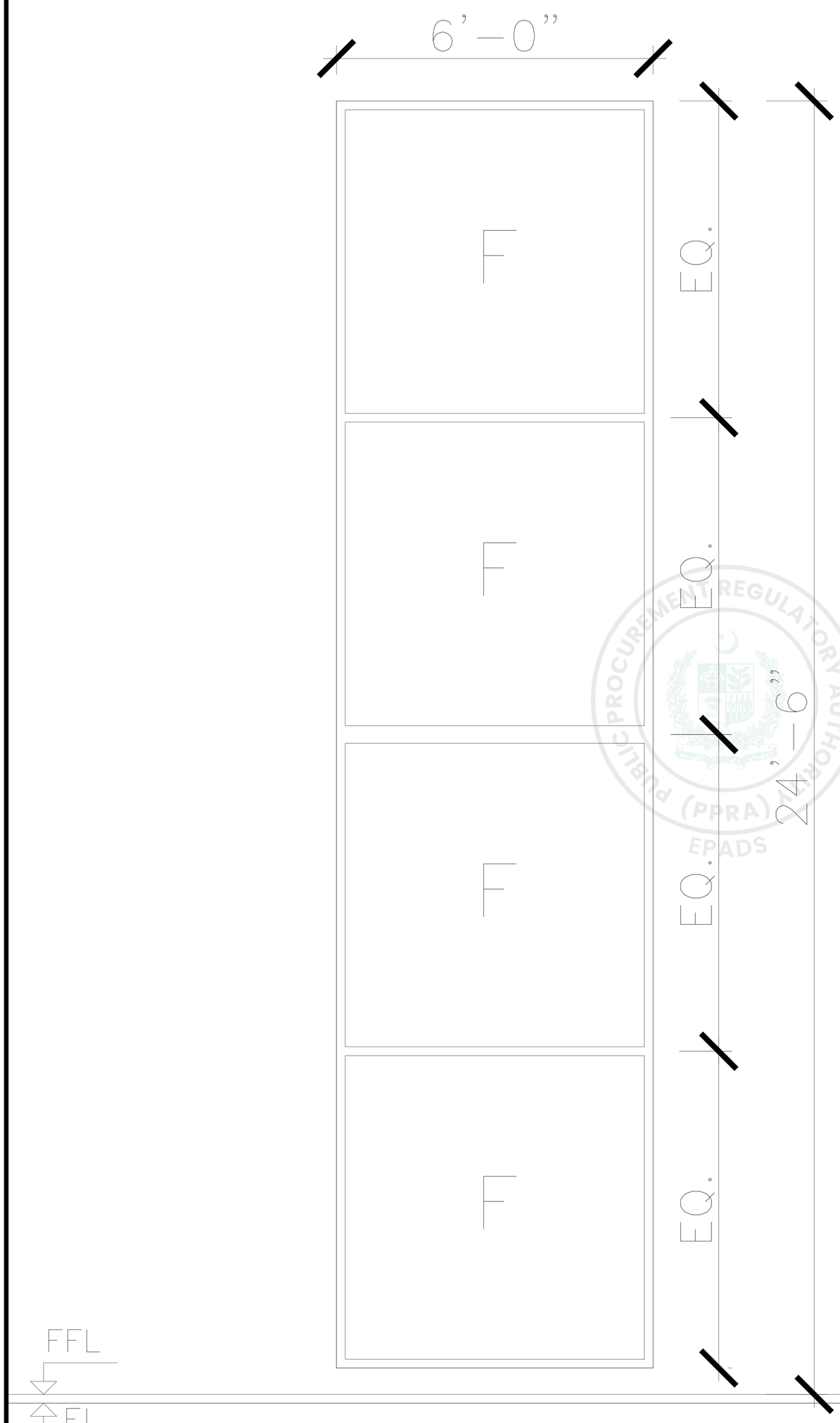
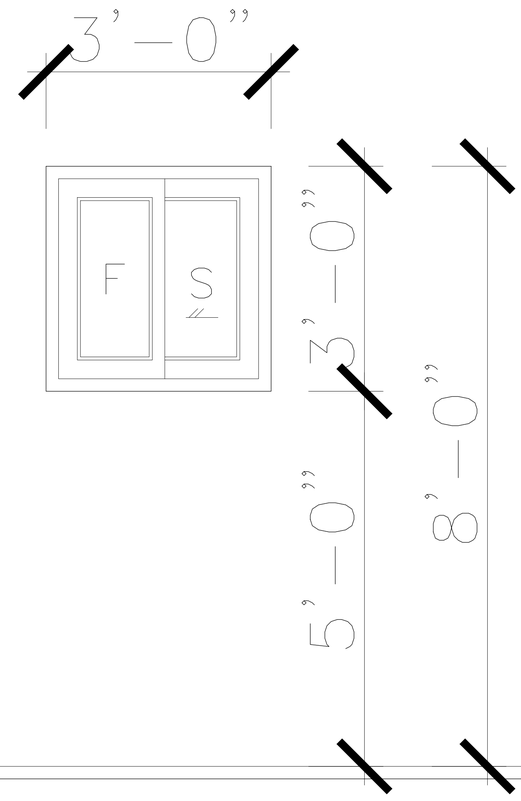
ARCHITECTURAL DETAILS



W5



V1

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: DOOR ELEVATIONS W5 – V1	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: JULY.,2025	NO.: SA-555/322/BD/02J15 / REV.: 0

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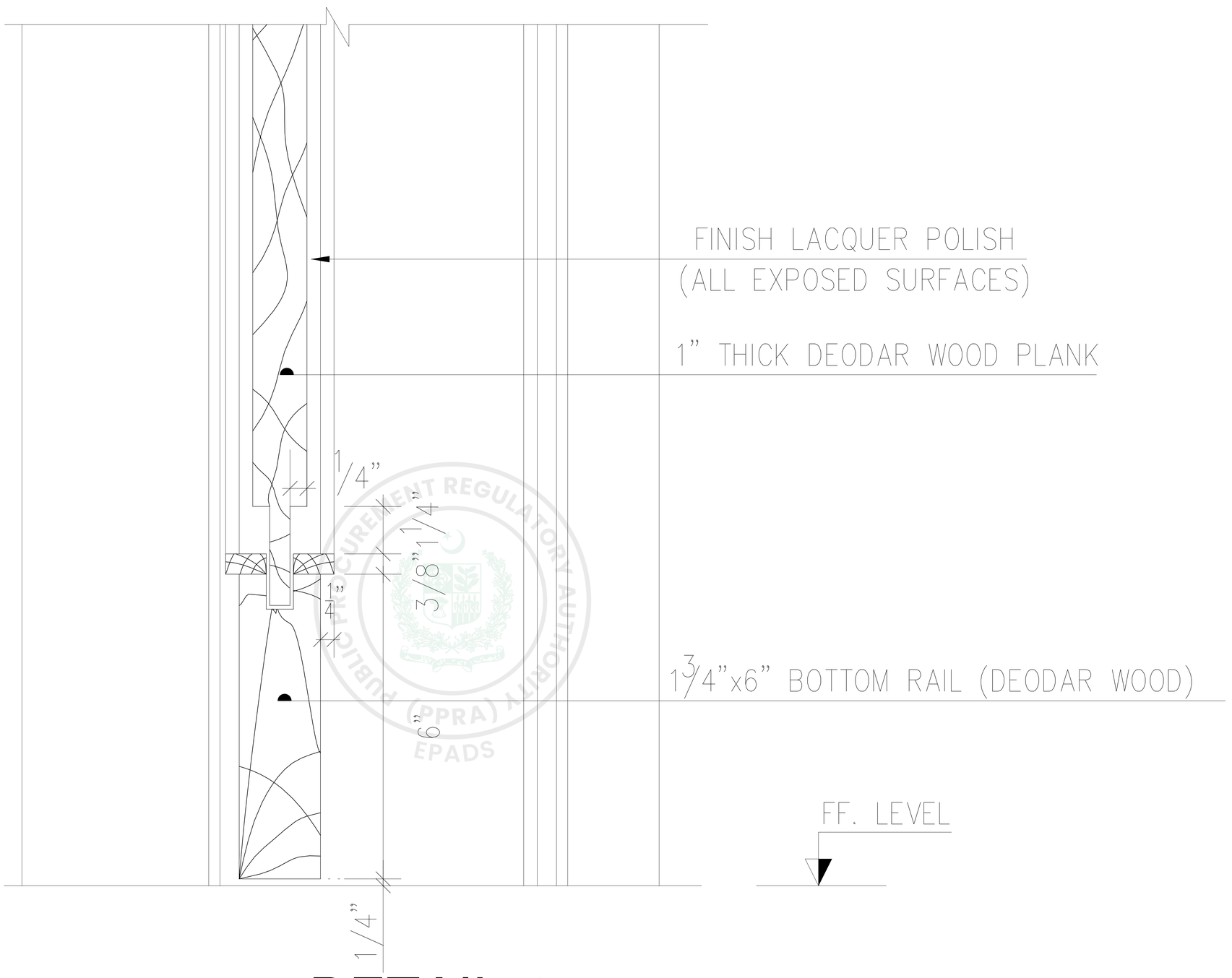
ARCHITECTURAL DETAILS



DETAIL-1

FOR DEODAR WOOD

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: BOTTAM RAIL DETAIL DETAIL –1	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA–555/322/BD/02J16 / REV.: 0

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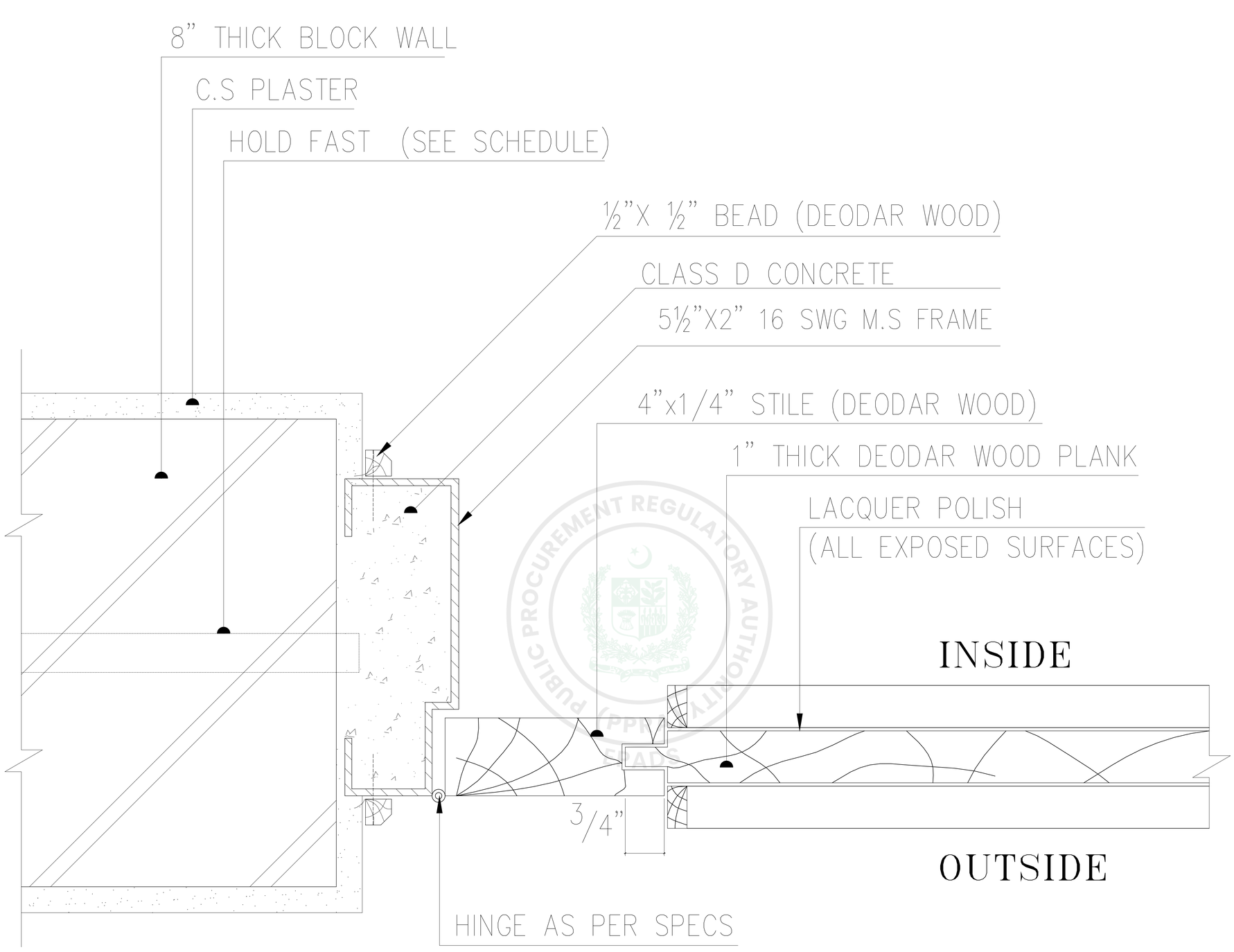
ARCHITECTURAL DETAILS



DETAIL-2

FOR DEODAR WOOD

PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE	DETAIL–2 (FOR 9" & ABOVE TH. WALL)
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE N.T.S DATE MAY, 2026	NO. SA–555/322/BD/02J17 — REV. 0

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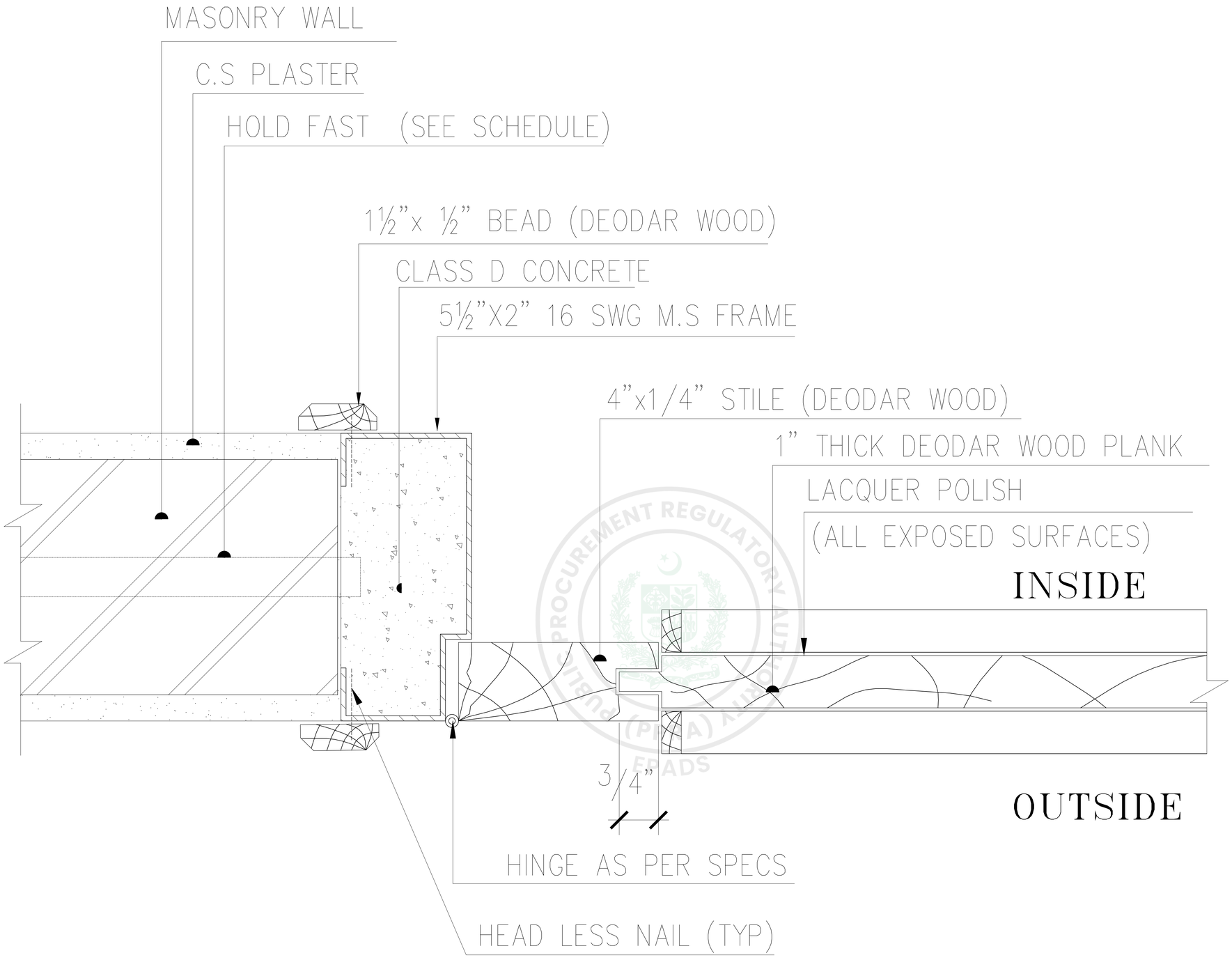
ARCHITECTURAL DETAILS



DETAIL - 2a

FOR DEODAR WOOD

PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE	DETAIL – 2a (FOR 4½" THICK WALL)
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J18
			REV. 0

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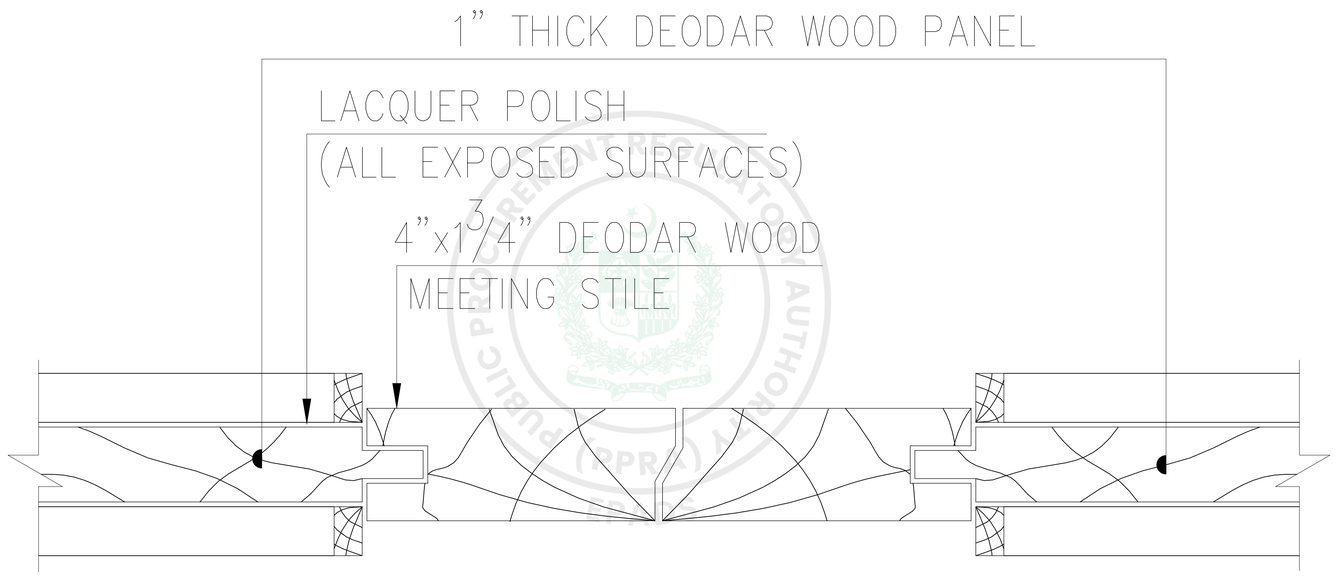

DETAIL- 3

FOR DEODAR WOOD

PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE	MEETING STILE DETAIL DETAIL – 3
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J19 / REV. 0

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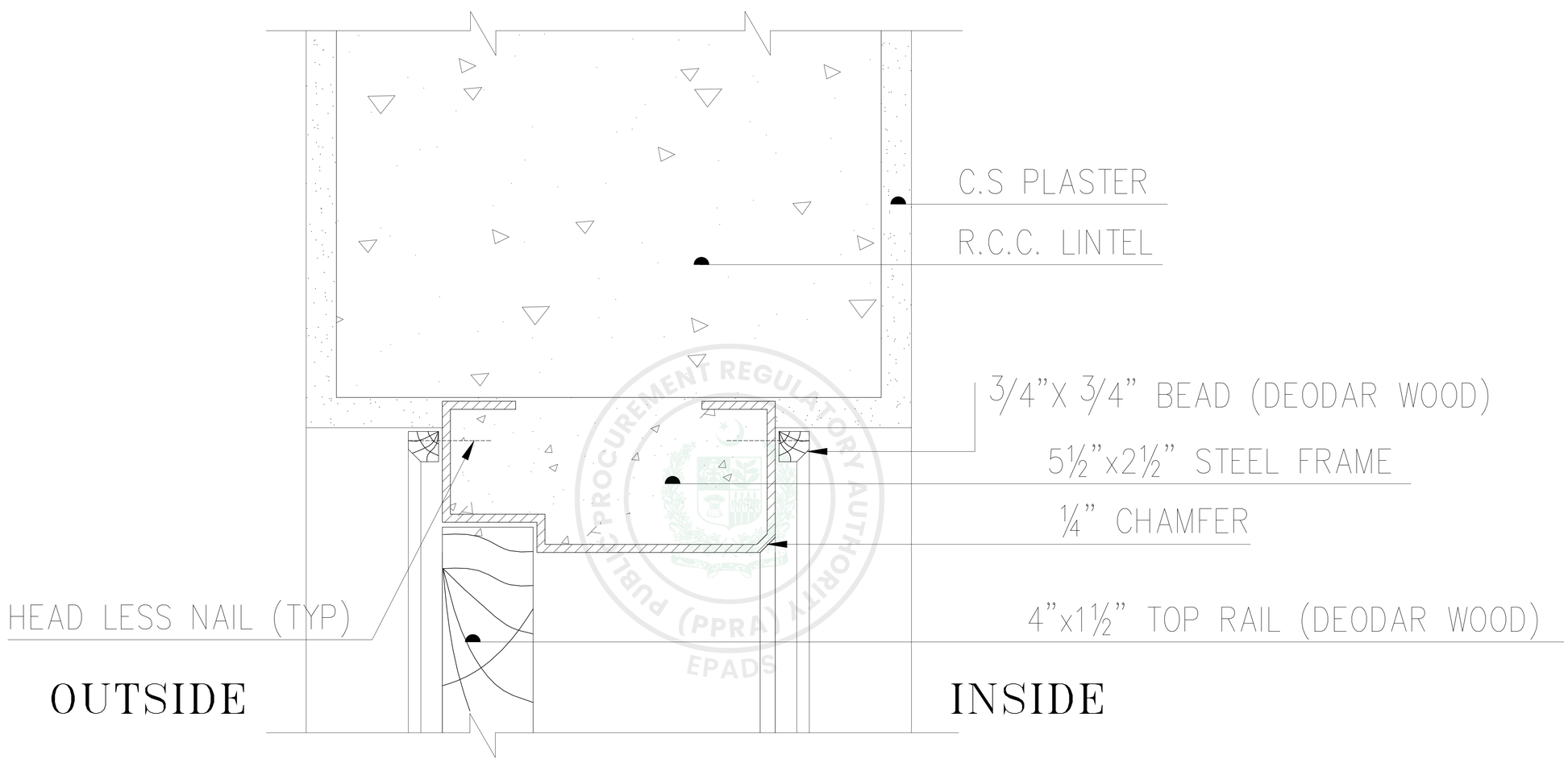

DETAIL-4

FOR 8" & ABOVE TH. WALL

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: DETAIL –4	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA–555/322/BD/02J20	REV.: 0

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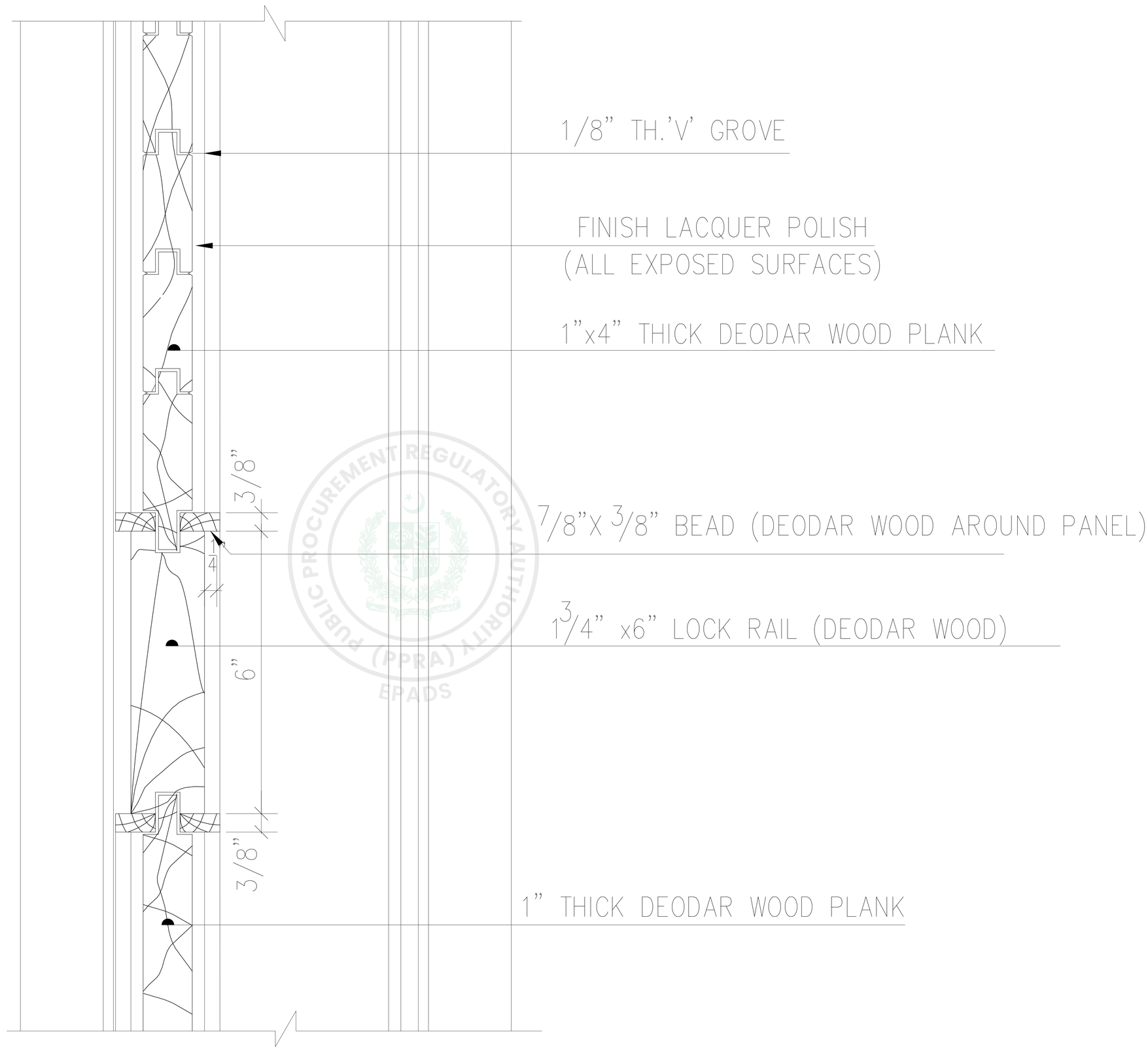
ARCHITECTURAL DETAILS



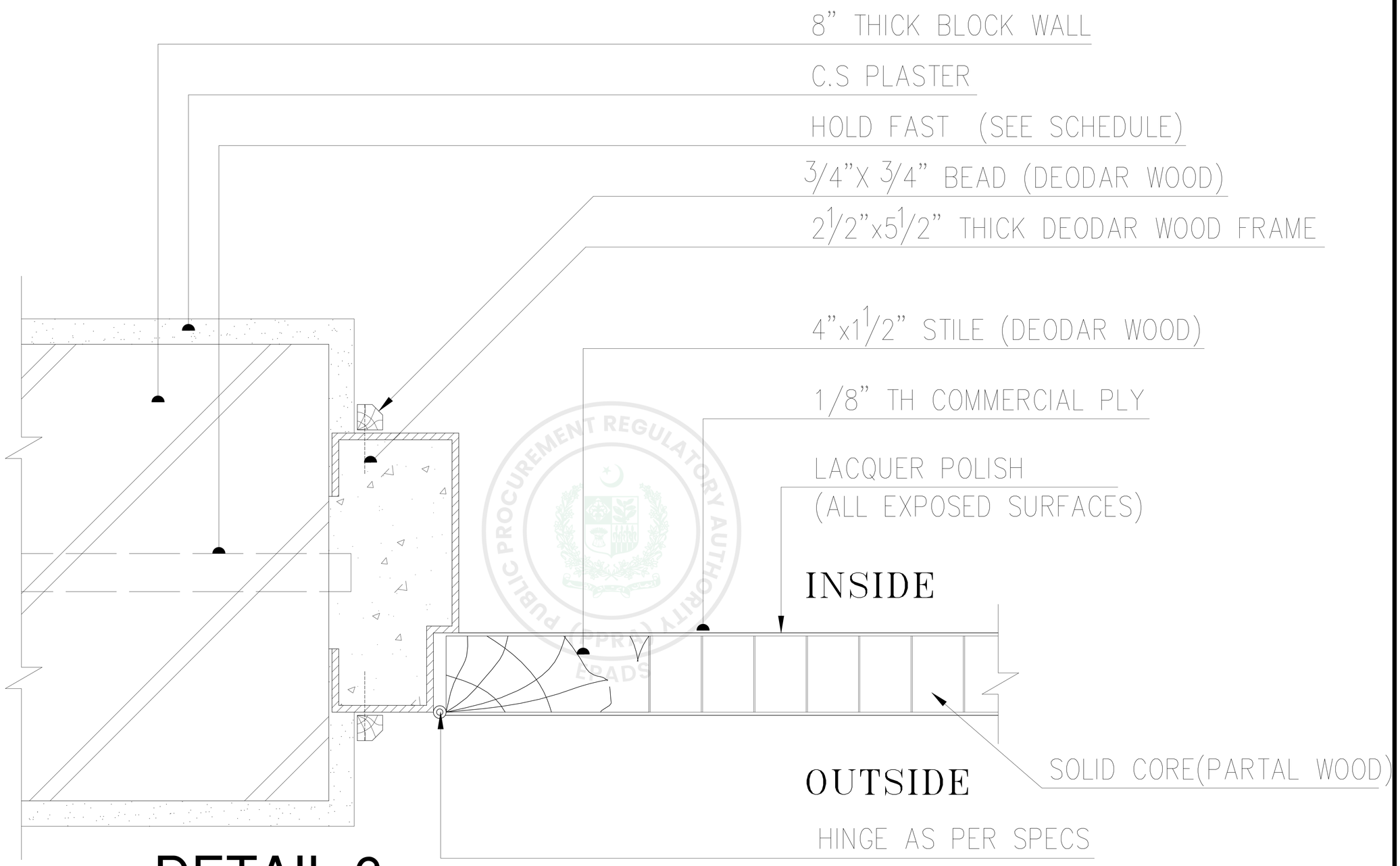
PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

DETAIL-5

FOR DEODAR WOOD

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: LOCK RAIL DETAIL DETAIL-5	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J21	REV.: 0

ARCHITECTURAL DETAILS



DETAIL-6

FOR 8" & ABOVE TH. WALL

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: DETAIL -6(FLUSH DOOR)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J22	REV.: 0

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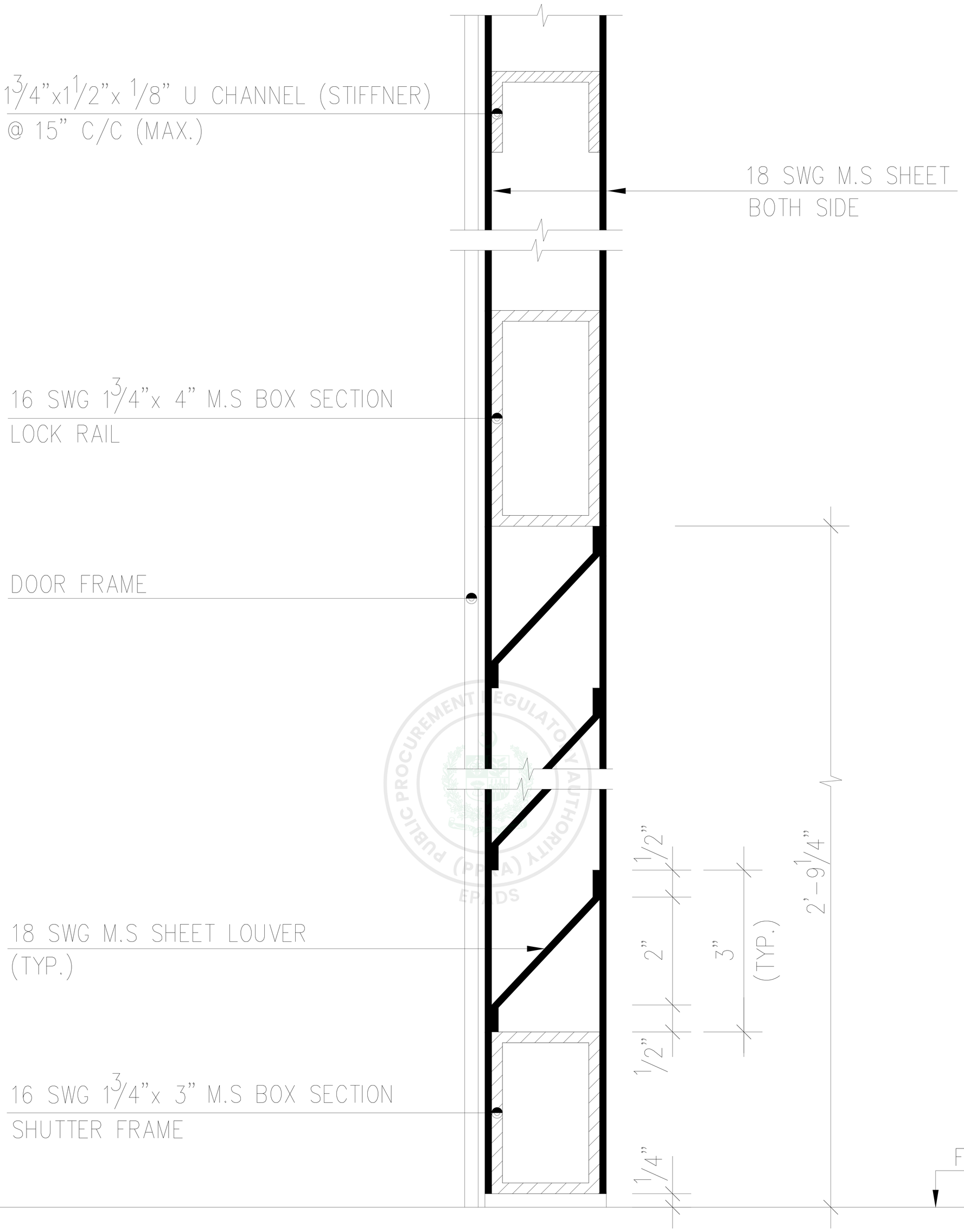
ARCHITECTURAL DETAILS



DETAIL-08

NOTE ALL STEEL SECTIONAL MEMBERS SHALL BE WELDED & ALL EXPOSED STEEL SURFACES SHALL BE PAINTED WITH RED OXIDE BEFORE APPLYING ENAMEL PAINT

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE: DETAIL-08	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J23 REV.: 0

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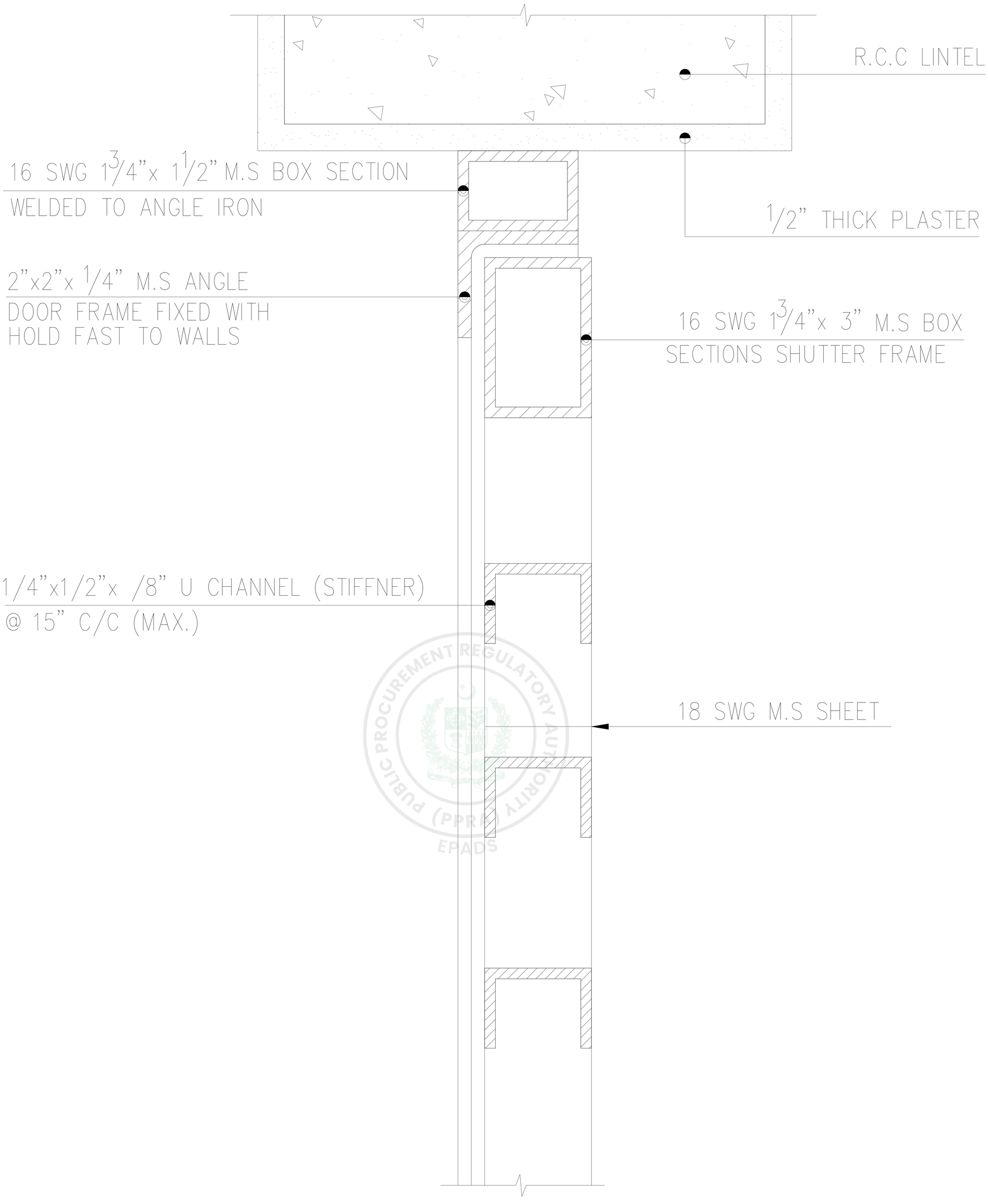
ARCHITECTURAL DETAILS



DETAIL - 9

NOTE ALL STEEL SECTIONAL MEMBERS SHALL BE WELDED & ALL EXPOSED STEEL SURFACES SHALL BE PAINTED WITH RED OXIDE BEFORE APPLYING ENAMEL PAINT

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE: DETAIL–10	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA–555/322/BD/02J24 REV.: 0

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ARCHITECTURAL DETAILS

	ROOM / FACILITY	FLOOR											WALL						DADO					SKIRTING						CEILING							
A	GROUND FLOOR PLAN	TERRAZZO CAST IN SITU LAID IN PANELS	MARBLE TILE 2'X2'	CONCRETE P.C.C	WOODEN TEXTURE PORCELAIN TILES 8"X4'	MARBLE TILES WITH BORDER	PORCELAIN TILES 1'X2' PORCELAIN TILES 18"X18"	PORCELAIN TILES 24"x24"	PORCELAIN TILES 2'X4'	TUFF PAVERS --	RUBBER FLOORING 1/4"-1/2"	GRANITE SLAB	PLASTIC EMULSION	PAINT PLASTIC EMULSION	TEXTURE COATING	STONE CLADDING GRANITE	MATT ENAMEL PAINT		PORCELAINE TILES 1'X2' HEIGHT UPTO CEILING	CERAMIC TILE UPTO CEILING	PORCELAIN TILES HEIGHT-5'-0"	VINYL TILE		GRANITE 4" HIGH	PORCELAINE TILES 4" HIGH	CERAMIC TILE 1'X2'	WOODEN 4" HIGH	P. C. C. 4" HIGH	RUBBER SKIRTING		MINERAL FIBER ACOUSTIC TILE	VINYL EMULSION	GYPSUM BOARD	ALUMINIUM STRIP FALSE CEILING	PLASTIC EMULSION PAINT	WEATHER SHIED PAINT	
1	RESEARCH PURPOSE ROOM								○					○											○									○		
2	CONFERENCE ROOM				○									○													○				○				
3	DATA CENTER								○					○											○									○		
4	ASSOC. PROF.								○					○											○									○		
5	LECTURERS								○					○											○									○		
6	HOD				○									○											○							○				
7	RET. ROOM				○									○											○							○				
8	ASO								○					○											○									○		
9	MISC. OFFICES								○					○											○									○		
10	EXECUTIVE OFFICE				○									○											○									○		
11	RESEARCH LAB (PHD)								○					○											○									○		
12	STAFF ROOM								○					○											○									○		
13	FACULTY TOILETS (M & F)							○								○				○													○				
14	BATH							○								○				○											○						
15	CORRIDOR		○											○											○									○		
16	PRINTING ROOM								○					○											○									○		
17	STORAGE							○						○											○						○					
18	ELEC.ROOM							○								○									○						○					
19	KITCHENETTE							○								○				○					○						○					
20	LIFT LOBBY		○											○											○									○		
21	E.T							○								○				○											○					

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

PROJECT

ACADEMIC BLOCK (ST)
ESTABLISHMENT OF NATIONAL INSTITUTE
OF INTELLIGENCE AND SECURITY STUDIES
(NIISS) AT QAU, ISLAMABAD

TITLE

SCHEDULE OF FINISHES

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD

SCALE N.T.S

DATE MAY, 2026

NO. SA-555/322/BD/02J25

REV. 0

0-00-00-00

ARCHITECTURAL DETAILS

B	ROOM / FACILITY	FLOOR											WALL						DADO					SKIRTING						CEILING						
	GROUND FLOOR PLAN	TERRAZZO CAST IN SITU LAID IN PANELS	MARBLE TILE 2'X2'	CONCRETE P.C.C	WOODEN TEXTURE PORCELAIN TILES 8"X4'	MARBLE TILES WITH BORDER	PORCELAIN TILES 1'X2' PORCELAIN TILES 18"X18"	PORCELAIN TILES 24"x24"	PORCELAIN TILES 2'X4'	TUFF PAVERS	RUBBER FLOORING 1/4"–1/2"	GRANITE SLAB	PLASTIC EMULSION	PAINT PLASTIC EMULSION	TEXTURE COATING	STONE CLADDING GRANITE	MATT ENAMEL PAINT		PORCELAINE TILES 1'X2' HEIGHT UPTO CEILING	CERAMIC TILE UPTO CEILING	PORCELAIN TILES HEIGHT-5'-0"	VINYL TILE		GRANITE 4" HIGH	PORCELAINE TILES 4" HIGH	CERAMIC TILE 1'X2'	WOODEN 4" HIGH	P. C. C. 4" HIGH	RUBBER SKIRTING		MINERAL FIBER ACOUSTIC TILE	VINYL EMULSION	GYPSUM BOARD	ALUMINIUM STRIP FALSE CEILING	PLASTIC EMULSION PAINT	WEATHER SHIED PAINT	
1	PODIUM		○												○									○												
2	PODIUM STEPS											○			○									○												
3	RAMP											○			○									○												
4	DOUBLE HEIGHT ENT.LOBBY		○											○										○							○					
5	LOBBY		○											○										○							○					
6	WAITING & STAFF		○											○										○							○					
7	STAIRCASE–1											○		○										○							○					
	STAIRCASE–2											○		○										○							○					
	STAIRCASE–3 (A&B)			○										○										○				○						○		

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

	PROJECT ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE SCHEDULE OF FINISHES	
	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J26 REV. 0

0–00–00–00

ARCHITECTURAL DETAILS

	ROOM / FACILITY	FLOOR											WALL						DADO					SKIRTING						CEILING							
A	FIRST FLOOR PLAN	TERRAZZO CAST IN SITU LAID IN PANELS	MARBLE TILE 2'X2'	CONCRETE P.C.C	WOODEN TEXTURE PORCELAIN TILES 8"X4'	MARBLE TILES WITH BORDER	PORCELAIN TILES 1'X2' PORCELAIN TILES 18"X18"	PORCELAIN TILES 24"X24"	PORCELAIN TILES 2'X4'	TUFF PAVERS	RUBBER FLOORING 1/4"-1/2"	GRANITE SLAB	PLASTIC EMULSION	PAINT PLASTIC EMULSION	TEXTURE COATING	STONE CLADDING GRANITE	MATT ENAMEL PAINT		PORCELAINE TILES 1'X2' HEIGHT UPTO CEILING	CERAMIC TILE UPTO CEILING	PORCELAIN TILES HEIGHT-5'-0"	VINYL TILE		GRANITE 4" HIGH	PORCELAINE TILES 4" HIGH	CERAMIC TILE 1'X2'	WOODEN 4" HIGH	P. C. C. 4" HIGH	RUBBER SKIRTING		MINERAL FIBER ACOUSTIC TILE	VINYL EMULSION	GYPSUM BOARD	ALUMINIUM STRIP FALSE CEILING	PLASTIC EMULSION PAINT	WEATHER SHIED PAINT	
1	UG CLASSROOM								○					○											○									○		
2	PG CLASSROOM								○					○											○									○		
3	CLASSROOM (PHD)								○					○											○									○		
4	COMP. LAB								○					○											○									○		
5	COMMON ROOM (M & F)								○					○											○									○		
6	DEPT. LIBRARY				○									○											○									○		
7	A / V		○											○										○											○		
8	LECTURE THEATRE		○											○										○						○							
9	STORAGE							○						○											○									○		
10	ELEC.ROOM							○						○											○									○		
11	LOBBY		○											○										○											○		
12	CORRIDOR		○											○										○											○		
13	TOILETS (PHD) (M & F)							○								○				○												○					
14	TOILETS (M & F)							○								○				○												○					
15	Kitchenette							○								○				○											○						
16																																					

	PROJECT ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE SCHEDULE OF FINISHES	
	NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J27 REV. 0

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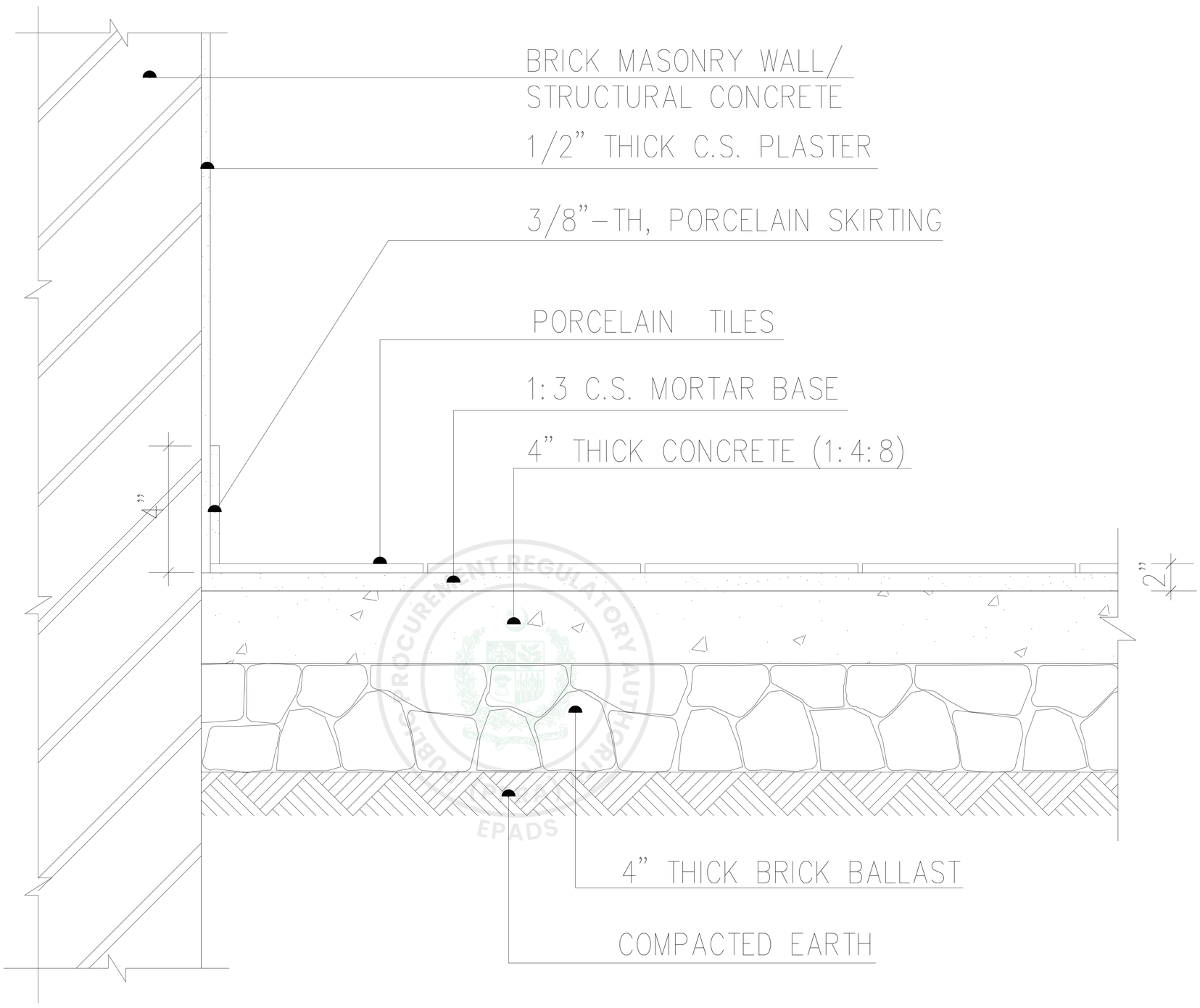

PROCELAIN TILES DEATIL(F-1)

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE: PROCELAIN TILES FLOORING/ SKIRTING(GROUND FLOOR)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J28 — REV.: 0

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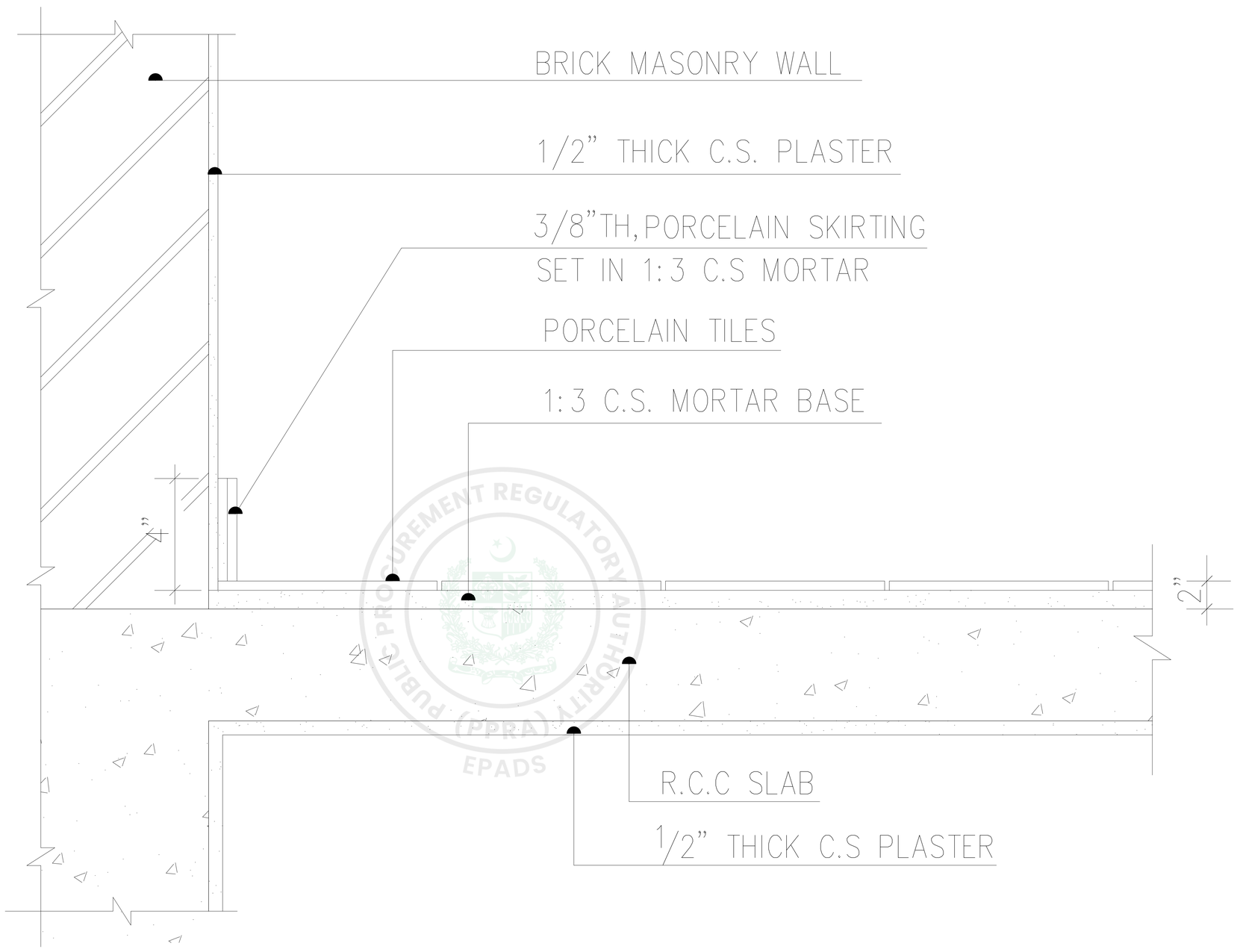

PROCELAIN TILES DEATIL(F-1A)

(FOR FIRST FLOOR & ABOVE)

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: PROCELAIN TILES FLOORING/ SKIRTING(FIRST FLOOR & ABOVE)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J29 / REV.: 0

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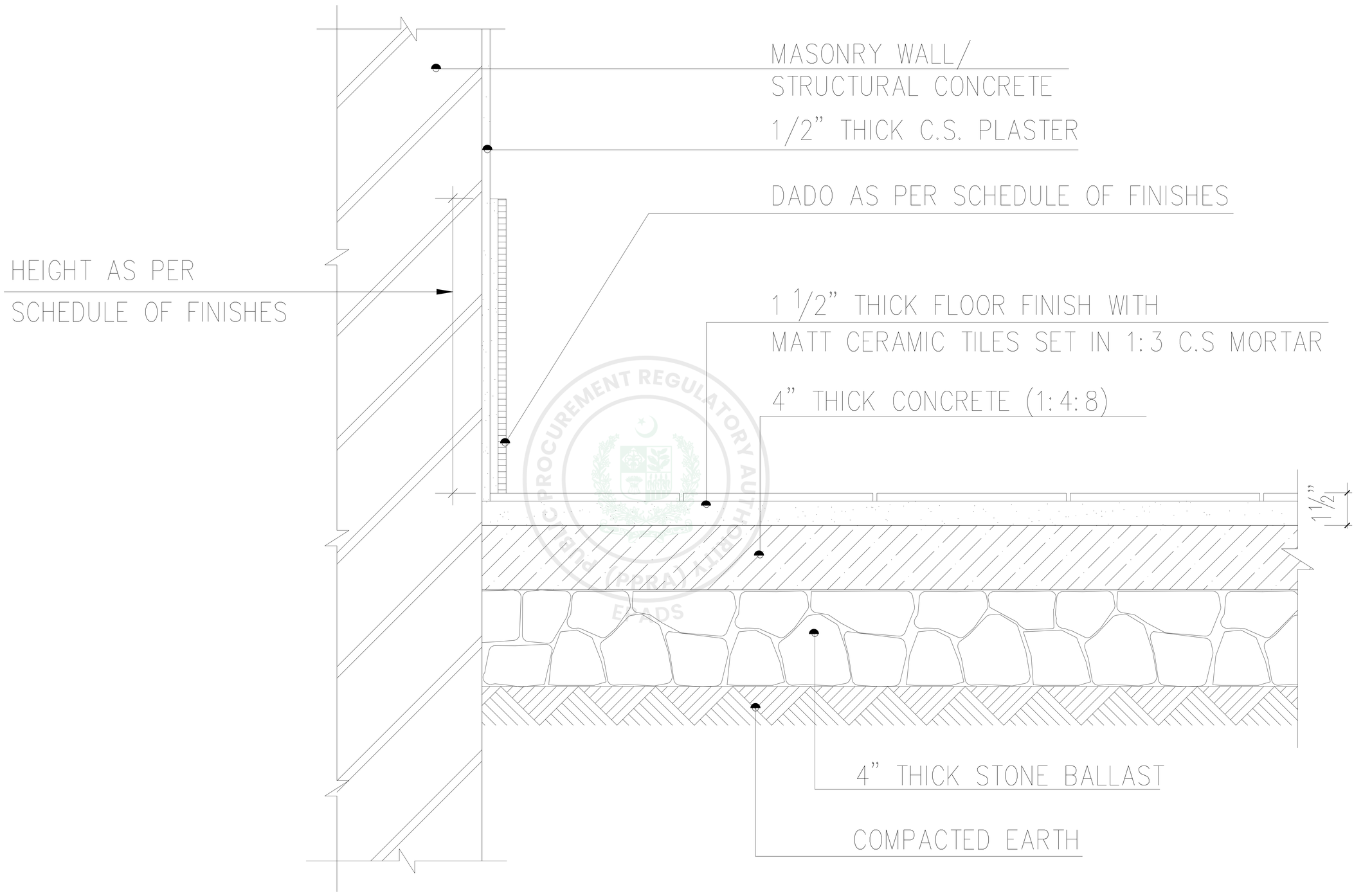
ARCHITECTURAL DETAILS



CERAMIC FLOORING & WALLS DETAIL(F-2)

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: CERAMIC TILE FLOORING/DADO SKIRTING (GROUNG FLOOR)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J30 / REV.: 0

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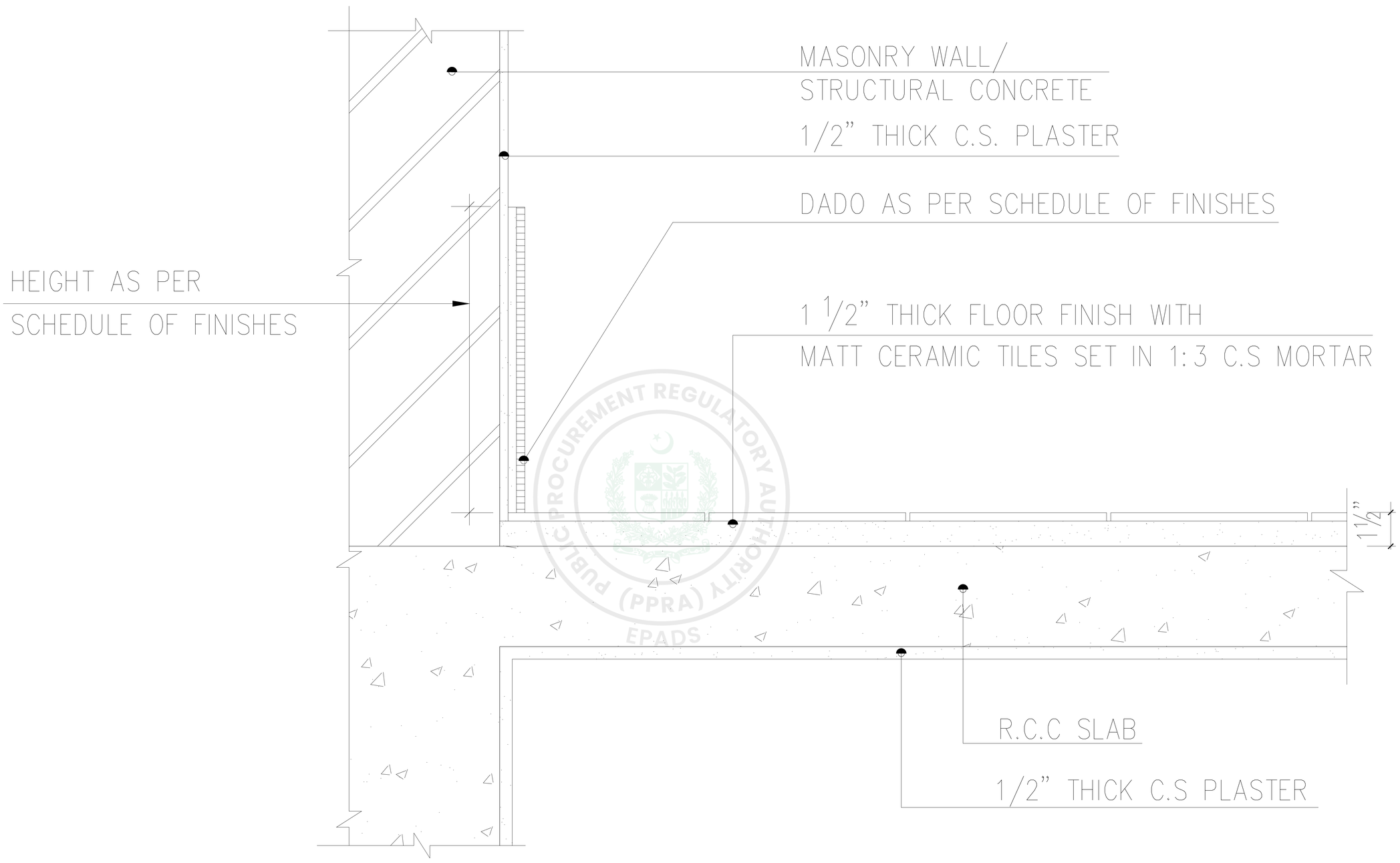

CERAMIC FLOORING & WALLS DETAIL(F-2A)
(FOR FIRST FLOOR & ABOVE)

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE: CERAMIC TILE FLOORING/DADO SKIRTING(FIRST FLOOR& ABOVE)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J31 — REV.: 0

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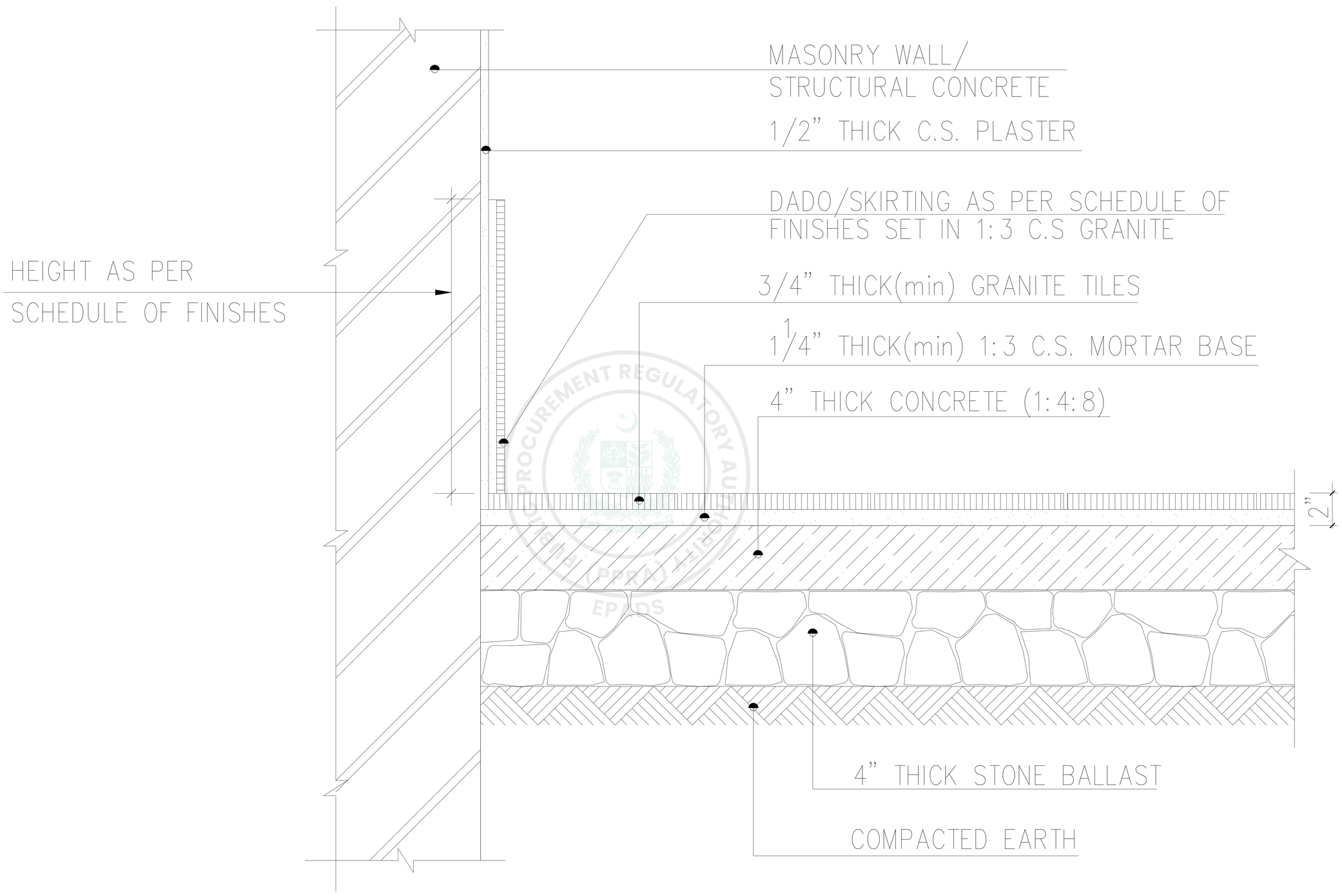

GRANITE FLOORING DETAIL(F-3)

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: MARBLE TILE FLOORING/DADO SKIRTING (GROUND FLOOR)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J32 / REV.: 0

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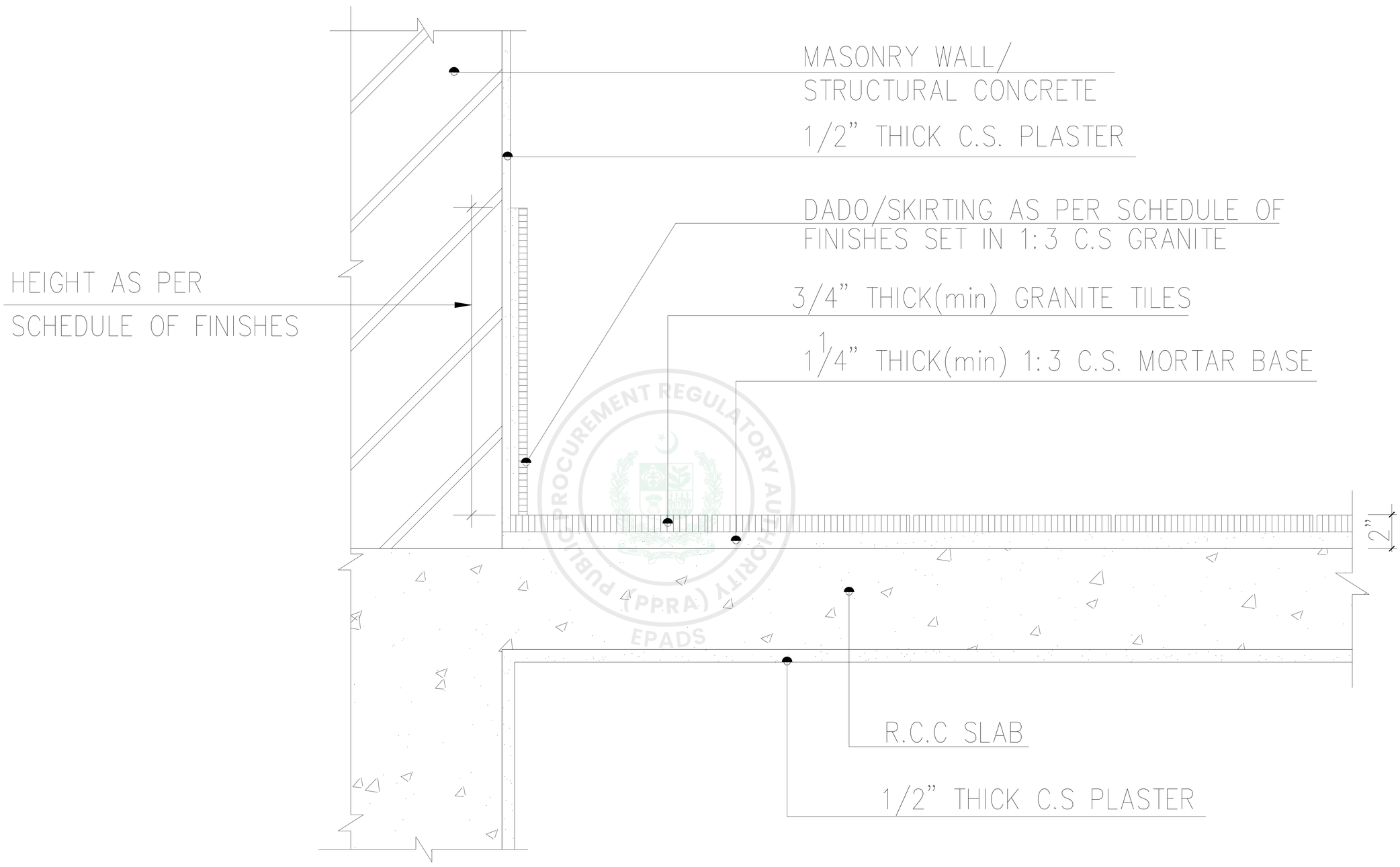
ARCHITECTURAL DETAILS



GRANITE FLOORING DETAIL(F-3A)

(FOR FIRST FLOOR & ABOVE)

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: MARBLE TILE FLOORING/DADO SKIRTING (FIRST FLOOR & ABOVE)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J33 / REV.: 0

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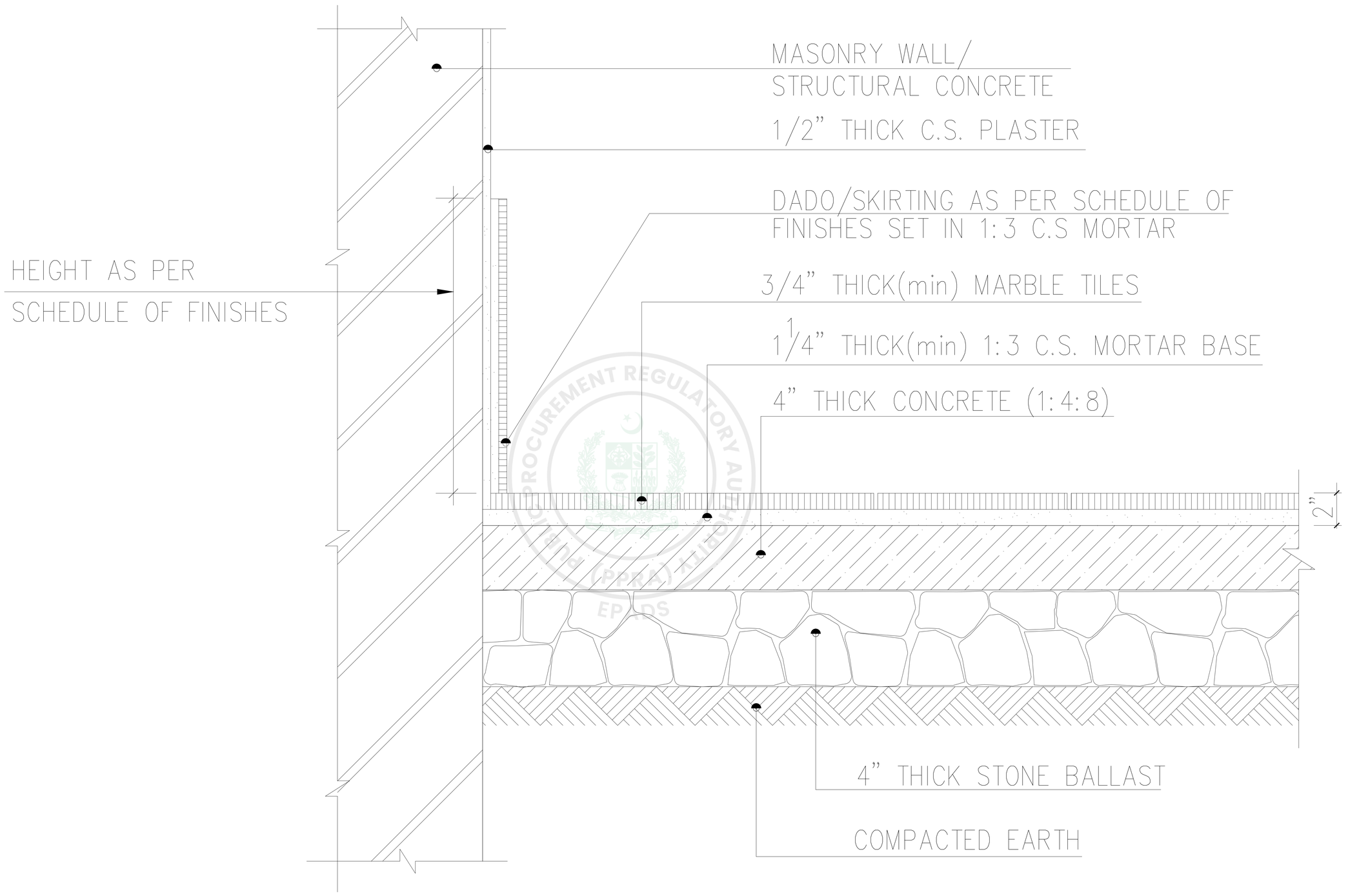
ARCHITECTURAL DETAILS



MARBLE FLOORING DETAIL(F-4)

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: MARBLE TILE FLOORING/DADO SKIRTING (GROUND FLOOR)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J34 / REV.: 0

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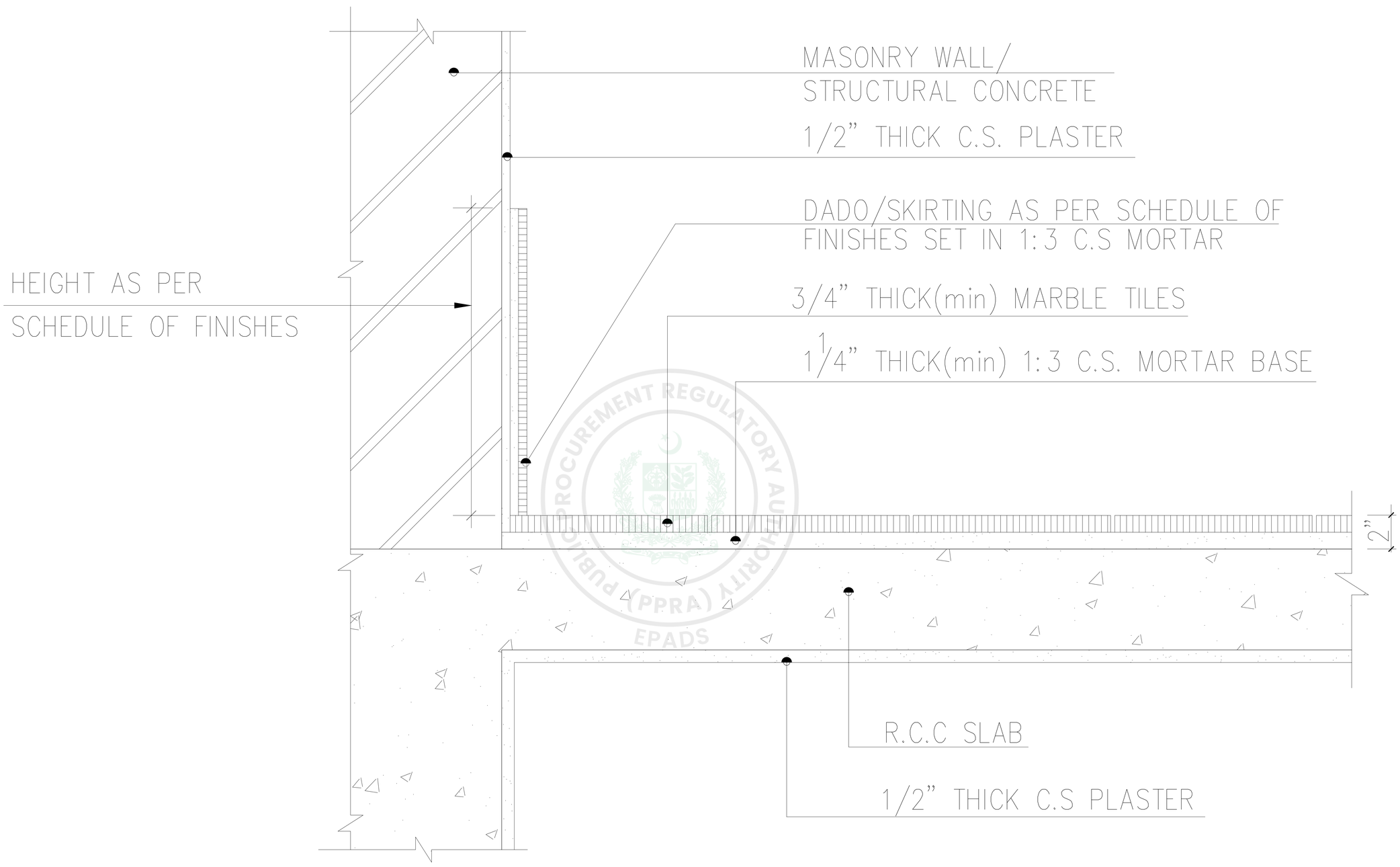
ARCHITECTURAL DETAILS



MARBLE FLOORING DETAIL(F-4A)

(FOR FIRST FLOOR & ABOVE)

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: MARBLE TILE FLOORING/DADO SKIRTING (FIRST FLOOR & ABOVE)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J35 / REV.: 0

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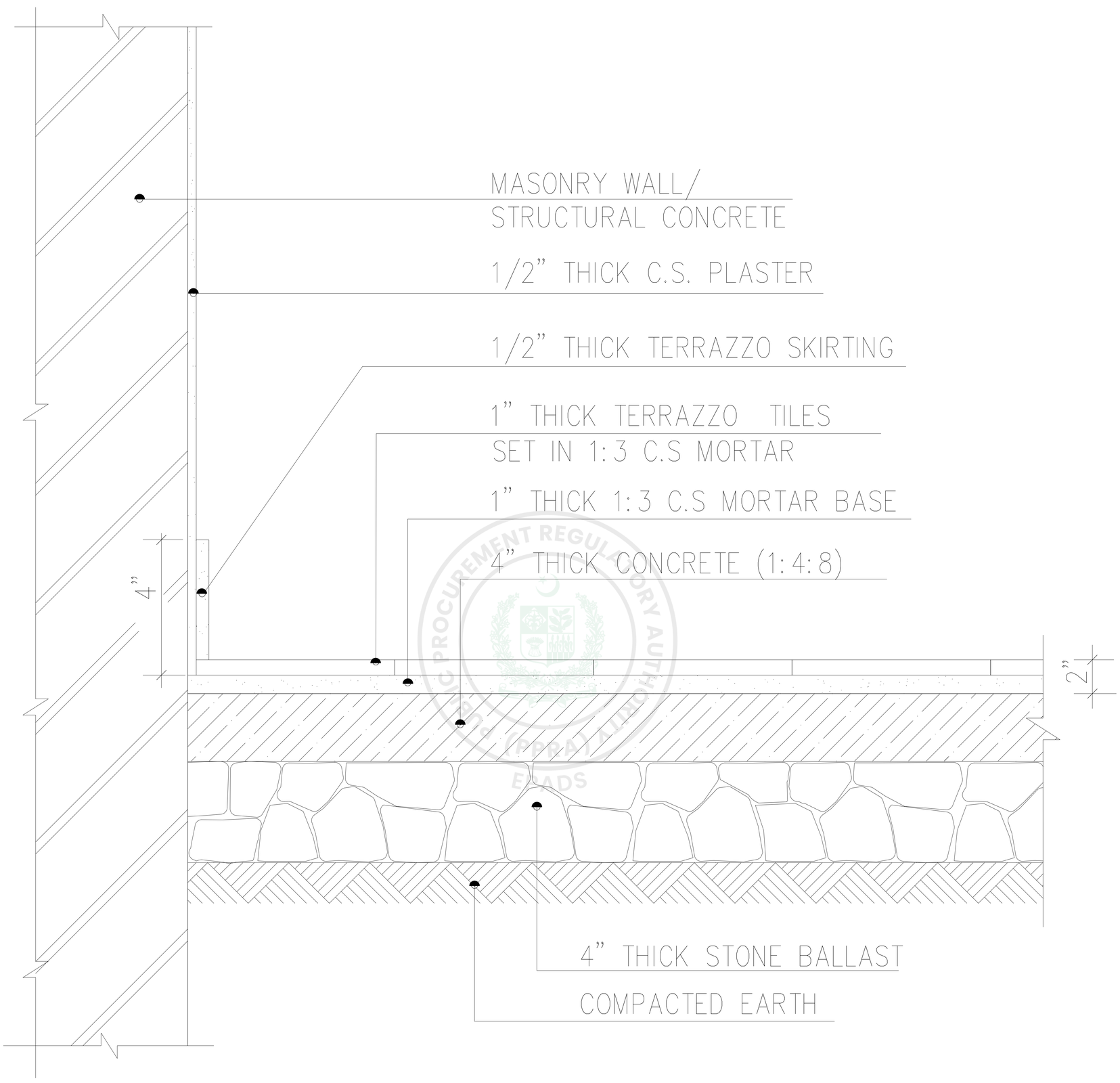
ARCHITECTURAL DETAILS



TERRAZZO TILES FLOORING DETAIL(F-5)

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: TERRAZZO FLOORING/SKIRTING (GROUND FLOOR)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J36 — REV.: 0

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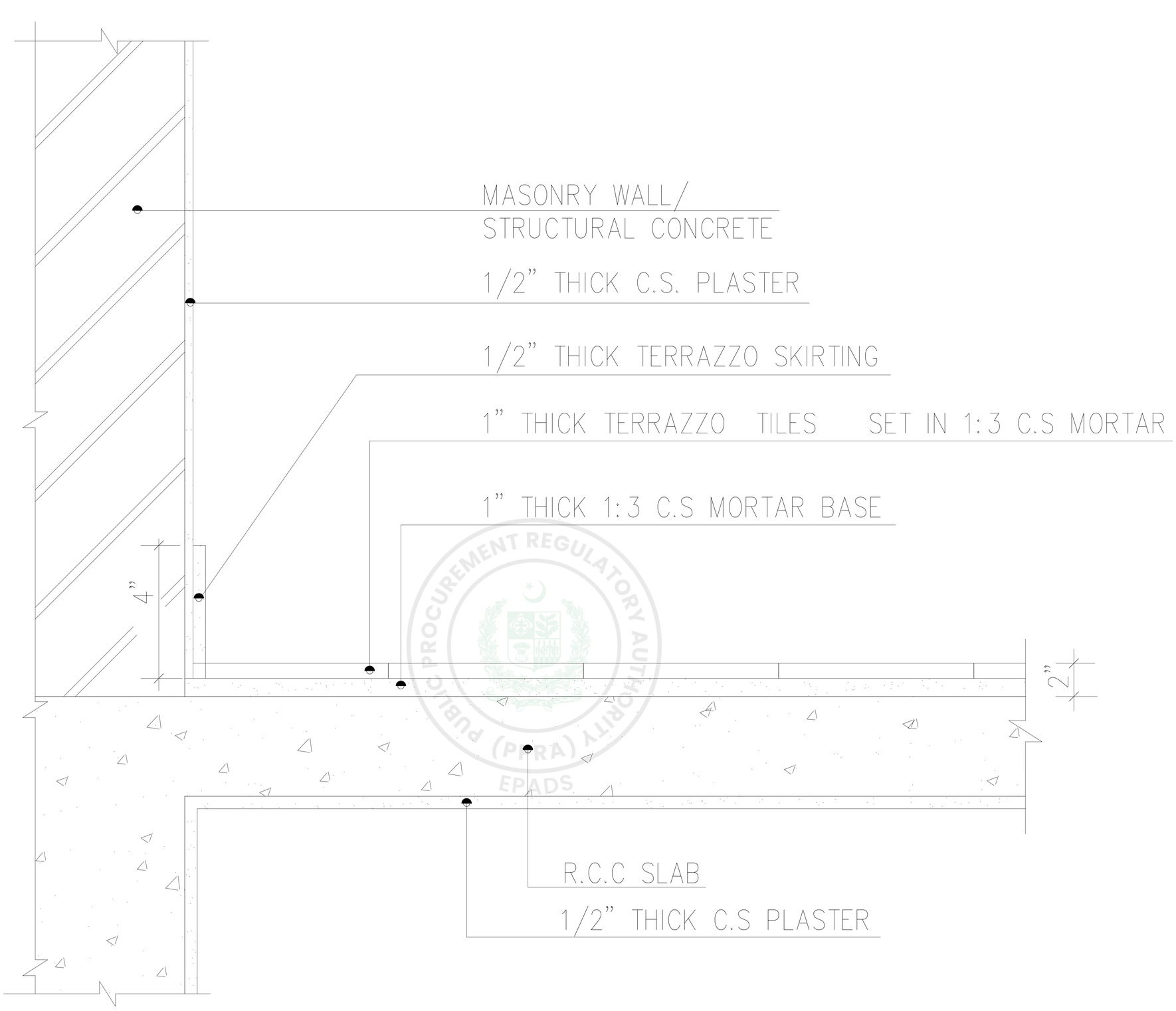
ARCHITECTURAL DETAILS



TERRAZZO TILES FLOORING DETAIL(F-5A)

(FOR FIRST FLOOR & ABOVE)

PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE	TERRAZZO FLOORING/SKIRTING (FIRST FLOOR AND ABOVE)
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J37	REV. 0

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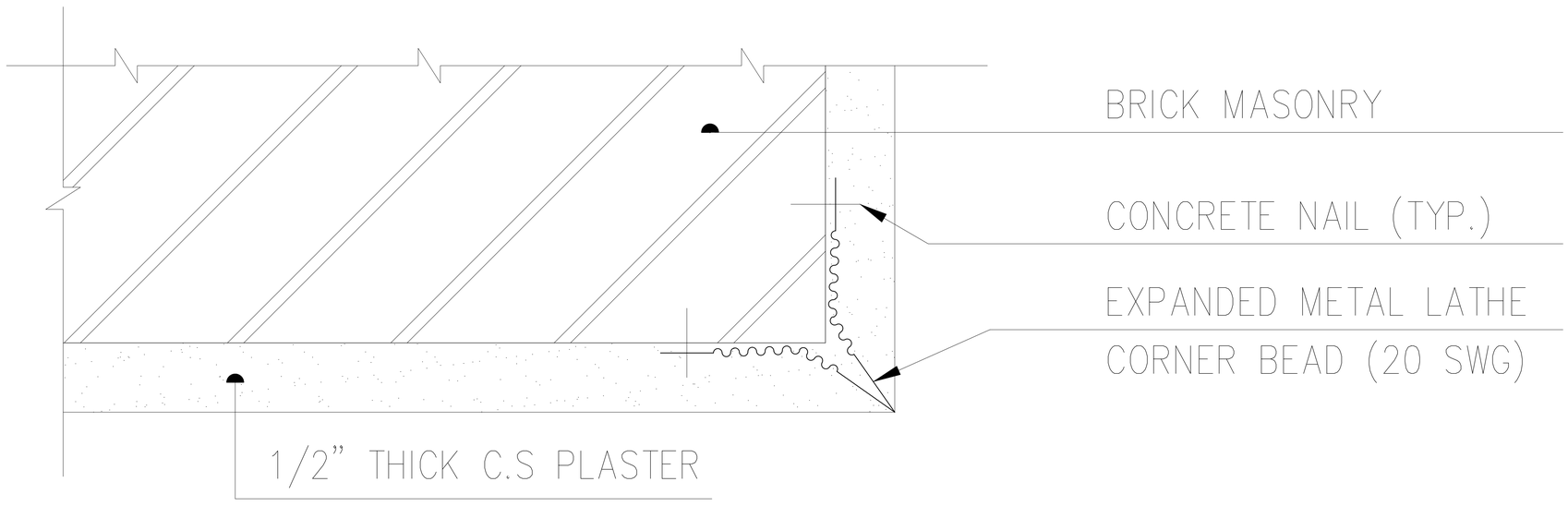
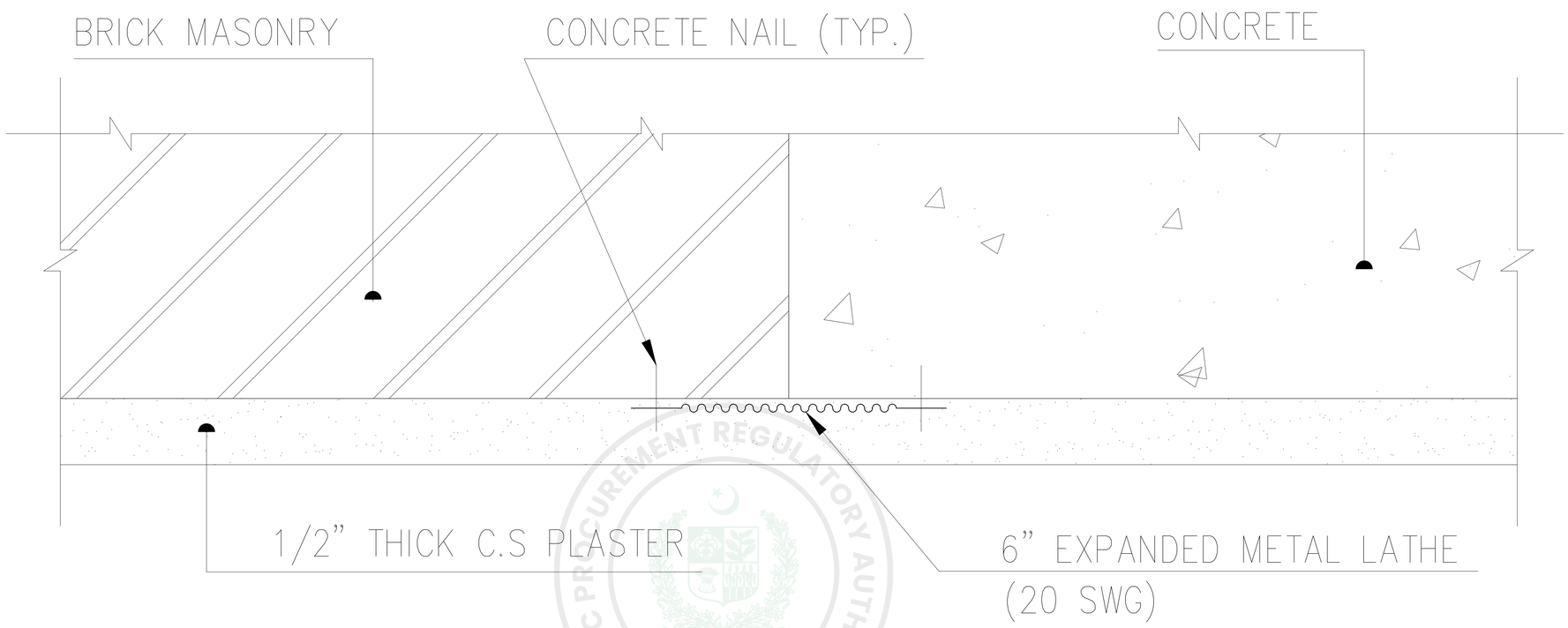
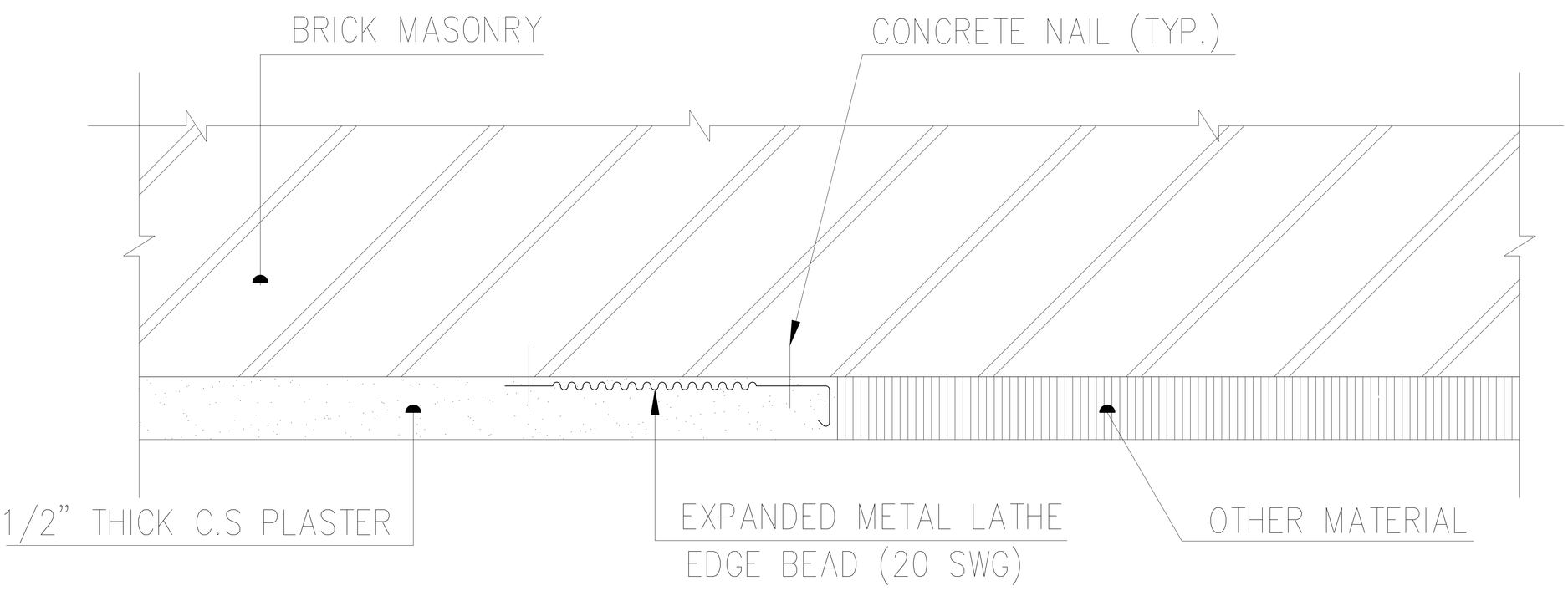
ARCHITECTURAL DETAILS



CORNER BEAD DETAIL



CONCRETE & MASONARY JOINT DETAIL



PLASTER EDGE BEAD DETAIL

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: PLASTER BEADS	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J38	REV.: 0

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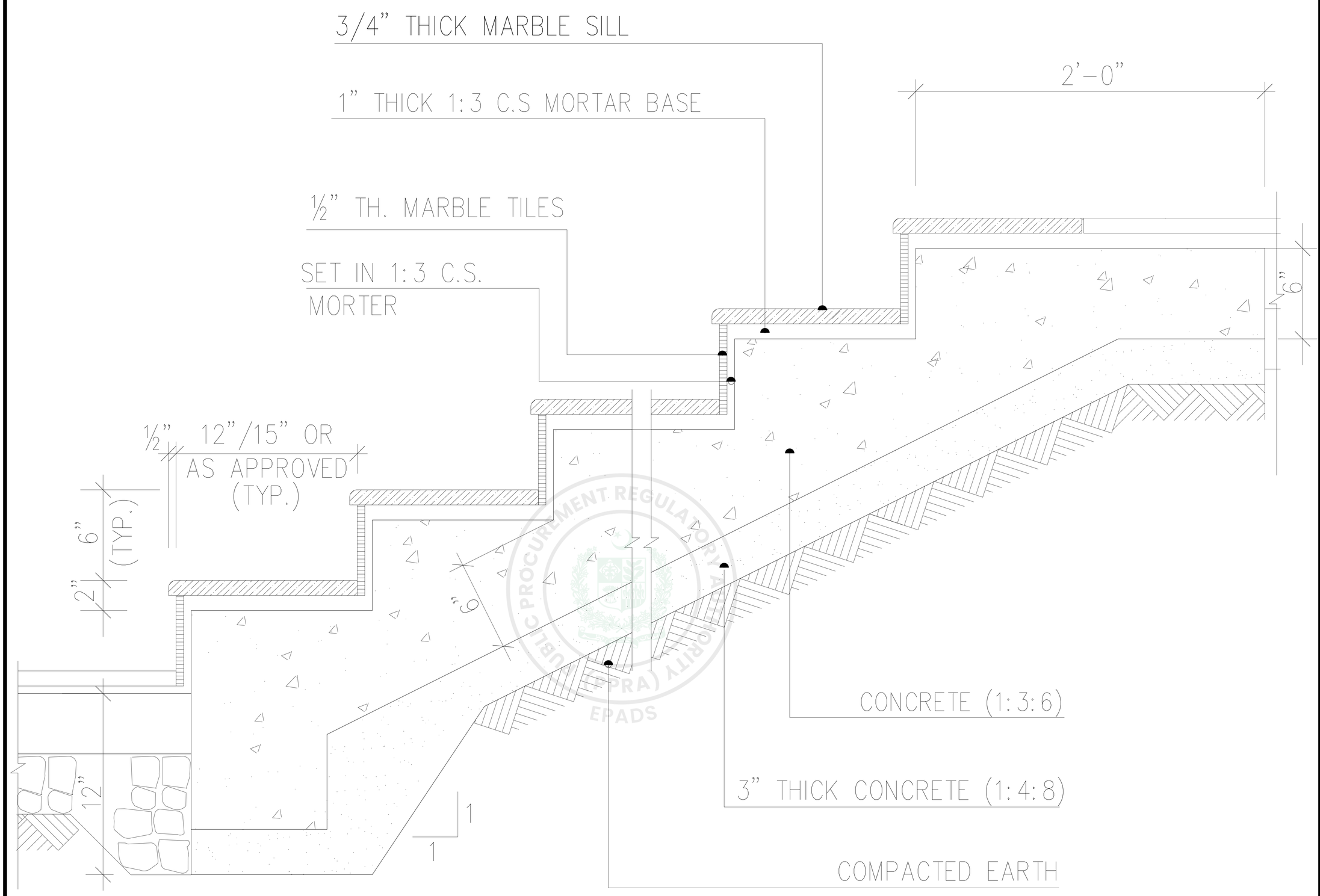
ARCHITECTURAL DETAILS



DETAIL OF MARBLE STEPS(EXTERNAL)

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: MARBLE STEPS DETAIL (EXTERNAL)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J39	REV.: 0

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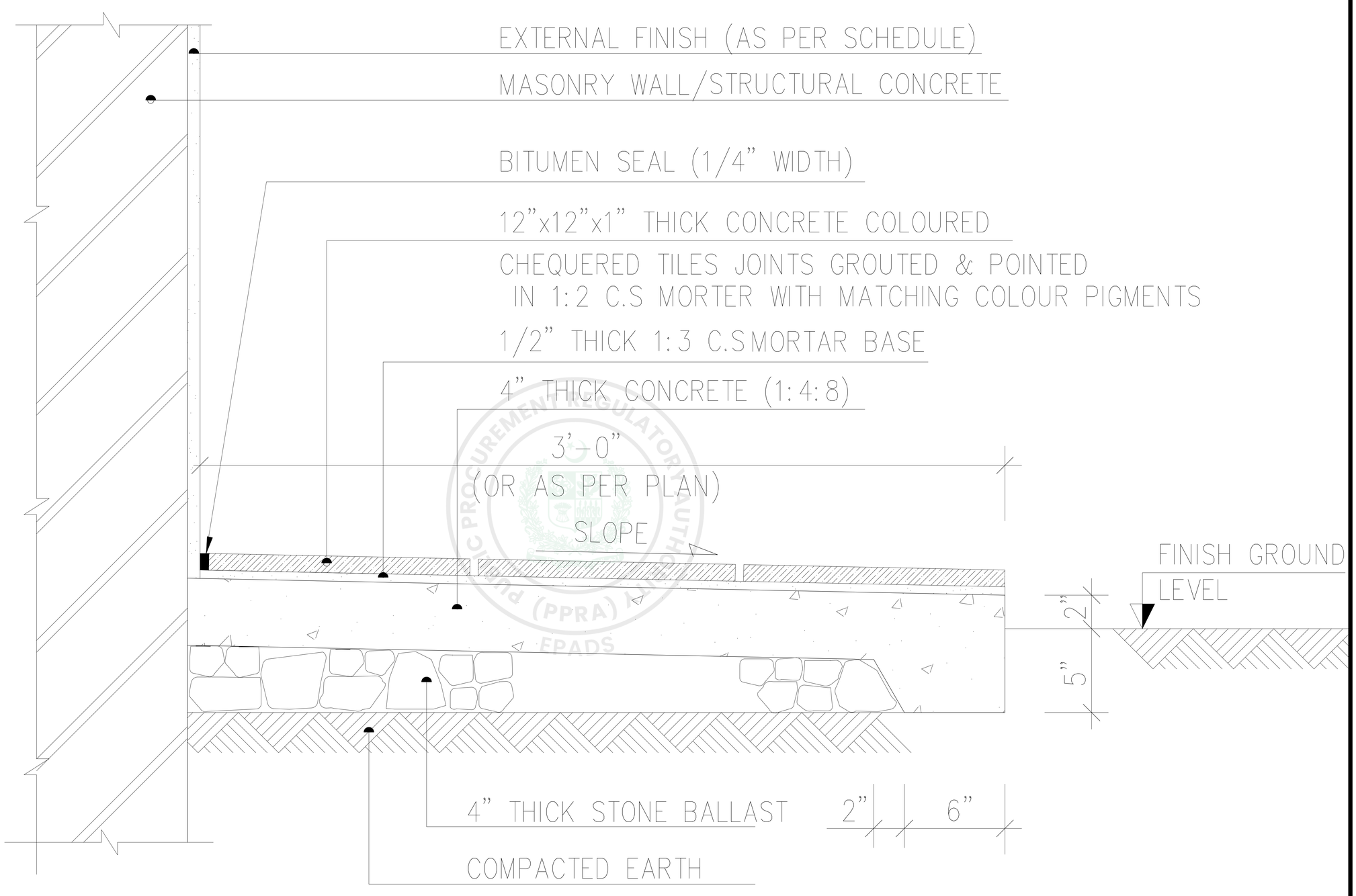
ARCHITECTURAL DETAILS



PLINTH PROTECTION DETAIL

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: DETAIL OF PLINTH PROTECTION	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J40 REV.: 0

P-PN-DN-00

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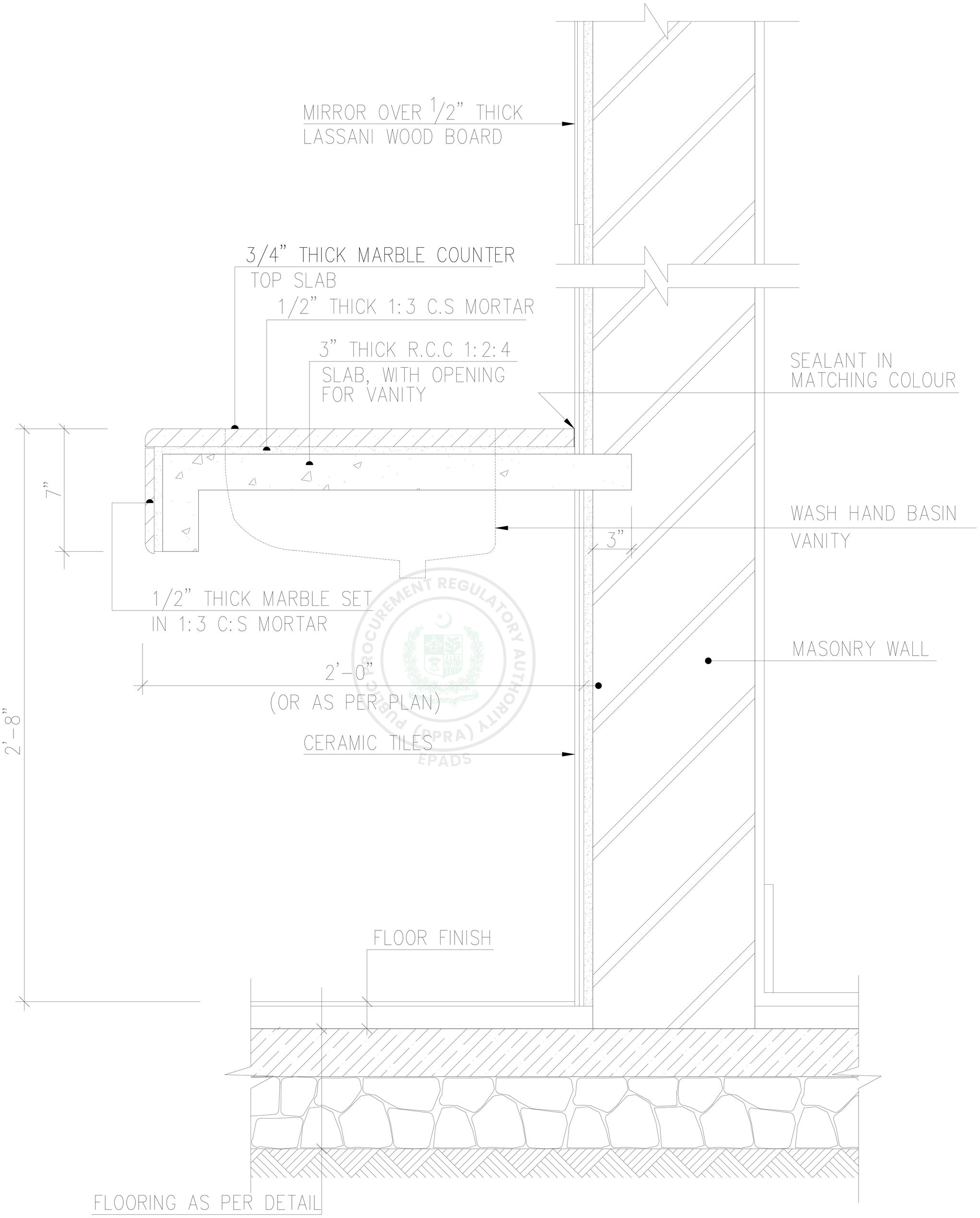
ARCHITECTURAL DETAILS



TYPICAL SECTION

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE: DETAIL OF COUNTER VANITY TOP	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J41 — REV.: 0

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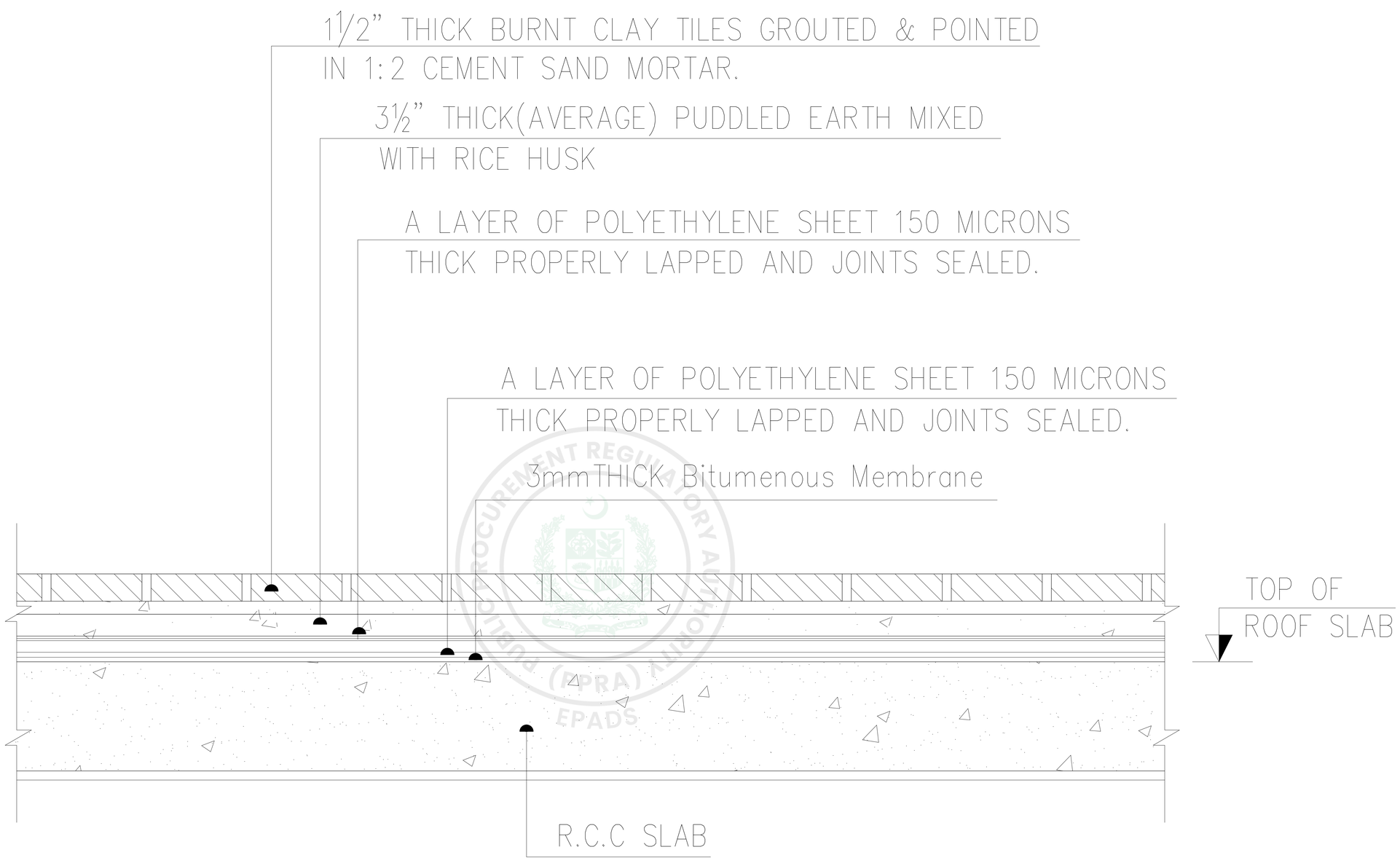
ARCHITECTURAL DETAILS



ROOF FINISH DETAIL

PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE	ROOF FINISH DETAIL-B WATER PROOFING & INSULATION
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J42 — REV. 0

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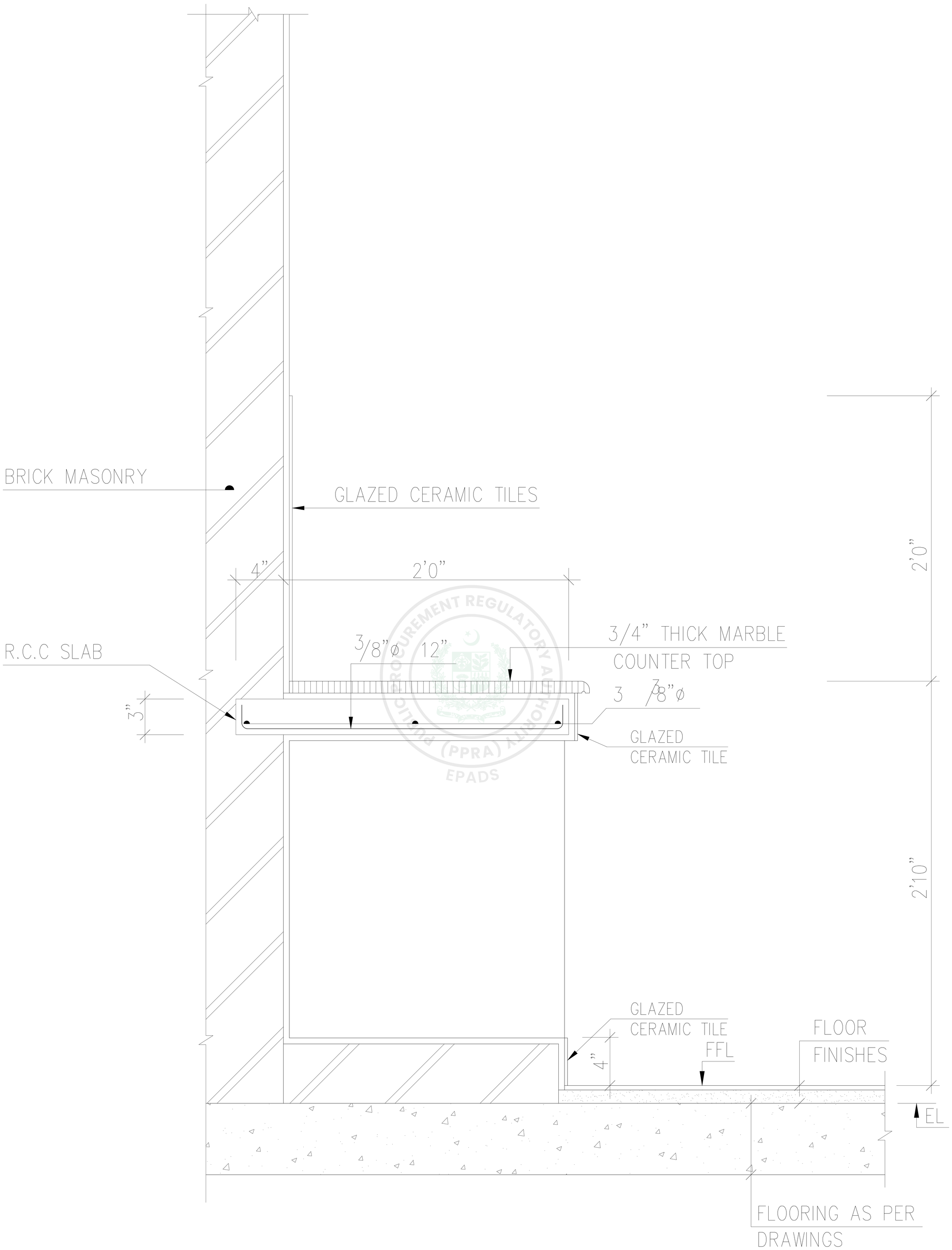
ARCHITECTURAL DETAILS



PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE	TYPICAL SECTION FOR KITCHEN COUNTER
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J43 / REV. 0

P-PN-DN-00

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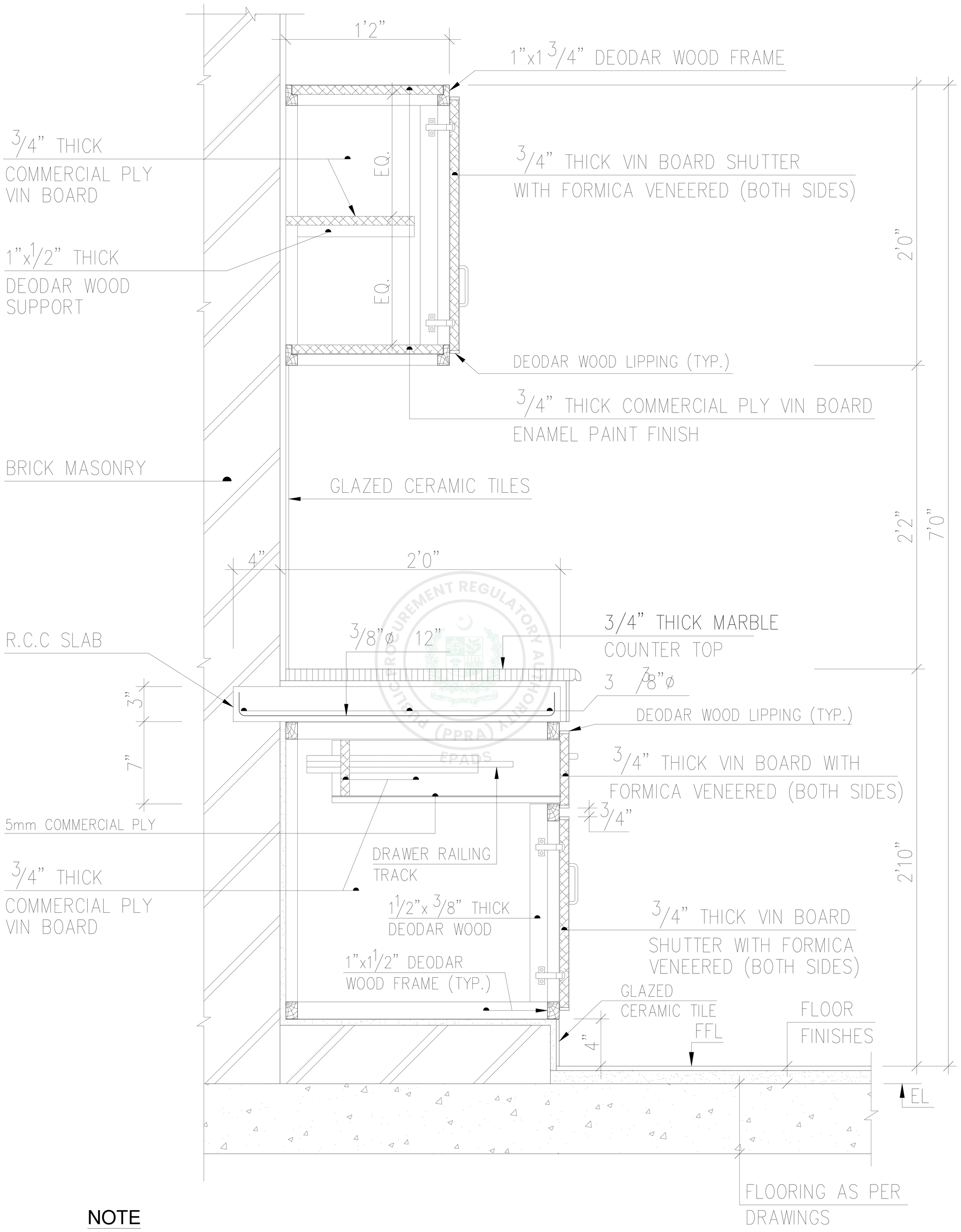
ARCHITECTURAL DETAILS

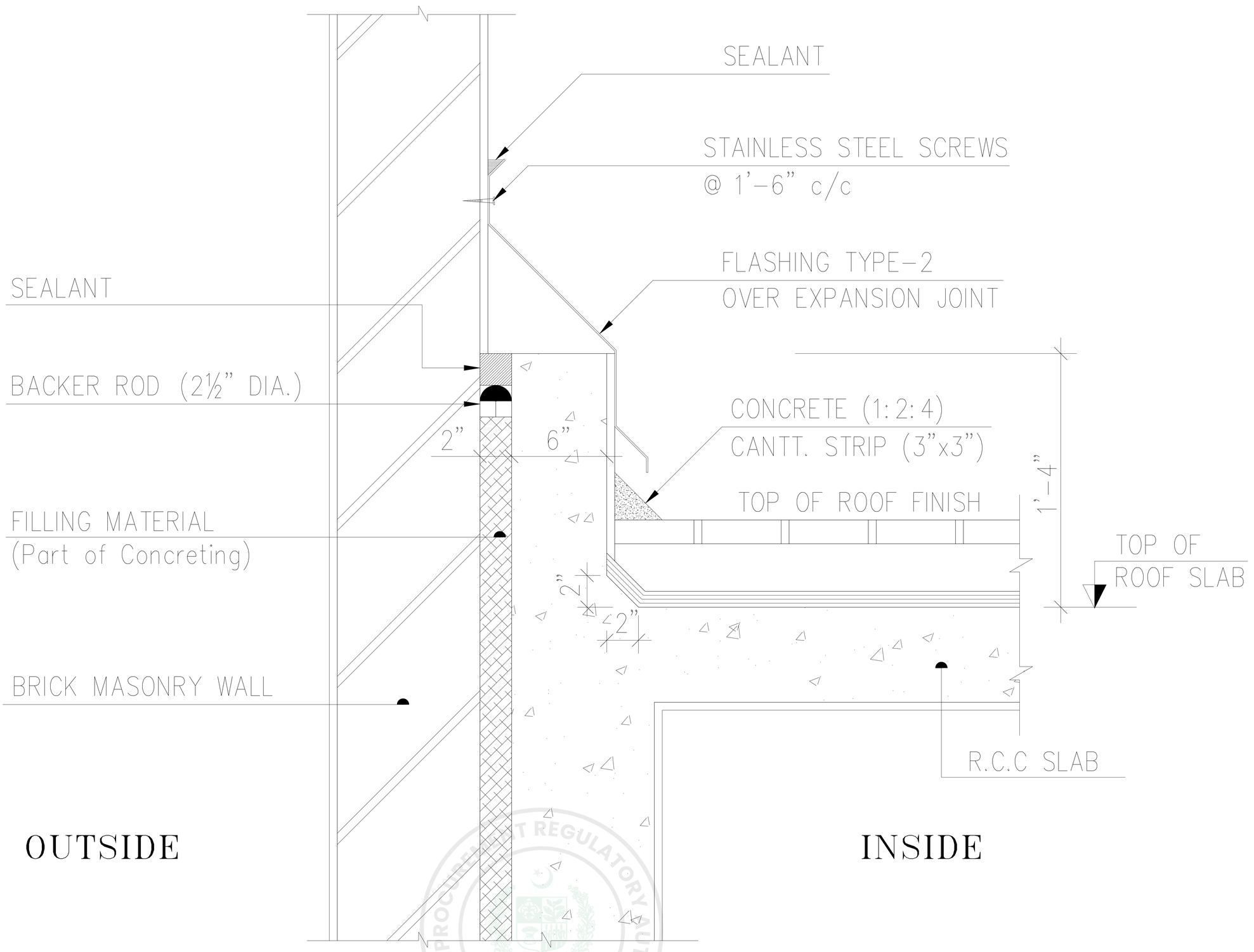


NOTE

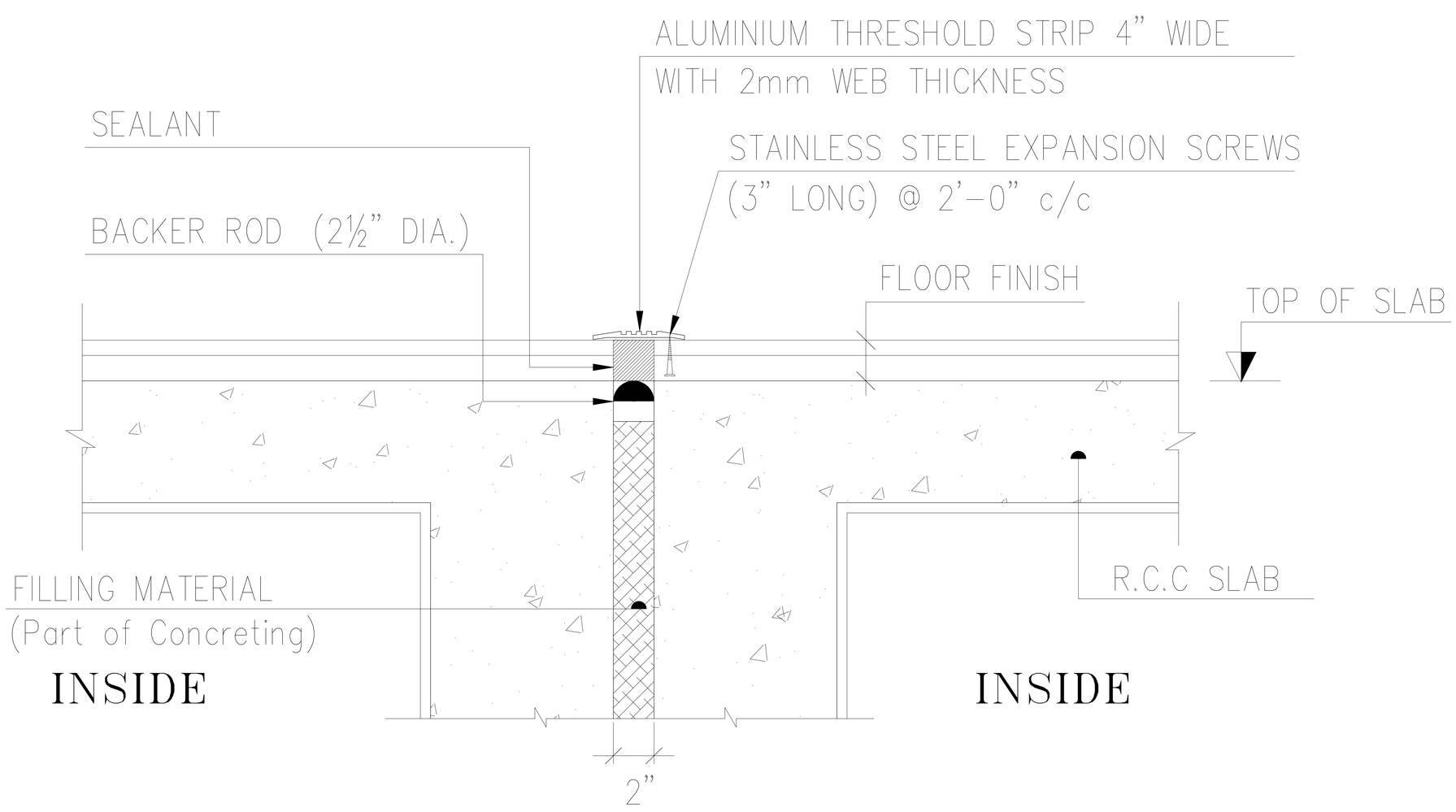
ALL WOODEN, PLY & BOARD SURFACES INSIDE CABINET SHALL BE PAINTED WITH ENAMEL PAINT.

PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE TYPICAL SECTION THROUGH KITCHEN CABINET
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J44 REV. 0

ARCHITECTURAL DETAILS



EXPANSION JOINT DETAIL TYPE-2



EXPANSION JOINT DETAIL TYPE-3

PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE EXPANSION JOINT (TYPE-2 & 3)
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J45 REV. 0

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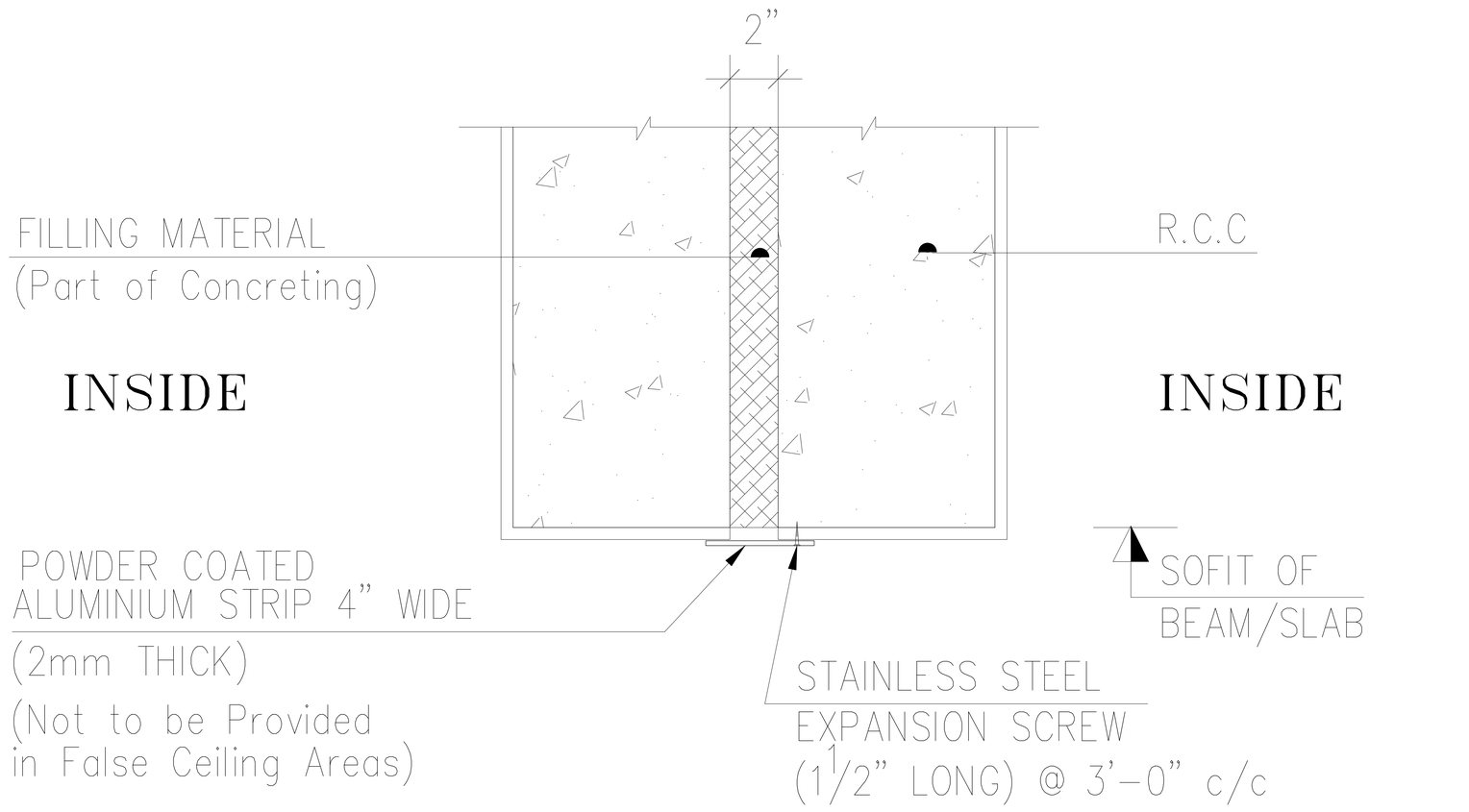
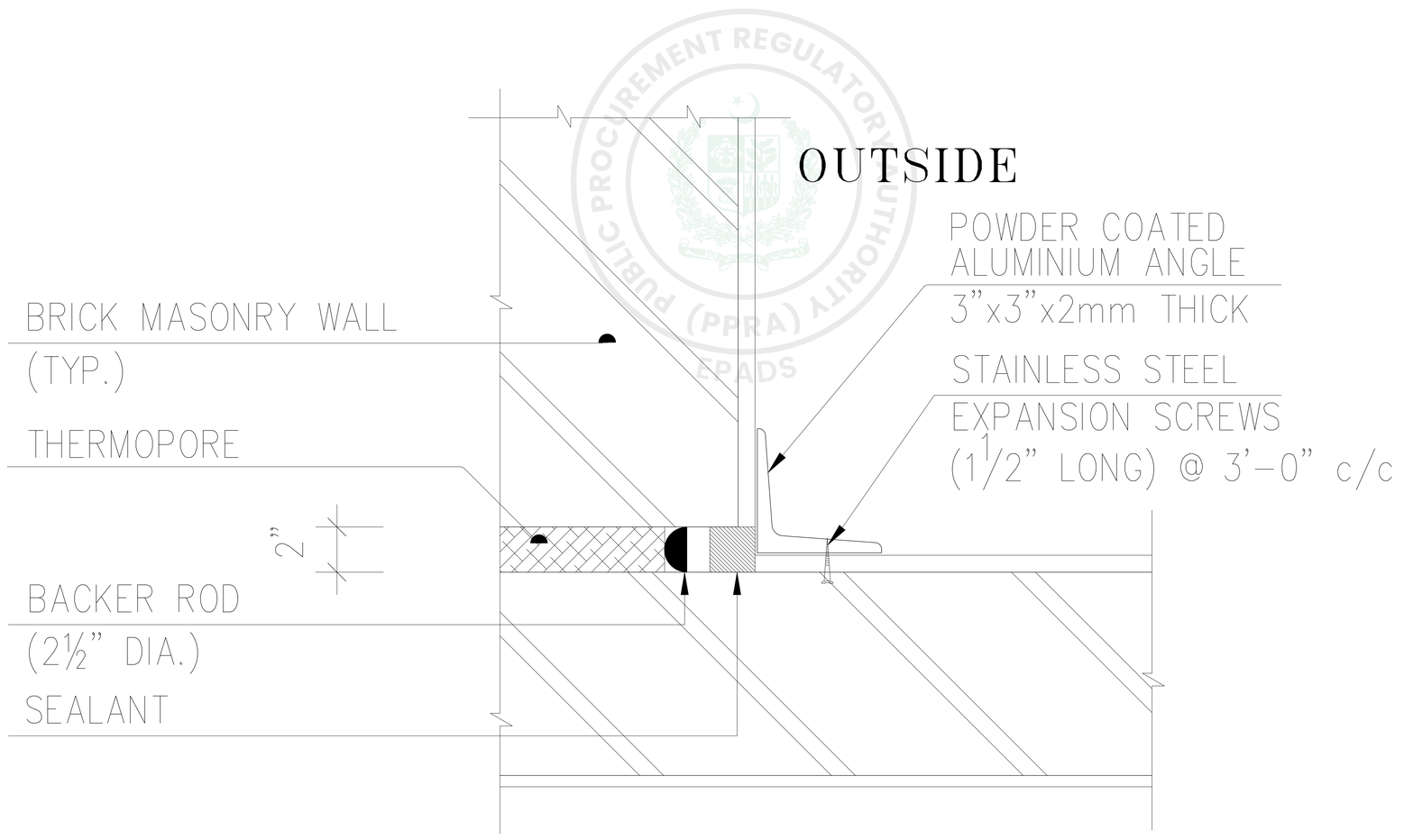
ARCHITECTURAL DETAILS



EXPANSION JOINT DETAIL TYPE-4



EXPANSION JOINT DETAIL TYPE-5

WITH COVER STRIP AT CORNER
VERTICAL SURFACES

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: EXPANSION JOINT (TYPE-4 & 5)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J46
			REV.: 0

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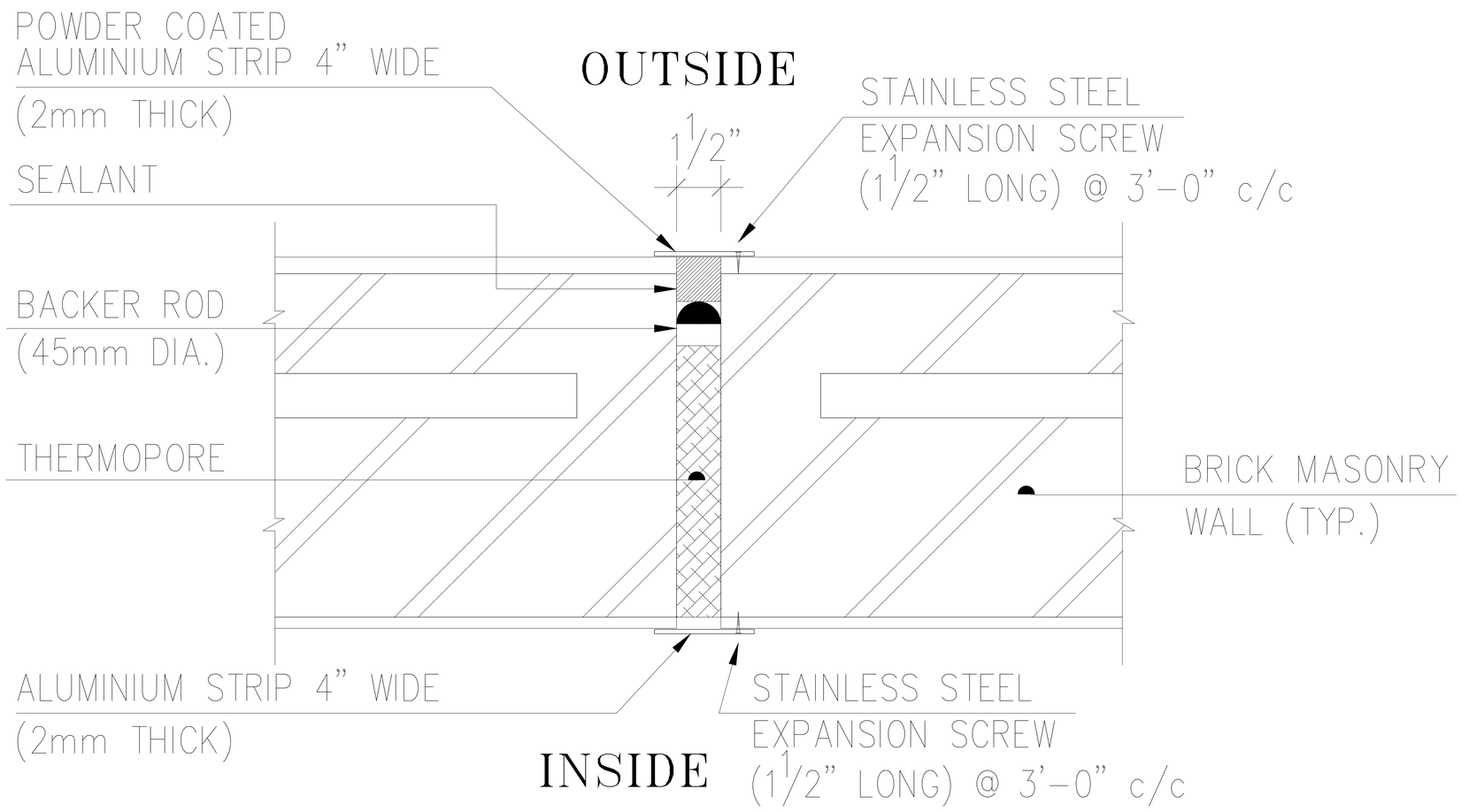
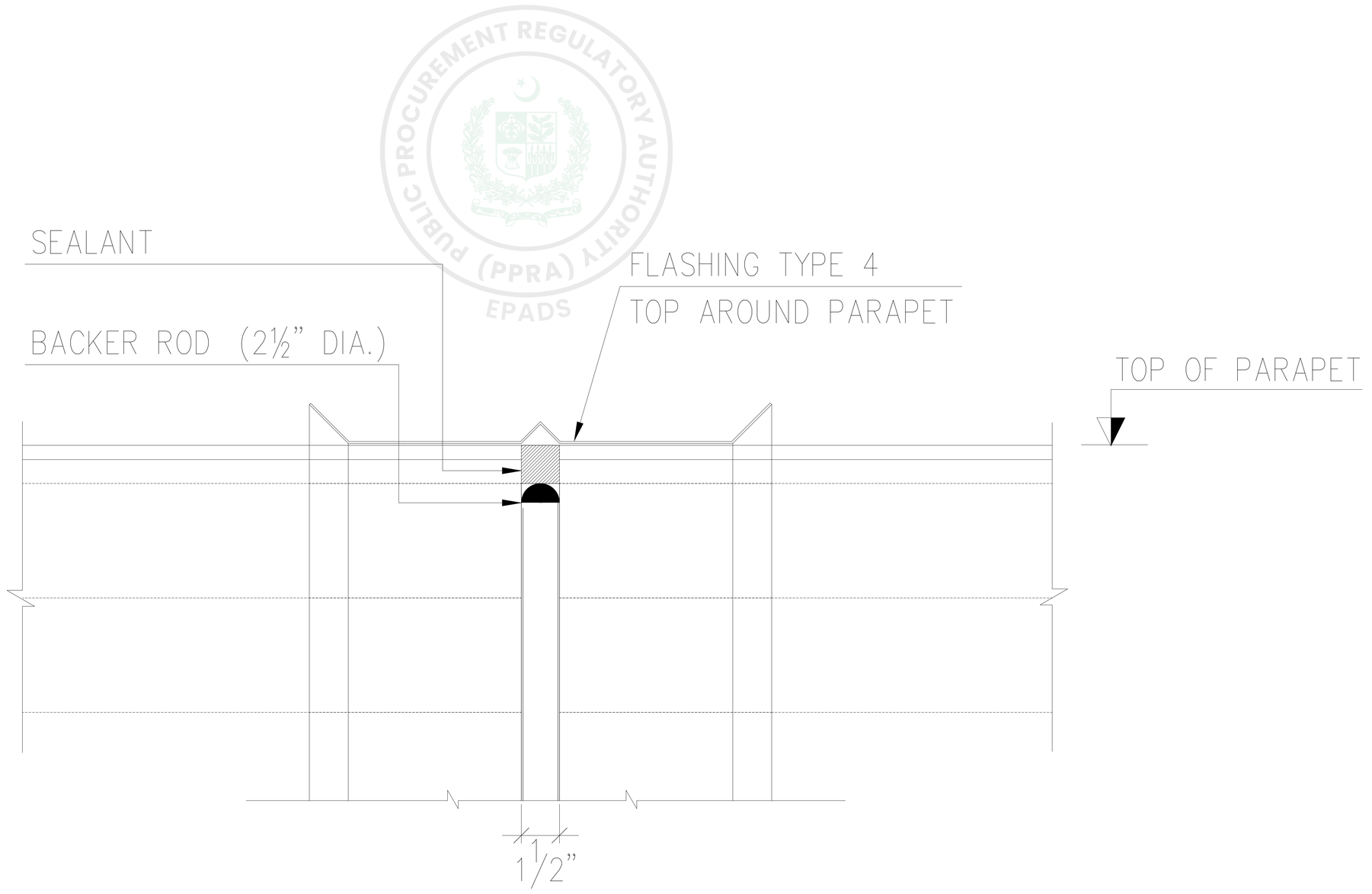
ARCHITECTURAL DETAILS



EXPANSION JOINT DETAIL TYPE-6

WITH COVER STRIP AT STRAIGHT
VERTICAL SURFACES



EXPANSION JOINT DETAIL TYPE-7

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: EXPANSION JOINT (TYPE-6 & 7)	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J47	REV.: 0

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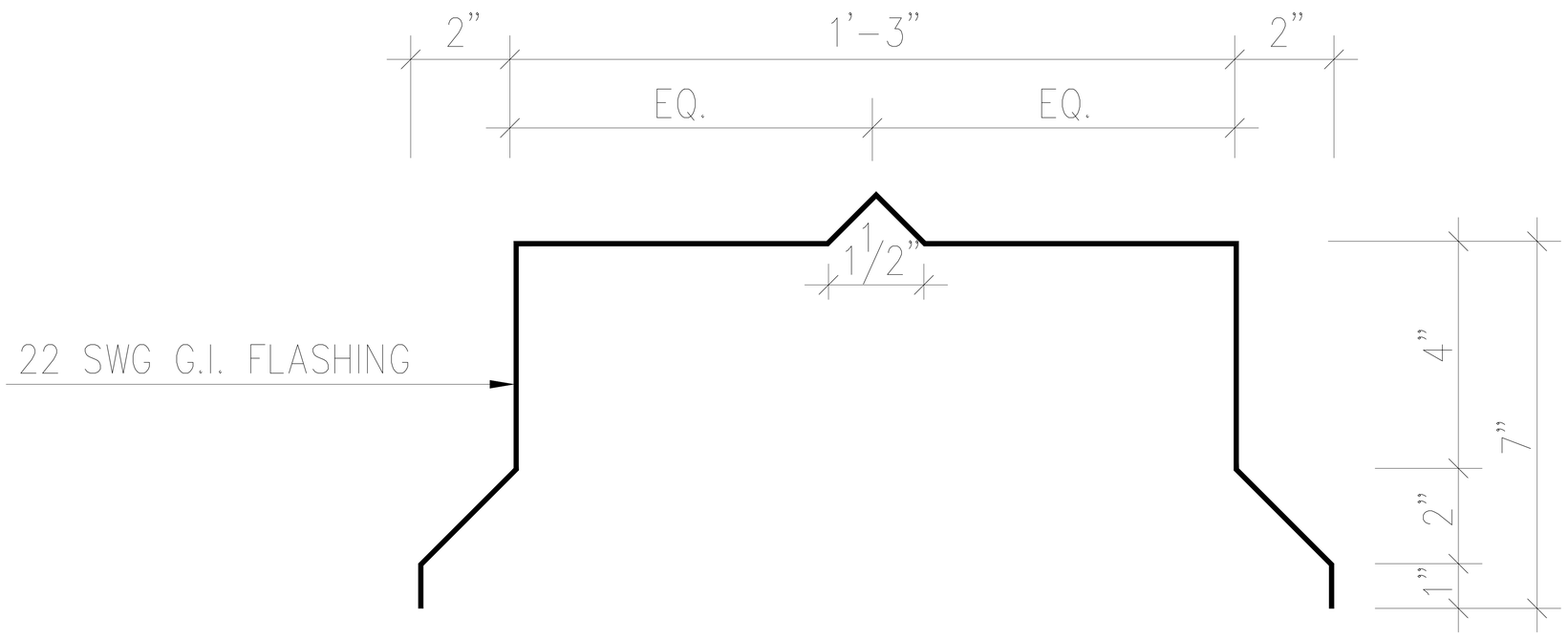
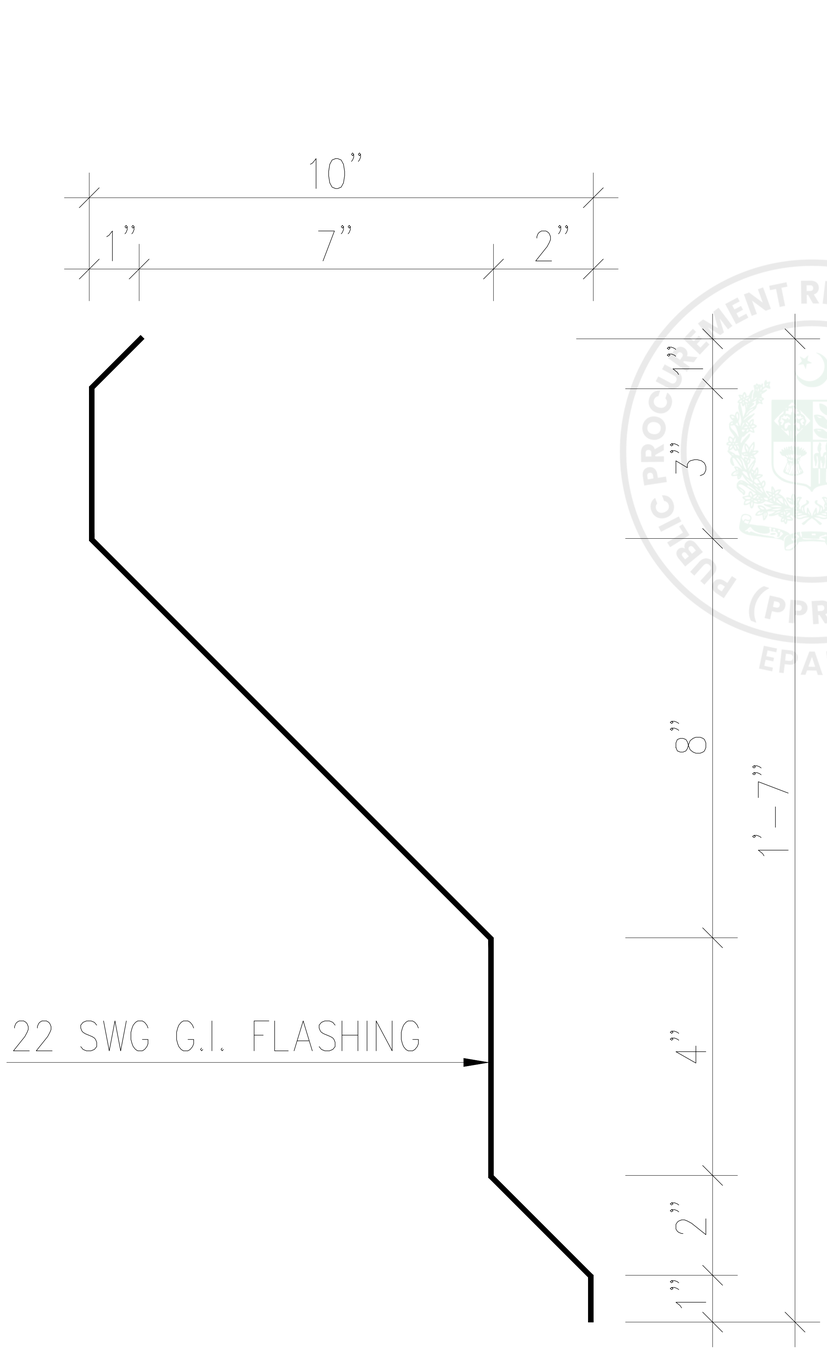
ARCHITECTURAL DETAILS

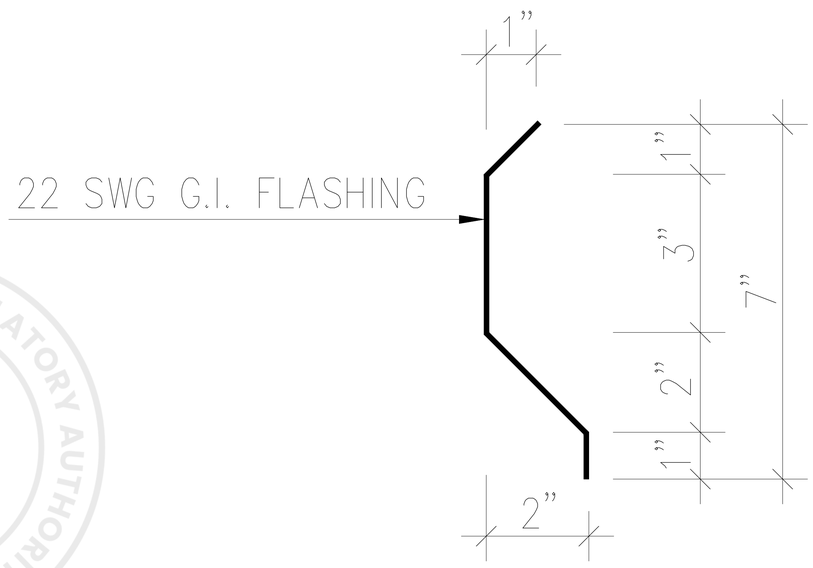


G.I. FLASHING (TYPE-1)

FOR EXPANSION JOINT

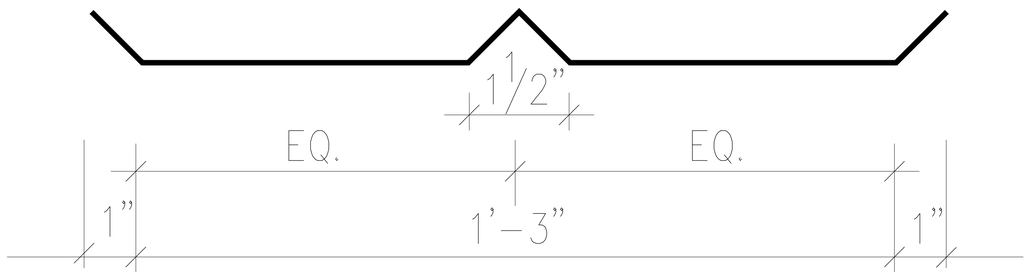


PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA)
EPADS



G.I. FLASHING (TYPE-3)

FOR BUILT UP ROOFING SYSTEM



G.I. FLASHING (TYPE-2)

FOR EXPANSION JOINT

G.I. FLASHING (TYPE-4)

FOR EXPANSION JOINT

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: DETAILS OF FLASHINGS	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA–555/322/BD/02J48	REV.: 0

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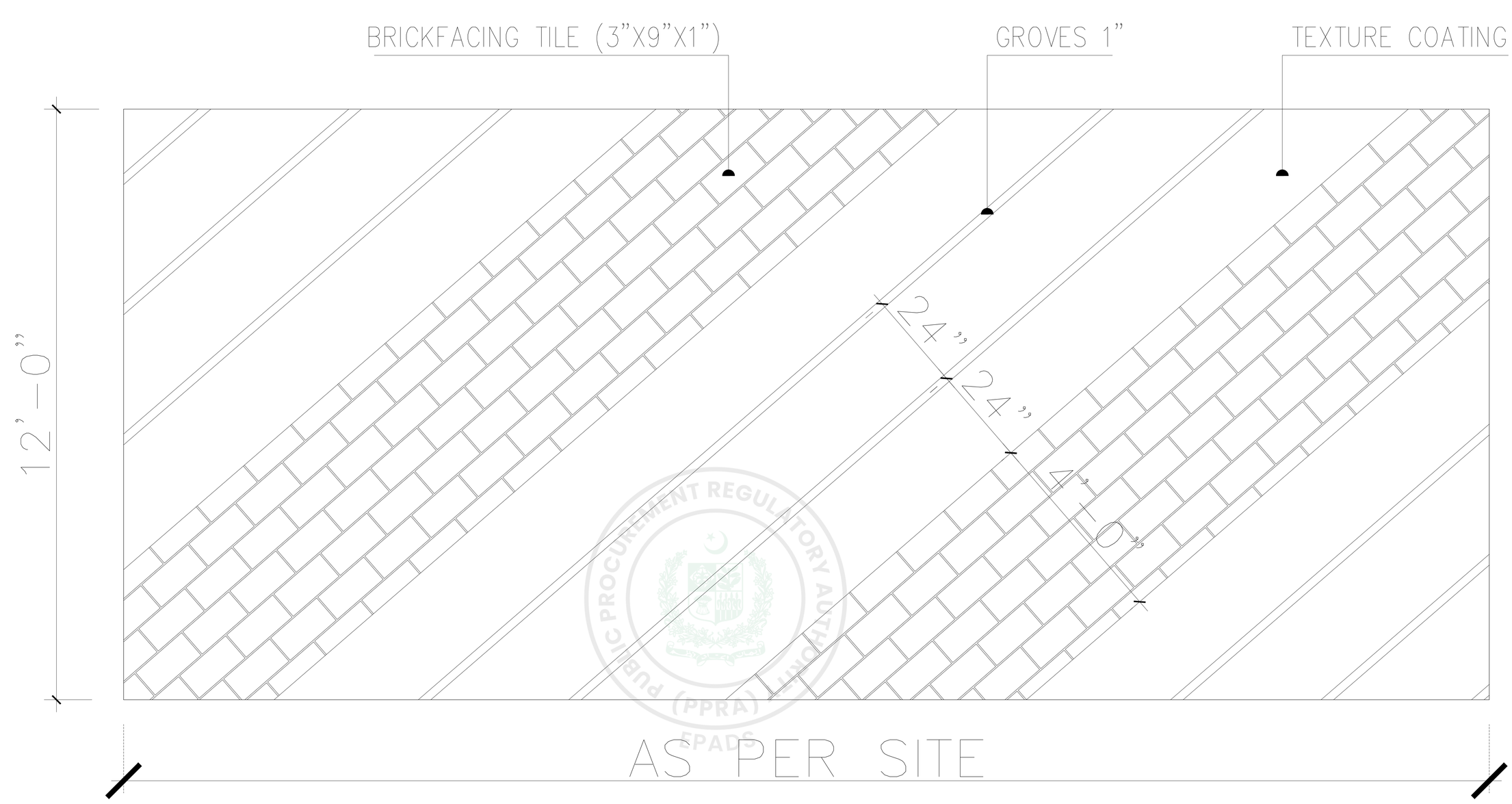
ARCHITECTURAL DETAILS



ELEVATION

PLAN

PROJECT: ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD		TITLE: FEATURE WALL	
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD	SCALE: N.T.S DATE: MAY, 2026	NO.: SA-555/322/BD/02J49	REV.: 0

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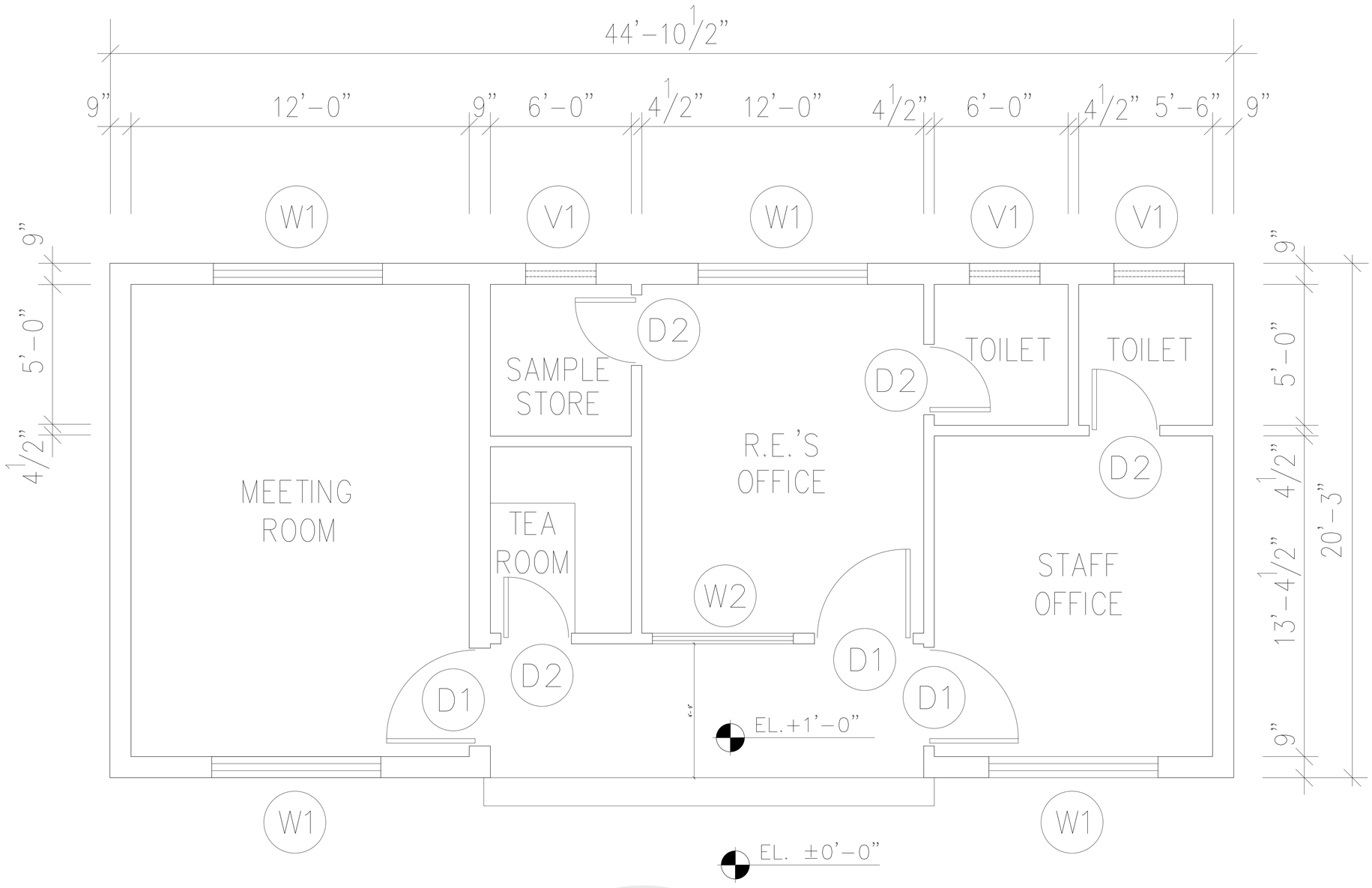
ARCHITECTURAL DETAILS



SITE OFFICE NOTES

1. ROOF SYSTEM SHALL BE OF PRE CAST CONCRETE ROOFING SYSTEM SLOPING TO ONE SIDE WITH A MINIMUM HEIGHT OF 11'-0" WITH THERMOPORE FALSE CEILING
2. BOTH INTERNAL & EXTERNAL SIDES OF THE WALLS SHALL BE PLASTERED WITH 1:4 C.S. MORTAR.
3. INTERNAL WALLS SHALL BE PAINTED WITH SPD WITH LIME WASH ON THE EXTERIOR.
4. TERRAZZO TILE FLOORING SHALL BE PROVIDED IN ALL ROOMS.
5. CERAMIC TILE FLOORING WITH CERAMIC TILE DADO UPTO 5'-0" SHALL BE PROVIDED IN ALL TOILETS & TEA ROOM.
6. THE SITE OFFICE SHALL HAVE ITS INDIPENDENT O/H WATER TANK OF AT LEAST 500 GALLON CAPACITY.
7. THE SITE OFFICE SHALL BE AIR CONDITIONED IN SUMMER AND HEATED IN WINTER.

SCHEDULE OF DOORS & WINDOWS

D1	3'-6"x 7'-0"	DEODAR WOOD FRAME & FLUSH SHUTTERS WITH COMMERCIAL PLY (PAINTED).
D2	2'-6"x 7'-0"	
W1	6'-0"x 4'-0"	STEEL Z SECTION WINDOWS & VENTILATORS WITH FIXED FLY PROOFING (PAINTED) & 5mm THICK PLAIN OR FROSTED (IN TOILET AREAS) GLASS.
W2	5'-0"x 4'-0"	
V1	2'-6"x 2'-0"	

PROJECT	ACADEMIC BLOCK (ST) ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QAU, ISLAMABAD	TITLE	SITE OFFICE
NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD. ISLAMABAD		SCALE N.T.S DATE MAY, 2026	NO. SA-555/322/BD/02J50 — REV. 0

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QUAID-I-AZAM UNIVERSITY(QAU), ISLAMABAD

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) QUAID-I-AZAM UNIVERSITY(QAU), ISLAMABAD

PRICE BID

BIDDING DOCUMENTS VOLUME – IV

LETTER OF PRICE BID
PREAMBLE TO BOQ
BILL OF QUANTITIES

MAY, 2026

NATIONAL ENGINEERING SERVICES PAKISTAN (PVT.) LTD
NESPAK House, Sector G-5/2, Islamabad, Tel: 051-9221910-13, Fax: 051-9221914.

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

LETTER OF PRICE BID AND BILL OF QUANTITIES

TABLE OF CONTENTS

BID AND APPENDICES	Page No.
Letter of Price Bid	LPB-1
Preamble to Bill of Quantities	BD-1 to BD-2
Summary of Cost	BD-4
Bill of Quantities	As per Contents

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Letter of Price Bid

Name of Contract: **"Establishment of National Institute of Intelligence & Security Studies (NIISS) at Quaid-i-Azam University (QAU), Islamabad"**

To: **Project Director**
Quaid-i-Azam University (QAU),
Islamabad

We, the undersigned, declare that:

(a) We have examined and have no reservations to the Bidding Documents, including Addenda issued in accordance with Instructions to Bidders (IB)9;

(b) The total price of our Bid, excluding any discounts offered in item (c) below is: Rs……
…

(c) The discounts offered and the methodology for their application are:

Rs……..…

(d) Our Bid shall be valid for a period of **120** days from the date fixed for the bid submission deadline in accordance with the Bidding Documents, and it shall remain binding upon us and may be accepted at any time before the expiration of that period;

(e) If our Bid is accepted, we commit to obtain a performance security in accordance with the Bidding Documents;

(f) We understand that this bid, together with your written acceptance thereof included in your notification of award, shall constitute a binding contract between us, until a formal contract is prepared and executed and we do hereby declare that the Bid is made without any collusion, comparison of figures or arrangement with any other bidder for the Works.

(g) We understand that you are not bound to accept the lowest evaluated bid or any other bid that you may receive.

(h) We agree to permit Employer or its representative to inspect our accounts and records and other documents relating to the bid submission and to have them audited by auditors. This permission is extended for verification of any information provided in our Technical Bid which comprises all documents enclosed herewith in accordance with IB.11.1 of the Bidding Data Sheet.

(i) If awarded the contract, the person named below shall act as Contractor's Representative.

Name .....

In the capacity of .....

Signed .....

Duly authorized to sign the Bid for and on behalf of .....

Date .....

Address……..

BILL OF QUANTITIES

(to be signed by the bidder)

PREAMBLE

1. **FOR SCHEDULED ITEMS, THE BIDDER SHALL QUOTE PERCENTAGE ABOVE OR BELOW ON THE AMOUNT PUT TO BID AND GIVEN IN THE SUMMARY OF COST OF ESTIMATE.**

2. **FOR NON-SCHEDULED ITEMS, THE BIDDER SHALL QUOTE HIS RATES IN BILL OF QUANTITIES.**

3. The Estimate shall be read in conjunction with the Conditions of Contract, Specifications and Drawings.

4. The Quantities given in the Bill of Quantities are estimated and provisional quantities 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 priced Bill of Quantities, where applicable, and otherwise at such rates and prices as the Engineer may fix as per Contract.

5. The rates and prices quoted in the BOQ, 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.

6. A rate or price shall be entered against each Non-Scheduled item in the priced Bill of Quantities, whether quantities are stated or not. The cost of items against which the Contractor will have failed to enter a rate or price shall be deemed to be covered by other rates and prices entered in the Bill of Quantities.

7. The whole cost of complying with the provisions of the Contract is included in the rates and prices given in the Priced BOQ. Where no items are provided, the cost is deemed to be distributed among the rates and prices for the other related items of the Works.

8. In case of any discrepancy in description or unit of any scheduled item provided in the BOQ with the description or unit of any scheduled item provided in Pak. PWD Schedule of Rates 2022, the description and unit of item as provided in Pak. PWD Schedule of Rates 2022 shall prevail.

9. General directions and description of work and materials are not necessarily repeated nor summarised in the Priced BOQ. References to the relevant sections of the Bidding Documents shall be made.

10. The items mentioned in the BOQ 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, BOQ and directions of the Engineer complete in all respect.

11. Pak. PWD Specifications and the Technical Specifications shall be applicable for schedule Items and the non-schedule items, respectively. "Ref Spec. No. 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.

12. Complete description of items of works in the BOQ, 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 BOQ. Theses shall be referred to in accordance with the Drawings and Technical Specifications.

13. 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.

14. 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 Estimate be made because of any increase or decrease in the quantities indicated therein.

15. Provisional sums included and so designated in the Bill of Quantities shall be expended in whole or in part at the direction and discretion of the Engineer in accordance with Sub-Clause 13.4 of General Conditions of Contract.

16. The following abbreviations for the Units have been used in the estimate:

Unit	**Abbreviations**
Running feet	Rft.
Square feet	Sft.
Cubic feet	Cft.
Kilogram	Kg.
Per Number	Each, Number, No.
Lump Sum Job	Job, Lot

Authorized Signature and official Seal: _____

Name: _____

Date: _____

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE & SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

SUMMARY OF COST

S/N	Description of Works	Unit	Price
A)	**ACADEMIC BLOCK (ST)**		
A-1)	**CIVIL WORKS**		
a)	Scheduled Items	Rs.	312,911,603
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total A-1) = (a + b)	**Rs.**	
A-2)	**PLUMBING WORKS**		
a)	Scheduled Items	Rs.	5,491,062
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total A-2) = (a + b)	**Rs.**	
A-3)	**ELECTRICAL WORKS**		
a)	Scheduled Items	Rs.	43,390,239
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total A-3) = (a + b)	**Rs.**	
A-3-1)	**BUILDING AIR CONDITIONS**		
a)	Scheduled Items	Rs.	5,411,553
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total A-3-1) = (a + b)	**Rs.**	
	TOTAL A (A-1 + A-2 + A-3 + A-3-1)	**Rs.**	
B)	**EXTERNAL DEVELOPMENT WORKS**		
B-1)	**ROADS, WALKWAYS, PAVED AREAS & CAR PARKING**		
a)	Scheduled Items	R	128,472,163
	Premium (%age above / below)		

S/N	Description of Works	Unit	Price
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-1) = (a + b)	**Rs.**	
B-2)	**BOUNDARY WALL & R.C.C RETAINING WALL**		
a)	Scheduled Items	Rs.	87,227,374
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-2) = (a + b)	**Rs.**	
B-3)	**MAIN GATE, GUARD ROOM & ELECTRIC METERING ROOM**		
i)	**CIVIL WORKS**		
a)	Scheduled Items	Rs.	5,607,538
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-3-i) = (a + b)	**Rs.**	
ii)	**ELECTRICAL WORKS**		
a)	Scheduled Items	Rs.	6,363,894
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-3-ii) = (a + b)	**Rs.**	
	SUB-TOTAL B-3) = (i + ii)	**Rs.**	
B-4)	**STORM DRAINAGE NETWORK**		
a)	Scheduled Items	Rs.	35,879,586
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-4) = (a + b)	**Rs.**	

S/N	Description of Works	Unit	Price
B-5)	**WATER SUPPLY NETWORK**		
a)	Scheduled Items	Rs.	2,566,773
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-5) = (a + b)	**Rs.**	
B-6)	**FIRE FIGHTING NETWORK**		
a)	Scheduled Items	Rs.	1,548,521
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-6) = (a + b)	**Rs.**	
B-7)	**SANITARY SEWER NETWORK**		
a)	Scheduled Items	Rs.	5,674,065
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items		
	Total B-7) = (a + b)	**Rs.**	
B-8)	**TUBE WELL**		
a)	Scheduled Items	Rs.	4,210,825
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-8) = (a + b)	**Rs.**	
B-9)	**ELEVATED WATER TANK**		
i)	**CIVIL WORKS**		
a)	Scheduled Items	Rs.	24,126,726
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-9-i) = (a + b)	**Rs.**	

S/N	Description of Works	Unit	Price
ii)	**PLUMBING WORKS**		
a)	Scheduled Items	Rs.	112,964
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-9-ii) = (a + b)	**Rs.**	
iii)	**ELECTRICAL WORKS**		
a)	Scheduled Items	Rs.	414,802
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-9- iii) = (a + b)	**Rs.**	
	TOTAL B-9) = (i + ii + iii)	**Rs.**	
B-10)	**UNDERGROUND WATER TANK & PUMP ROOM**		
i)	**CIVIL WORKS**		
a)	Scheduled Items	Rs.	17,273,267
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-10-i) = (a + b)	**Rs.**	
ii)	**PLUMBING WORKS**		
a)	Scheduled Items	Rs.	454,445
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-10-ii) = (a + b)	**Rs.**	
iii)	**ELECTRICAL WORKS**		
a)	Scheduled Items	Rs.	1,518,468
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-10-iii) = (a + b)	**Rs.**	
	TOTAL B-10) = (i + ii + iii)	**Rs.**	

S/N	Description of Works	Unit	Price
B-11)	**SEPTIC TANK**		
a)	Scheduled Items	Rs.	4,645,388
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-11) = (a + b)	**Rs.**	
B-12)	**EXTERNAL ELECTRICAL WORKS**		
a)	Scheduled Items	Rs.	15,586,267
	Premium (%age above / below)		
	Amount of Scheduled Items after adding Premium	Rs.	
b)	Non-Scheduled Items	Rs.	
	Total B-12) = (a + b)	**Rs.**	
	NET TOTAL = (A + B)	**Rs.**	

Total A+B (Scheduled + Non-Scheduled)

_____

C: Sales Tax **@ …….. = Rs.**

_____

Total A+B+C (Scheduled + Non-Scheduled + Sales Tax)

_____

In Words:

(_____)

Note: The Bidder shall carry over the quoted percentage to Letter of Price Bid page **LPB-1.**

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

S/N	Description of Works	Unit	Price

D. PROVISIONAL SUM:

i.	DAB	}	**Rs. 1,000,000/-**

Note-2: The Bidder shall not consider the amount stated against the Provisional Sum while quoting his Bid. All Provisional Sums amount are to be expended in whole or, in part at the direction and discretion of the Engineer in accordance with Sub- Clause 13.4 of the General Conditions except with respect to DAB fees and the expenses in accordance with GC Clause 21.

Authorized Signature and Official Seal: _____

Name: _____

Date: _____

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

ACADEMIC BLOCK (ST)

BILL OF QUANTITIES

CIVIL WORKS

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
			GENERAL NOTE. SCOPE : *(Applicable to all sections)* 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.				
			CIVIL WORKS **PART-I (SCHEDULE ITEMS)**				
QU-AC-C- 1		(103-1)	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	54514.00	1624.63	885,651
		(103-28)	5'-00" to 8'-00" Depth	%Cft	2726.00	1862.13	50,762
QU-AC-C- 2		(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	54514.00	1862.13	1,015,122
		(103-28)	5'-00" to 8'-00" Depth	%Cft	2726.00	2099.63	57,236
QU-AC-C- 3		(103-41)	Structure excavation in Cornman Material by mechanical means and dispose of surplus excavated material upto 10 mile leed complete as ll per direction of Engineer incharge.	100Cft	254100	1078.09	2,739,427
QU-AC-C- 4		(104-1)	Filling excavated earth available at site in foundation, plinth or under floor, etc. including breaking clods, dressing, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction complete within a lead of one chain (30.5 R.m) and lift of 5 feet (1.52m).	100Cft	5500.00	735.19	40,435
QU-AC-C- 5		(104-9)	Supplying stacking and filling sand of approved quality from outside sources in foundation, trenches, plinth or under floor, etc. including dressing, watering and consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction and lift upto 5 feet (1 .52 m).	100Cft	2500.00	4869.94	121,749
QU-AC-C- 6		(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	100Cft	5204.00	24504.59	1,275,219
QU-AC-C- 7		(108-12)	Providing one coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	100Sft	131368.00	1010.75	1,327,802
QU-AC-C- 8		(109-113) + (109-120)	Providing and laying 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge in steps including cost of form work and its removal etc. complete in ground floor.	100Cft	340.00	29075.48	98,857

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
QU-AC-C- 9		(112-02)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:6 in straight or curved walls of **9" to 13-1/2" thick** including scaffolding , racking out joints and curing etc.complete in foundation ,basements and plinth (foundation and basement masonry upto 5 feet or 1.52 M. depth and plinth upto 4 feet or 1.2 M.height from ground level)	%Cft	1538	38582.85	593,404
QU-AC-C- 10		(112-03) + (112-79)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:4 in straight or curved wall 4-1/2 inches (114 mm) or less thickness including scaffolding, raking out joints and curing etc, complete in foundation, basement and plinth (foundation and basement masonry upto 5 (1.52 Ru.m.) feet depth and plinth upto 4 feet (1.2 Ru.m.) height from ground level) .	%Cft	350	43334.68	151,671
QU-AC-C- 11		(112-25) + (112-76)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:5 in straight or curved walls 9 to 13-1/2 inches (229 mm to 343 mm) thick including scaffolding, raking, out joints and curing etc. complete in ground floor superstructure .	%Cft	18,745	41,824.42	7,839,988
		(112-25) + (112-70) + (112-76)	First Floor	%Cft	17,020	44,165.51	7,516,970
		(112-25) + (112-70) + (112-71) + (112-76)	Second Floor	%Cft	471	46,019.01	216,750
QU-AC-C- 12		(112-26) + (112-79)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:4 in straight or curved walls 4-1/2 inches and less thickness including scaffolding , racking out joints and curing etc.complete in ground floors super-structure .	%Cft	1,095	45,506.55	498,297
		(112-26) + (112-70) + (112-79)	First Floor	%Cft	906	47,847.64	433,500
QU-AC-C- 13		(112-144)	Providing and laying wall ties of mild steel flats of approved section and design placed at horizontal and vertical spacing in cavity wall of any description in any floor at any height..	Kg	850	424.07	360,460
QU-AC-C- 14		(114-1) + (114-134) + (114-137) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in column footing of required shape** including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	%Cft	3,984	42,168.16	1,679,979
		(114-2) + (114-134) + (114-137) + (114-146)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **raft or strip** foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	%Cft	35,030	42,168.16	14,771,506

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
QU-AC-C- 15		(114-4) + (114-134) + (114-137) + (114-161) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in columns of square or rectangular shape** of regular section including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth.	%Cft	4,124	51,173.41	2,110,391
QU-AC-C- 16		(114-8) + (114-134) + (114-137) + (114-163) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 lbs per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **plinth beams** of required shape and design including M.S Plates form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	%Cft	6,433	61,457.75	3,953,577
QU-AC-C- 17		(114-24) + (114-134) + (114-137) + (114-161) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in columns of square or rectangular shape** of regular section including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. but excluding the cost of reinforcement, in ground floor.	%Cft	6,652	61,951.46	4,121,011
		(114-24) + (114-134) + (114-137) + (114-92) + (114-161) + (114-146)	First Floor	%Cft	6,613	64,762.92	4,282,772
		(114-24) + (114-134) + (114-137) + (114-92) + (114-93) + (114-161) + (114-146)	Second Floor	%Cft	538	66,973.51	360,317
QU-AC-C- 18		(114-32) + (114-134) + (114-137) + (114-92) + (114-162) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in straight walls vertical fins etc. 3 inches (70 mm) and less than 5 inches (127 mm) thick** including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in First Floor	%Cft	80	89,192.95	71,354

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
		(114-32) + (114-134) + (114-137) + (114-92) + (114-93) + (114-162) + (114-146)	Second Floor	%Cft	1,690	91,403.54	1,544,720
		(114-32) + (114-134) + (114-137) + (114-92) + (114-93) + (114-162) + (114-146)	Third Floor	%Cft	72	93,614.13	67,402
QU-AC-C- 19		(114-30) + (114-134) + (114-137) + (114-92) + (114-93) + (114-162) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in straight walls vertical fins more than 6 inches (152 mm)) thick** including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in G. Floor	%Cft	350	62,403.55	218,412
QU-AC-C- 20		(114-30) + (114-134) + (114-137) + (114-92) + (114-93) + (114-162) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in straight walls vertical fins more than 6 inches (152 mm)) thick** including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in First Floor	%Cft	285	65,215.01	185,863
QU-AC-C- 21		(114-30) + (114-134) + (114-137) + (114-92) + (114-93) + (114-162) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in straight walls vertical fins more than 6 inches (152 mm)) thick** including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in First Floor	%Cft	1,403	67,425.60	945,981

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
QU-AC-C- 22		(114-38) + (114-134) + (114-137) + (114-163) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in straight beams, lintels cantilever beams** of required shape or section including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement and ground floor.	%Cft	4,460	68,415.37	3,051,326
		(114-38) + (114-134) + (114-137) + (114-92) + (114-163) + (114-146)	First Floor	%Cft	4,738	71,226.83	3,374,727
		(114-38) + (114-134) + (114-137) + (114-92) + (114-93) + (114-163) + (114-146)	Second Floor	%Cft	386	73,437.42	283,468
QU-AC-C- 23	a)	(114-50) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **straight stairs and landing** of required section including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor.	100Cft	681.00	61558.17	419,211
	b)	(114-50) + (114-134) + (114-137) + (114-92)	First Floor	100Cft	1464.00	64369.63	942,371
QU-AC-C- 24	a)	(114-56) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **ordinary slab 5 inches to 6 inches** (152 mm) thick including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor.	100Cft	14242.00	49314.91	7,023,429
	b)	(114-56) + (114-134) + (114-137) + (114-92)	First Floor	100Cft	15200.00	52126.37	7,923,208

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA)

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
	c)	(114-56) + (114-134) + (114-137) + (114-93)	Second Floor	100Cft	275.00	54336.96	149,427
QU-AC-C- 25	a)	(114-55)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 2250 Ibs. per sq inch (15.52 N/mm^2) at 28 days with a mix not leaner than 1:2:4 in **ordinary slab 3 inches (76 mm) to less than 5"** (127 mm) thick including form work and its removal compacting and curing etc, complete but excluding the cost of reinforcement, in basement plinth and ground floor.	100Cft	150.00	50801.07	76,202
	b)	(114-55) + (114-92)	First Floor	100Cft	150.00	53612.53	80,419
QU-AC-C- 26	a)	(114-57) + (114-134) + (114-137) + (114-92) + (114-93) + (114-164) + (114-146)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, Lawrencepur sand having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in ordinary slab more than 6 inches (152 mm) thick** including M.S Plates form work and M.S pipe folding and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in **Second floor**.	%Cft	834	68,046.29	567,506
QU-AC-C- 27	a)	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	210700.00	282.45	59,512,215
	b)	(114-166) + (114-174)	First Floor	Kg	75893.00	286.89	21,772,943
	c)	(114-166) + (114-174) + (114-175)	Second Floor	Kg	11202.00	291.33	3,263,479
QU-AC-C- 28	a)	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	62900.00	266.70	16,775,430
	b)	(114-167) + (114-174)	First Floor	Kg	51082.00	271.14	13,850,373
	c)	(114-167) + (114-174) + (114-175)	Second Floor	Kg	6607.00	275.58	1,820,757

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
QU-AC-C- 29	a)	(116-37) + (116-55)	Providing and laying 1st class burnt clay tiles of 9" X 4-1/2" X 1-1/2" size grouted with 1:3 cement mortar over 4" thick (avg) puddled earth compacted and smooth finished to slope mixed with bhoosa at the rate of one seer of bhoosa for one cft. of puddled earth in **first floor** including flush pointing on tiles works with 1:3 cement mortar and curing complete.	%Sft	31,228	15,500.25	4,840,418
		(116-37) + 2x(116-55)	Second Floor	%Sft	473	15,622.75	73,896
QU-AC-C- 30		(117-2)	Providing and laying 1:4:8 cement concrete bed under floor using graded stone ballast 1"(25mm) and down gauge with leveling and ramming, ramming, watering and curing etc. complete in ground floor.	100Cft	10371.00	22036.75	2,285,431
		(117-13) + (117-18) + (114-136) + (114-145)	Providing and laying terrazzo floor 1-3/4 inches (44 mm) thick consisting of 3/4 inch (19 mm) thick topping 1:2 (1 white cement 2 approved marble chips No. 0 to 6) in ground floor over a base of 1:2:4 (one cement, two sand and four graded crushed) cement concrete 1 inch (25 mm) thick laid in panels or pattern including form work, curing, cutting, rubbing and polishing etc, complete...	%Sft	420	15918.02	66,856
		(117-13) + (117-18) + (114-136) + (114-145) + (117-25)	First Floor	%Sft.	420	16159.98	67,872
QU-AC-C- 31	a)	(117-39) + (117-76)	Providing and laying floor of 3/4 inch (19 mm) thick marble tiles more than 3 Sq.ft. upto 5 Sq.ft- (more than 0.28 Sq.m upto 0.46 Sq.m) size fine dressed on the surface, without winding in ground floor over 1 inch (25 mm) cement mortar 1:4 (one cement, four sand) setting the marble tiles with grey cement slurry over lime mortar, jointing and washing the tiles with white cement slurry including curing, rubbing and polishing etc. complete including the cost of mortar.	100Sft.	12142.00	48884.00	5,935,495
	b)	(117-39) + (117-76) + (117-79)	First Floor	100Sft.	7467.00	49477.75	3,694,504
QU-AC-C- 32	a)	(117-58) + (117-77)	Providing and laying stairs / steps (in treads, rises and mid stair landing) floor of **1 inch (25 mm) thick white marble tiles more than 3 Sq.ft. upto 5 Sq.ft-** (more than 0.28 Sq.m upto 0.46 Sq.m) size fine dressed on the surface, without winding in ground floor over 1 inch (25 mm) cement mortar 1:4 setting the marble tiles with grey cement slurry over lime mortar, jointing and washing the tiles with white cement slurry including curing, rubbing and polishing etc. complete including the cost of mortar.	100Sft.	1311.00	81539.13	1,068,978
QU-AC-C- 33		(117-75)	Extra for making nosing of treads as per design and instructions of the Engineer-in-Charge ..	Rft	566.00	131.25	74,288
QU-AC-C- 34		(117-117)	Proving and laying floor 1 inch (25 mm) thick of cement tiles 12" X 12" X 1" (1/2 inch toping 1/2 inch base) or 305 mm X 305 mm X 25 mm (13 mm topping 12 mm base) in grey cement with pigment of dark shade in ground floor over 1 inch (25 mm) lime mortar 1:2 (one lime two sand) including setting the tiles with grey cement slurry over lime mortar, jointing and washing the tiles with grey cement slurry including grinding, rubbing, polishing and curing etc. complete including the cost of mortar .	100Sft.	3252.00	19654.80	639,174

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
QU-AC-C- 35		(117-166)	Providing and fixing with iron screws best quality imported teak wood 2 inches (51 mm) thick planeding of required width for flooring rebated or tongued and grooved on wooden frame in any floor including necessary Jointing etc. complete but excluding the cost of frame .	Sft	2,590	3,764.75	9,750,703
QU-AC-C- 35		(117-180)	Providing & laying light colour, glazed/ non skid vitrified porcelain tiles (polished) exceeding 1600 Sqcm and upto 3600 Sqcm each, (Pak made) on walls & floors, in any floor, laid with dry bond (stile bond) over a base of 1" thick cement mortar (1:3) including jointing to tiles with joint filler of approved quality as per direction of the Engineer incharge.	%Sft.	18,773	40,610.74	7,623,854
QU-AC-C- 36		(117-181)	Providing & laying light colour, glazed/ non skid vitrified porcelain tiles (polished) exceeding 3600 Sqcm each, (Pak made) on walls & floors, in any floor, laid with dry bond (stile bond) over a base of 1" thick cement mortar (1:3) including jointing to tiles with joint filler of approved quality as per direction of the Engineer incharge.	%Sft.	29,617	49,798.24	14,748,745
QU-AC-C- 37	a)	(118-15) + (118-21)	Providing and fixing 1/2 inch (13 mm) thick white marble tiles above 36 Sq. inches upto 144 Sq. inches (232 Sq.cm upto 928 Sq.cm) size fine dressed on the surface without windings in dado and skirting and facing etc. in ground floor over 1/2 inch (13 mm) thick base of cement mortar 1:3 setting of tiles in slurry of grey cement over mortar base including filling the joints and washing the tiles with white cement slurry curing, finishing, cleaning and polishing etc. in internal work complete..	100Sft.	471.00	33112.00	155,958
	b)	(118-15) + (118-21) + (118-28)	First Floor	100Sft.	375.00	34002.63	127,510
QU-AC-C- 38		(119-5)	Providing and fixing single leaf steel doors made to crittal or equivalent standard and of approved sections fully panelled with M. S. Sheet of 16 gauge painted with two coats of red oxide paint including using approved brass section oxidized fitting iron lugs, cutting holes and making good damages to walls etc. complete as required in any floor.	Sft.	118.00	933.84	110,193
QU-AC-C- 39		(119-32)	Providing and fixing iron grills with required section of angle iron and MS square bar as per approved design including welding all sides of the section at the junction, and fixing with sunk iron screws, painting two coats of red oxide paint etc. complete as required in any floor in masonry or concrete work.	Kg.	4374.00	290.89	1,272,353
QU-AC-C- 40		(119-45)	Providing and fixing M.S. moulded steel door frames of 5.73" x 2-1/2" (146 mm x 63 mm) manufactured from mild steel sheet of 18 gauge (1.41 mm) conforming to B.S.S. 1245 having a double rebate size i 1/2" x 1/2" (38 mm x 12 mm) provision of .3. Nos. M.S. plate, section 1- 1 /2" x 114" (38 mm x 6 mm) (2 Nos. 6 inch long welded with frame at not less than 1 O points and 1 Nos. 12 inch long welded with frame at not less than 20 points), with holes and threads for fixing steel hings, fitted with one locking box of same sheet (point welded inside the frame), 6 Nos. 6 inches long flat iron fixing lugs of 1-1 /4" x 3/16" section, treated with special red oxide primer coat all around including cutting holes and filling the cavity with cement concrete 1 :2:4 etc. in any floor at any height complete as directed by the Engineer-in-Charge	Rft	1141	469.80	536,042

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
QU-AC-C- 41		(119-45)	Providing and fixing M.S. moulded steel door frames of 10" x 2-1/2" manufactured from mild steel sheet of 18 gauge conforming to B.S.S. 1245 having a single/double rebate size 1-1/2" x 1/2" (38 mm x 12 mm) provision of 3 Nos. M.S. plate, section 1-1/2" x 1/4" (38 mm x 6 mm) (2 Nos. 6 inch long welded with frame at not less than 10 points and 1 Nos. 12 inch long welded with frame at not less than 20 points), with holes and threads for fixing steel hinges, fitted with one locking box of same sheet (point welded inside the frame), 6 Nos. 6 inches long flat iron fixing lugs of 1-1/4" x 3/16" section, treated with special red oxide primer coat all around including cutting holes and filling the cavity with cement concrete 1 :2:4 etc. in any floor at any height complete as .directed by the Engineer-in-Charge	Rft	1443	693.86	1,001,240
QU-AC-C- 42		(119-61)	Providing and fixing fully glazed **Bronze anodized or Powder Coated** aluminum fixed windows partition as per British standard manufactured by **Lucky, Prime, Chawla, Krudson and Pakistan Cables.** (fixing through their approved fabricators), Deluxe model box section 101.76mm x 44.5mm and **2mm** thick including the cost of aluminum fitting, with all accessories cutting hole etc. and making good damages to walls etc. complete as required in any floor as per direction of engineer-in-charge, but excluding the cost of glass pans.	Sft	110	847.22	93,194
QU-AC-C- 43		(119-91)	Providing and fixing fully glazed **Bronze anodized or powder coated aluminium Swing door** with frame as per British standard manufactured by **Lucky, Prime, Chawla, Krudson, and Pakistan cable.** (fixing through their approved fabricators) deluxe model section, 101.6mm x 44.5mm and 2mm thick including the aluminium fittings, with all accessories cutting hole etc. and making good damages to walls etc. complete as required in any floor as per direction of engineer-in-charge, but excluding the cost of glass pans.	Sft	1451	2078.13	3,015,367
QU-AC-C- 44		(119-97)	Providing and fixing fully glazed **Bronze anodized or Powder Coated** aluminum Sliding windows as per British standard manufactured by **Lucky, Prime, Chawla, Krudson and Pakistan Cables.** (fixing through their approved fabricators), prime model box section 101mm x 30mm and **2mm** thick including the cost of aluminum netting ,fitting, with all accessories cutting hole etc. and making good damages to walls etc. complete as required in any floor as per direction of engineer-in-charge, but excluding the cost of glass pans.	Sft	3,970	1,367.19	5,427,744
QU-AC-C- 45		(119-121)	Providing and fixing Tinted glass panes 5mm thick to M.S. Box pipe / Aluminium doors, windows and ventilators etc including the cost of labour but excluding the cost of M.S. square pipe beading, rubber packing and screw in any floor at any height.	Sft	5,531	371.82	2,056,536
QU-AC-C- 46		(120-2)	Providing and fixing best quality deodar frames for doors. windows, ventilators, clerestory windows, shelves, partitions, trellis work, etc., as required .	Cft	30.00	12731.98	381,959
QU-AC-C- 47		(120-21)	Providing and fixing 1-3/4 inch (44 mm) thick best quality deodar wood shutters fully panelled with same wood, approved iron hinges and tower bolts, etc., as required...	Sft	2.00	1759.61	3,519

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
QU-AC-C- 48		(120-64)	Providing and fixing 1-1/2 inches (38 mm) thick solid core **deodar wood flushed veneered door shutters**, with and including the cost of commercial plywood facing 3 mm. thick (3 ply) on both faces, fixed over best quality deodar wood frame 2 inches wide alround 6 inches wide lock rail and 2nd class deodar wood solid core, i/c., 1/4 inch thick best quality deodar wood lipping on al! sides as per approved drawing, manufactured under power driven hydraulic press, including the cost of approved iron fittings but excluding the cost of handles and locking arrangement.	Sft	3400.00	1448.56	4,925,104
QU-AC-C- 49		(120-236)	Providing and fixing on frames etc., with sunken iron screws best quality deodar wood moulding beading, architrave etc., of approved design up-to one square inch (6.45 Sqm) in cross section as required .	Rft	2584.00	193.35	499,616
QU-AC-C- 50		(121-70)	Providing and fixing with brass screws or specially supplied screws hydraulic door closer Rayobi or approved design No. 72, Japan make, cutting wood etc., to required shape and size as per direction of engineer-in-charge .	Each	14.00	9331.25	130,638
QU-AC-C- 51		(121-84)	Providing and fixing with brass screws door Alpha lock with handle of approved design (Taiwian make), cutting wood etc., to required shape and size with two operating keys as per direction of the Engineer-in-Charge.	Each	65.00	3149.38	204,710
QU-AC-C- 52	a)	(122-2)	1/4" thick cement plaster 1:4 on soffits of ceiling cantilever slabs sides and soffits of beams etc. in basement mezzanine and ground floor including making edges corners and curing etc. complete.	100Sft	25313.00	3852.59	975,206
	b)	(122-2) + (122-87)	First Floor	100Sft	29501.00	4160.09	1,227,268
	c)	(122-2) + (122-87) + (122-90)	Second Floor	100Sft	400.00	4396.34	17,585

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
QU-AC-C- 53	a)	(122-4)	1/2" (13 mm) thick cement plaster 1:4 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete .	100Sft	64149.00	4381.84	2,810,907
	b)	(122-4) + (122-87)	First Floor	100Sft	44005.00	4689.34	2,063,544
	c)	(122-4) + (122-87) + (122-90)	Second Floor	100Sft	11931.00	4925.59	587,672
QU-AC-C- 54		(122-77) + (122-83)	**Colour-creting 1/4"** (6.4 mm) thick 1:1:2 (1 white cement mixed with pigment, 1 marble powder and 2 marble chips zero No.) in required shade including dragging the surface with wire brushes complete with curing etc. over a base of 3/4" (19 mm) thick cement plaster 1:3 in plinth, mezzanine and ground floor including the cost of base course as directed complete, (including horizontal or vertical joints or grooves 3/8" x 1/4" (9.5 mm x 6.4 mm) size of approved design)	%Sft	13,778	18,087.50	2,492,096
		(122-77) + (122-83) + (122-88)	First Floor	%Sft	12,424	18,497.50	2,298,129
		(122-77) + (122-83) + (122-88) + (122-91)	Second Floor	%Sft	7,031	18,812.50	1,322,707
QU-AC-C- 55		(122-156)	Painting wood work with super glass enamel paint of approved make and shade two coats over and including the cost of one coat of priming complete at any height in any floor .	100Sft	4050.00	5624.86	227,807
QU-AC-C- 56		(122-162)	Painting with (ICI) Dulux Plastic emulsion paint VIP of approved shade two coats over and including the cost of one priming coat complete over plastered surface at any height in any floor.	100Sft	136940.00	6737.38	9,226,168
QU-AC-C- 57		(122-172)	Painting three coats with weather shield paint deluxe (ICI) make of approved shade on plaster surface (External) and including the cost of cleaning the surface, sand papering etc. complete at any height in any floor.	100Sft	5471.00	4408.75	241,203
QU-AC-C- 58		(122-157)	Painting plastered surface with super glass synthetic enamel paint of approved make and shade two coats over and including the cost of one coat of priming complete at any height in any floor	100Sft	800.00	5686.75	45,494
QU-AC-C- 59		(122-189a)	Lacquer polishing including sealer (ICI) on wood work at any height in any floor .	%Sft	8,751	19,760.85	1,729,272
QU-AC-C- 60		(124-97)	Providing and fixing PVC ribbed water stops 9" (229 mm) wide in vertical or horizontal expansion joints including cutting or jointing etc., complete in all floors.	Rft	190	448.81	85,274
QU-AC-C- 61		(124-183)	Providing and fixing dampa ceiling aluminium, Denmark I Germany make 2' x 2' tiles/ strip ceiling including all accessories i.e, plump, rod etc complete as required in any floor.	Sft	4,403	1,426.17	6,279,427
QU-AC-C- 62		(124-186)	Providing and fixing Gypsum board 2' x 2'x 12mm tiles ceiling including Aluminum T & L angle 1" x 1" i.c hanger clips jointing clips and G.I Wire etc complete as required in any floor.	Sft.	2558.00	172.73	441,843

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
QU-AC-C- 63		(124-192)	P/F kitchen cabinet wall mounted of 3/4" thick laminated board with best quality deodar wood frame and beading 1/8" thick hard board backing required section in approved pattern etc fixed on wall with rawal pugs,screws i/c the cost of gule , nails,screws, piano hinges, handles and painting or polishing etc as drawing complete all as respects.	Sft.	84	1363.25	114,513
QU-AC-C- 64		(124-193)	P/F kitchen cabinet floor mounted of 3/4" thick laminated board with best quality deodar wood frame and beading required section in approved pattern etc fixed on floor with rawal pugs,screws i/c the cost of gule , nails,screws, piano hinges, handles and painting or polishing etc as drawing complete all as respects.	Sft.	105	1178.19	123,710
QU-AC-C- 65		(124-205)	Providing and fixing of aluminum conventional system **curtain wall** using aluminum profile 64mm x 128mm x 2.5mm thick in anodized I powder coated RAL (as per approved) color with double glazed tempered glass unit (5mm tinted + 12mm AGU +5mm clear local (Ghanirrariq) include 100 Micronanu Shutter safety film (Rhino Solar Windows film made in Taiwan) with M.S Angle/ Bracket, Anchor Bolt, cross bolt with other SS fitting screw with PVC rubber & weather sealants & imported accessories, complete in all respect.	Sft.	1827	3986.25	7,282,879
QU-AC-C- 66		(124-199)	Providing and carrying out Termite proofing in foundations, under floors and wood work surface with a solution using of control TC with water and spraying the solution of the area to be treated as completed as per direction of Engineer Incharge.	Sft.	36160.00	13.13	474,781
QU-AC-C- 67		(124-202)	Providing & fixing 2" dia stainless steel pipe (18 gauge) railing along with 4 Nos 3/4 dia paralled pipe having S/S pipe vertical post 2" dia at 3 ft C/C average spacing and 4" dia vertical post at start turing and end point including cost of labour, welding charges fitting & fixing in marble floor and wall etc complete the as per direction of the Engineer Incharge.	Rft.	333.00	2234.38	744,049
QU-AC-C- 68		(127-32)	Supplying and laying hand broken 1-1/2" to 1/2" (38 mm to 13 mm) stone ballast of approved grade and quality in sub-base or base courses in required grade and camber and compacting to the required density by approved mechanical means (Vibratory Roller, Road Packer and Smooth Wheel Roller etc.) including watering with all lead and lift complete (actual compacted depth shall be considered for payment)	100Cft	10371.00	8341.52	865,099
						TOTAL (SCHEDULE ITEMS) =	**312,911,603**
			PART-II (NON- SCHEDULE ITEMS)				
			Ref. Spec. No. 3000				
QU-AC-C- 69		N.S - 1	Providing and fixing in position 22 gauge expanded metal lath on areas as specified in joints etc. under plaster	Sft.	7690.00		
			Ref. Spec. No. 6600				
QU-AC-C- 70		N.S - 2	1" thick (minimum) chemically pre-polished marble slabs on vanity counter tops of premimum quality available in the market and as approved by the Engineer (of approved colour/shade/texture), with rounded edges, jointed and pointed in 1:2 cement sand mortar (white cement with imported colour pigments) and grouted with 1:3 cement sand grout and base, including cutting, etc, complete.	Sft.	294.00		

Item No.	Sub Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(c)	(d)	(e)	(f)	(g)
			WATER PROOFING/EXPANSION JOINT FILLING **Ref. Spec. No. 6411**				
QU-AC-C- 71		NS-03	Water proofing treatment on roof slabs comprising: 2mm thick self adhesive bituminous membrane over primer coated surface as per manufacturers specifications.	Sft.	31701.00		
					Total Non-Schedule Items		
					TOTAL (Scheduled + Non Scheduled)		

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

ACADEMIC BLOCK (ST)

PLUMBING WORKS

BILL OF QUANTITIES

ITEM NO.	PAK PWD 2022 / NS REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
		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 drawings, specifications and as approved by the				
		SCHEDULED ITEMS				
		SANITARY FIXTURES AND FITTINGS				
ISS-P-01	301-26	Providing and fixing best quality white glazed earthenware Two piece toilet (commode) coupled with flushing tank (Porta or equivalent) complete with and including the cost of plastic seat and buffers, with integral fittings complete.	Each	30	25,375.00	761,250
ISS-P-02	301-28	Providing and fixing best quality squatting type earthenware W.C.Pan (porta or equivalent) complete with and including cost of 13.6 liter best quality low level plastic flushing cistern with integral fittings complete, P.V.C. flushing pipe suitable for squating type with extra bends and length with fittings, PVC trap 04 inches (100mm)dia making requisite number of holes in walls, plinth & floor for pipe connections and making good in cement concrete 1:2:4..	Each	15	19,665.00	294,975
ISS-P-03	301-29 + (4205)	Providing and fixing approved quality earthen ware glazed vanity basin (Porta or equivalent) standard size (White/light colour) and including the cost of Chromium plated mixer 1/2" = 12 mm dia, 1-1/4” dia brass waste 1-1/4” rubber plug and chrome plated brass chain PVC waste pipe 1-1/4” dia of approved pattern etc. complete.	Each	46	18,620.63	856,549

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ITEM NO.	PAK PWD 2022 / NS REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
ISS-P-04	301-8 + 301-10	Providing and fixing 25inches x 18inches (635mm x457mm) lavatory basin in white glazed earthenware with pedestal (Pakistani) complete with and including the cost of Brass oxidized bolts kit built into wall 1/2 inch (15mm) dia. Chrome plated mixer 1-1/4 inches(32 mm) rubber plug and chrome plated brass chain,1-1/4 inches(32mm) dia. brass waste of approved pattern, 1-1/4 inches (32mm) dia Malleable iron or C.P. brass traps malleable iron or brass unions and making requisite number of holes in walls, plinth and floor for pipe connections and making good in cement concrete 1:2:4.	Each	9	18,181.25	163,631
ISS-P-05	301-17	Providing 1/2 inch (15 mm) dia plastic connection complete with a 1/2 inch (15 mm) dia brass stop cock two brass nuts and lining jointed to plastic pipe.	Each	155	824.50	127,798
ISS-P-06	301-23	Providing and fixing approved quality stainless steel sink 33” x 18” Pak made (Atlas) complete with brass oxidized bolt kit/angle iron brackets built into walls ½” dia CP sink mixer 1·1/4” rubber plug and CP brass chain 1-1/4” CP brass waste 1-1/4” dia malleable iron or CP brass bottle trap with malleable iron or brass unions and making requisite number of holes in walls, plinth and floor for pipe connections and making good in cement concrete 1:2:4	Each	4	16,495.00	65,980
ISS-P-07	302-3	Providing and fixing approved quality C.P. brass toilet paper holder.	Each	30	1,970.91	59,127
ISS-P-08	307-2	Providing and fixing 1/2 inches dia. (15 mm) CP bib cocks.	Each.	8	1,130.40	9,043
ISS-P-09	302-2	Providing and fixing 24"x3/4"(610 mm x 20 mm) dia approved quality of chrome plated brass towel rail complete with brackets fixed with 1"(25 mm) long C.P brass screws and rawal plug.	Each	15	2,475.50	37,133
ISS-P-10	302-5	Providing and fixing 24inches x 18 inches (610mm x457mm) looking mirror of imported glass 5mm thick fixing with CP clamps and screws.	Each	9	2,173.98	19,566
ISS-P-11	302-7	Providing and fixing glass shelf 25 inches x 5 inches (610mm x 127mm) brackets and guard rail complete.	Each	9	758.24	6,824
ISS-P-12	302-13	Providing and fixing chromium plated Muslim bib cosk with Muslim shower of approved quality.	Each	45	3,381.75	152,179

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ITEM NO.	PAK PWD 2022 / NS REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
ISS-P-13	301-30	Providing and fixing uPVC multi floor trap of sizes with grating including cutting and making the requisite number of holes in walls, plinth and floors and making good in 1:2:4 C.C.	Each	36	1,459.43	52,539
ISS-P-14	315-27	Providing & fixing C.I Cover & Frame 24" dia (610 mm) weight 2 cwt 2 Qtr (127.00 Kg.) *(on Overhead Water Tank)*	Each	2	36,631.25 ,	73,263
		WATER SUPPLY PIPES AND FITTINGS				
		Providing G.I. pipes, specials and clamps etc., including fixing, cutting and fitting, complete with and including the cost of breaking through walls and roof, making good etc., painting 2 coats after cleaning the pipe etc. with white zinc paint with pigment to match the colour of the building and testing with water to a pressure head of 200 feet (61 m) and cartage within 10 miles. (16.09km). (ILLM). of following pipe sizes:				
ISS-P-15	305-2	3/4 inch (20mm) dia pipe	Rft	55	257.38	14,156
ISS-P-16	305-3	1 inch (25mm) dia pipe	Rft	200	366.46	73,292
ISS-P-17	305-4	1-1/4 inch (32mm) dia pipe	Rft	350	473.30	165,655
ISS-P-18	305-5	1-1/2 inch (40mm) dia pipe	Rft	55	534.17	29,379
ISS-P-19	305-6	2 inch (50mm) dia pipe	Rft	315	718.54	226,340
		Providing and fixing full way gun metal valves with wheels threaded or flanged ends with rubber washers, (standard pattern) of following diameters:				
ISS-P-20	307-8	3/4 inch (20mm) dia	Each	100	2,017.90	201,790
ISS-P-21	307-9	1 inch (25mm) dia	Each	24	4,012.90	96,310
ISS-P-22	307-10	1-1/4 inch (32mm) dia	Each	8	6,366.65	50,933
ISS-P-23	307-11	1-1/2 inch (40mm) dia	Each	4	8,169.15	32,677
ISS-P-24	307-12	2 inch (50mm) dia	Each	4	8,699.40	34,798
		Providing and fixing gun-metal non-return valves with male and female ends as required of following diameters:				
ISS-P-25	307-30	1 inch (25mm) dia	Each	8	4,271.60	34,173
		Providing and fixing PPR pipe PN-20 with specials and clamps etc, including cutting and fitting complete with and including the cost of breaking through walls and roof and making goodetc, after cleaning the pipe and cartage with in 10 miles of following diameter:				

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ITEM NO.	PAK PWD 2022 / NS REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
ISS-P-26	306-30	25mm dia.	Rft	2,600	215.32	559,832
ISS-P-27	306-31	32mm dia.	Rft	1,100	320.26	352,286
ISS-P-28	306-32	40mm dia.	Rft	970	433.66	420,650
ISS-P-29	306-33	50mm dia.	Rft	210	747.61	156,998
ISS-P-30	306-34	63mm dia.	Rft	105	1,147.61	120,499
ISS-P-31	306-35	75mm dia.	Rft	105	2,018.74	211,968
		VALVE CHAMBER				
ISS-P-32	308-4	Providing chambers 15 inches x 9 inches or 380 mm x 230 mm (inside dimensions) x 24 inches (610 mm) deep for valves, with 4-1/2 inches (115 mm) thick, burnt brick masonry walls in 1:6 C.M, 6 inches (150 mm) C.C. 1:4:8 in foundation, 1/2 inch (13 mm) thick cement plaster in 1:3 C.M. to all inside wall surfaces and to top, 1 inch (25 mm) thick C.C. 1:2:4 flooring complete with cast iron hinged cover and frame 15 inches x 9 inches or 380 mm x 230 mm (inside) clear opening (wt = 1 Qtr. or 12.7 kg.) fixed in cement concrete 1:2:4 including curing, excavation back filling and disposal of surplus earth etc., complete..	Each	4	7,367.50	29,470
			TOTAL (SCHEDULE ITEMS) =			**5,491,062**
		NON-SCHEDULED ITEMS				
		SANITARY FIXTURES AND FITTINGS (Ref. Specs 5100)				
ISS-P-33	NS-01	05mm thick Glass mirror Belgium make or approved equivalent including hard board behind it, approved beeding around it and all other fittings for complete installation	Sft	570		
ISS-P-34	NS-02	CP Soap Dish of any shape, pattern and size, of approved make, complete with plugs, screws etc., fixed to concrete, brick, stone or wood work, complete in all respects .	Each	55		
ISS-P-35	NS-03	CP Soap Dispenser of 01liter capacity of any shape, pattern, of approved make, complete with plugs, screws etc., fixed to concrete, brick, stone or wood work, complete in all respects .	Each	8		
ISS-P-36	NS-04	Grab bar/Hand rail set (02 pc's) for handicap toilet commode with fixing plugs and screws etc. fixed to concrete, brick, stone or wood work, complete in all respects.	Each	8		

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ITEM NO.	PAK PWD 2022 / NS REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
ISS-P-37	NS-05	Dual Type (Gas + Electric) water heater heavy guage of 50 Gallons capacity, including automatic temperature/pressure relief valve on outlet and all other accessories for complete installation.	Each.	4		
ISS-P-38	NS-06	Electric water heater heavy duty of 50 Liters capacity, including tee stop cocks, metal flexible pipes, automatic temperature/ pressure relief valve on outlet and all other accessories for complete installation.	Each.	5		
ISS-P-39	NS-07	Electric water coolers of 20gallons/hr capacity, minimum two taps, including Tee stop cock on inlet, and all other accessories for complete installation.	Each	4		
ISS-P-40	NS-08	Water filters of following type, including all accessories for complete installation.				
	(a)	Triple type filter	Each.	4		
ISS-P-41	NS-09	Providing and fixing CP ablution mixer of approved make including all fittings for complete installation.	Each	1		
ISS-P-42	NS-10	Electric Hand Dryer (automatic) with easy to mount kit of approved make & model and all required accessories complete.	Each.	12		
		WATER SUPPLY PIPES AND FITTINGS (Ref. Specs 5100, 5220, 5280)				
ISS-P-43	NS-11	01" thick Glass wool thermal insulation for cold and hot water GI pipes (in exposed conditions) including aluminium vapour barrier and GI (28swg) cladding and all other required accessories complete for following pipe diameters				
	(a)	3/4 inch (20mm) dia pipe	Rft	20		
	(b)	1 inch (25mm) dia pipe	Rft	200		
	(c)	1-1/4 inch (32mm) dia pipe	Rft	350		
	(d)	1-1/2 inch (40mm) dia pipe	Rft	20		
	(e)	2 inch (50mm) dia pipe	Rft	210		
		VALVES (Ref. Specs 5100, 5220)				
ISS-P-44	NS-12	Air relief valves, of approved manufacturers, including jointing arrangement of pipes on both ends of valves; nuts, bolts etc. complete in all respects.				
	(a)	3/4 inches	Each	14		
ISS-P-45	NS-13	Providing and Fixing brass ball float valve including jointing arrangement with pipe; etc. complete in all respects.				
	(a)	02 inches	Each	2		

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ITEM NO.	PAK PWD 2022 / NS REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
		SOIL, WASTE AND VENT PIPES & (Ref. Specs 5100)				
ISS-P-46	NS-14	uPVC Soil, Waste and vent pipes conforming to ISO:3633 type "B" or BS-4514/5255 class "A" of the following diameters, including imported rubber ring/solvent cement fittings, hangers & supports, jointing, cutting, breaking concrete/masonry and then making it good, core cutting & filling with non shrink grout of approved manufacturer wherever required and applying painting, cleaning and testing etc. complete in all respects.				
	(a)	1-1/2 inches	Rft	280		
	(b)	2 inches	Rft	650		
	(c)	3 inches	Rft	1,970		
	(d)	4 inches	Rft	1,530		
	(e)	6 inches	Rft	20		
ISS-P-47	NS-15	3"dia uPVC Floor Trap with SS Top Tile strainer; supports; making required number of connections; breaking concrete or masonry work & then making it good; etc.	Each	40		
ISS-P-48	NS-16	uPVC Floor Cleanout of the following diameter, including Stainless Steel-304 top tile access plug, transition pipe, breaking concrete or masonry work & then making it good, etc. complete in all respects.				
	(a)	3 inches	Each	12		
	(b)	4 inches	Each	12		
ISS-P-49	NS-17	Cawal on vent pipes of the following diameter.				
	(a)	3 inches	Each	10		
ISS-P-50	NS-18	Construction of Gully Trap Chamber (12" x12" clear) including supply & fixing of 4" deep seal C.I. gully trap, construction of 4-1/2" thick brick masonry in 1:4 c/s mortar, 3" thick 1:4:8 P.C.C at bottom, 1:3:6 P.C.C around trap, (12" x 12") CI cover with frame (7 Kg), 1/2" thick 1:3 c/s plaster on inner face, etc complete in all respects as shown in drawings or as directed.	Each	14		
		RAIN WATER AND STORM DRAINAGE PIPES & FITTINGS (Ref. Specs 5100, 5230)				
ISS-P-51	NS-19	uPVC Rain water pipes conforming to ISO:3633 type "B" or BS-4514/5255 class "A" of the following diameters, 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.				

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ITEM NO.	PAK PWD 2022 / NS REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
	(a)	03 inches	Rft	35		
	(b)	04 inches	Rft	550		
	(c)	06 inches	Rft	30		
ISS-P-52	NS-20	CI roof drain of approved make of following diameters, including Brass strainer, flushing material, and all accessories for complete installation, as per specifications.				
	(a)	03 inches	Each	2		
	(b)	04 inches	Each	13		
	(c)	06 inches	Each	1		
		FIRE FIGHTING (Ref. Specs 5150, 5220)				
ISS-P-53	NS-21	MS pipes with specials and clamps etc, conforming to ASTM A53 Sch. 40, Grade-B including fixing, cutting, welding, fixing & support systems; and other fittings complete with and including the cost of breaking, through walls and slabs, making walls & slabs good thereafter, etc, painting with two coats of approved enamel paint after cleaning the pipe.				
	(a)	1.5 inches	Rft	65		
	(b)	2 inches	Rft	30		
	(c)	3 inches	Rft	20		
	(d)	4 inches	Rft	265		
ISS-P-54	NS-22	Supply and installation of steel fire hose cabinet,double compartment, including fire hose reel (25mm x 30m) swinging type with pressure guage and pressure reducing valve brass valved nozzle at one end, 01"dia. Hydrant valve in upper compartment, and fire extinguishers in lower compartment & all accessories for complete installation.	Each	6		
ISS-P-55	NS-23	Fire Extinguisher (BS EN-3) of following types.				
	(a)	Dry Chemical Powder Fire Extinguisher 6Kg Capacity.	Each	10		
	(b)	Foam Type fire extinhuisher capacity 10litres.	Each	10		
		MISCELLANEOUS (Ref. Specs 5100,5230)				
ISS-P-56	NS-24	3/4" diameter Galvanised MS ladder rungs for underground and overhead water tanks; each rung of 18" width, 6" projected outside the wall and 6" embeded in RCC on both ends; including all necessary works for complete installation.	Each	10		

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(a)		(b)	(c)	(d)	(e)	(f)
ISS-P-57	NS-25	Dia 2" u-turned G.I. vent pipes, pudddle plate, with insect proof mesh at open end etc., complete in all respects.	Job	2		

TOTAL (NON-SCHEDULED) = _____

_____

TOTAL SCHEDULED + NON-SCHEDULED ITEMS = _____

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

ACADEMIC BLOCK (ST)

ELECTRICAL WORKS

BILL OF QUANTITIES

SR NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		SCHEDULED ITEMS				
	2-3	**Point wiring in recessed PVC conduit**				
AB-E-01	2-3-01	Wiring for light or fan point with (3/.029") pvc insulated wire in 20 mm² (3/4") dia upvc conduit recessed in the wall , column , roof including 1 mm² single core pvc insulated wire as ECC as Required.	Point	1,000	2,836	2,836,000
	2-7	**Extension /Additional Point wiring**				
AB-E-02	2-7-03	Extension /additional wiring for light fan call bell or light plug point controlled with same switch with (3/.029") pvc insulated wire in 20 mm (3/4") dia PVC conduit recessed in the wall , column or roof including 1mm² single core pvc insulated wire as ECC as required	P/Point	600	1,179	707,400
	2-26	**Single pvc insulated wire and pvc ,pvc cable in existing conduits/ducts**				
AB-E-03	2-26-05	Supply & drawing of 10 mm², single core, PVC insulated wire in all kinds of existing or given conduit/cable duct as required.	Rft	4,600	139	639,400
AB-E-04	2-26-20	Supply & drawing of 16 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	520	219	113,880
AB-E-05	2-26-21	Supply & drawing of 25 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	20	327	6,540
AB-E-06	2-26-22	Supply & drawing of 35 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	100	438	43,800
AB-E-07	2-26-23	Supply & drawing of 50 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	100	590	59,000
AB-E-08	2-26-24	Supply & drawing of 70 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	500	843	421,500

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SR NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
AB-E-09	2-26-25	Supply & drawing of 95 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	1,800	1,158	2,084,400
AB-E-10	2-26-26	Supply & drawing of 120 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	20	1,452	29,040
AB-E-11	2-26-27	Supply & drawing of 150 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	20	1,825	36,500
AB-E-12	2-26-28	Supply & drawing of 185 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	2,100	2,217	4,655,700
AB-E-13	2-26-29	Supply & drawing of 240 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	20	2,908	58,160
	2-35	**2 Wire with ECC wire in PVC REC ESSED conduits**				
AB-E-14	2-35-02	Wiring for sub-main with 2x2.5 mm², PVC insulated wire 300/500 volts grade, single core, stranded copper conductor wire in 20 mm (3/4") dia PVC conduit recessed in the wall, column and roof etc including 1.5 mm² PVC insulated wire single core wire as ECC as required. (from DB to Switch, Switch to Switch)	Rft	15,000	137	2,055,000
AB-E-15	2-35-03	Wiring for sub-main with 2x4 mm², PVC insulated wire 300/500 volts grade, single core, stranded copper conductor wire in 20 mm (3/4") dia PVC conduit recessed in the wall, column and roof etc including 1.5 mm² PVC insulated wire single core wire as ECC as required.(Db to first Socket 13A/15A , Socket to Socket)	Rft	20,000	195	3,900,000
AB-E-16	2-35-04	Wiring for sub-main with 2x6 mm², PVC insulated wire 300/500 volts grade, single core, stranded copper conductor wire in 20 mm (3/4") dia PVC conduit recessed in the wall, column and roof etc including 1.5 mm² PVC insulated wire single core wire as ECC as required	Rft	4,500	245	1,102,500
	2-61	**UPVC CONDUIT & DUCT**				
AB-E-17	2-61-05	Supply and fixing 50mm (2") dia Upvc conduit with all especial such as bends, sockets, junction etc Fitted on surface as required	P/Rft	1,500	231	346,500

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
AB-E-18	2-61-06	Supply and fixing 20mm (3/4") dia Upvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required	P/Rft	500	49	24,500
AB-E-19	2-61-07	Supply and fixing 25mm (1") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required	P/Rft	17,000	55	935,000
AB-E-20	2-61-08	Supply and fixing 30mm (1-1/4") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required	P/Rft	100	78	7,800
AB-E-21	306-23	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 2 inches (50 mm) dia pipe	P/Rft	3,220	435	1,399,798
AB-E-22	306-24	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 3 inches (80 mm) dia pipe	P/Rft	200	503	100,694
AB-E-23	306-25	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 4 inches (100mm) dia pipe..	P/Rft	4,080	600	2,448,041
	2-66	**SCHNEIDER /PHILIPS ACCESSORIES ON RECESSED METAL BOARD**				
AB-E-24	2-66-01	Providing & fixing 10 Amps Polycarbonate flame retardant, S.P Switch with fancy required gang plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required. (Schneider/ Philips)	Each.	150	471	70,650

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SR NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
AB-E-25	2-66-02	Providing & fixing 10 Amps Polycarbonate flame retardant, Two way Switch with fancy required gang plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required.	Each.	6	531	3,186
AB-E-26	2-66-06	Providing & fixing 15 Amps Polycarbonate flame retardant 3-Pin switch socket unit with fancy gang plate fixed on die fabricated, powder coated metal board recessed in wall or column including connection as required. (Clipsal make)	Each	23	1,290	29,670
	2-78	**(Philips,signify)**				
AB-E-27	2-77-02(i)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having warm/ netural white / cool white colour 100-110lm/ watt effeciency .9 or above power factor, 40000-50000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (30-34) Watts	Each	1	16,300	16,300
	2-78	**(Sunlight , Pierlite , Future Technology)**				
AB-E-28	2-78-01(a)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having warm/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (7-10) Watts	Each	370	1,824	674,880
AB-E-29	2-78-01(b)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having warm/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (12) Watts	Each	90	2,198	197,820
AB-E-30	2-78-01(c)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (18-20) Watts	Each	34	2,886	98,124

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
AB-E-31	2-78-01(d)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (22-24) Watts	Each	1	4,222	4,222
AB-E-32	2-78-02(c)	Supply installation testing & commisioning of recessed / surface mounted LED panel light including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (48) Watts 2x2ft	Each	25	12,525	313,125
AB-E-33	2-78-02(d)	Supply installation testing & commisioning of recessed / surface mounted LED panel light including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (48) Watts 1x4ft	Each	340	12,525	4,258,500
AB-E-34	2-78-03(a)	Supply installation testing & commisioning of LED Tube / Batten Lights including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 10000-15000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (18-20) Watts 2 Feet	Each	45	1,957	88,065
AB-E-35	2-78-03(b)	Supply installation testing & commisioning of LED Tube / Batten Lights including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 10000-15000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (18-20) Watts 4 Feet	Each	15	2,336	35,040
AB-E-36	2-78-09	Providing, Installation, Testing & Commissioning of Emergency Lights, including connection, complete in all respect as approved by the Engineer Incharge(2w + 2x4 Watts Emergency Exit Light)	Each	10	7,402	74,020
AB-E-37	2-78-09	Providing, Installation, Testing & Commissioning of Emergency Lights, including connection, complete in all respect as approved by the Engineer Incharge(3-4 Watts Emergency Light)	Each	5	6,137	30,685

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
AB-E-38	2-78-09	Providing, Installation, Testing & Commissioning of Emergency Lights, including connection, complete in all respect as approved by the Engineer Incharge(5-7 Watts Emergency Light)	Each	5	7,402	37,010
	2-80	**CEILING FANS**				
AB-E-39	2·80·03	Providing & installing 140 Cm (56") sweep ceiling fan with blades, canopy, standard length of down, rod including connection with 14.0076" flexible wire complete as required. (without regulator) Pak, Rovat FC,Younas, Millat	Each	260	9,349	2,430,740
	2-87	**FAN CLAMPS, DOWN ROD & MAKING HOLE.**				
AB-E-40	2-87-01	Providing & installing of Ceiling fan down rod 3/4" dia heavy gauge GI pipe of require length, one end arrangement for fan insulator and other end duly threaded and hole for split pin etc to be hold all sweep ceiling fan as required.	P/Rft.	260	70	18,200
	2-81	**WALL BRACKET FANS**				
AB-E-41	2-81-01	Providing & installing 35 Cm (18") sweep wall bracket fan complete with blades, regulator and pulling cord switch, fitted on wall or column with GI clip including connection as required. Pak, Royal, GFC, Younas, Millat.	Each	10	4,100	41,000
	2-83	**Metallic Body Exhaust Fans**				
AB-E-42	2-83-02	Providing & installing 30 Cm (12") sweep, metallic body Exhaust fan ·complete with blades, motor, etc fitted in existing hole inc!uding connection with 14/.0076" flexible wire complete as required Pak, Royal, GFC,Younas,Millat.	Each	15	4,400	66,000
	2-85	**Plastic BodyExhaust Fans**				
AB-E-43	2-85-02	Providing & installing 25 Cm (10") sweep Double action Plastic body exhaust fan complete with blades, motor & regulator & pulling cord switch etc. fixed in existing hole including connection with 14 /.0076" flexible wire complete as required . Millat / Pak / Asia / Younas / Climax / Royal.	Each	12	4,249	50,988

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SR NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	3-04	**4 CORE LT UN ARMOURED CABLE IN EXISTING CONDUIT OR CABLE DUCT**				
AB-E-44	3-4-01(a)	Providing & laying 4 core, 16 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	3200	804	2,572,800
AB-E-45	3-4-01(b)	Providing & laying 4 core, 25 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	500	1,223	611,500
AB-E-46	3-4-01(c)	Providing & laying 4 core, 35 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	20	1,668	33,360
AB-E-47	3-4-01(d)	Providing & laying 4 core, 50 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	20	2,258	45,160
AB-E-48	3-4-01(e)	Providing & laying 4 core, 70 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	100	3,209	320,900
AB-E-48	3-4-01(g)	Providing & laying 4 core, 120 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	500	5,593	2,796,500
	3-08	**EARTHING AND LIGHTNING ARRESTOR**				
AB-E-49	3-8-04	Providing and fixing 1" diameter 3ft long lighting copper rod with five spikes and balls on its head as required.	Job	2	26,301	52,602
AB-E-50	3-8-05	Providing and fixing 1-1/2" x 1/8" Thick copper strip with suitable saddle at 12" intervals complete as required.	P/Rft	1,500	268	402,000

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SR NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	7-1	**ADDRESSABLE FIRE ALARM SYSTEM**				
AB-E-51	7-1-02	Providing, fixing, testing and commissioning of microprocessor based 02 loop addressable fire control panel extendable to 4 loop with the use of Network Card, surface /recessed mounting type with full switching programming capabilities ,system suitable for operation at 230 volts 50hz with full functionality as per specification, drawing, etc complete in all respect as approved by the Engineer Incharge	Job	1	466,923	466,923
AB-E-52	'7-1-06	Providing and fixing , testing and commissioning of addressable optical smoke detector with addressable base with full functionality switching programing capabilites system as per specification & recomendation of drawings / manufacturer with allied components complete in all respect as approved by the Engineer incharge.	Job	110	7,919	871,090
AB-E-53	'7-1-07	Providing and fixing , testing and commissioning of addressable optical heat detector with addressable base with full functionality switching programing capabilites system as per specification & recomendation of drawings / manufacturer with allied components complete in all respect as approved by the Engineer incharge.	Job	5	7,919	39,595
AB-E-54	'7-1-09	Providing and fixing , testing and commissioning of addressable manual call point with addressable base with full functionality switching programing capabilites system as per specification & recomendation of drawings / manufacturer with allied components complete in all respect as approved by the Engineer incharge.	Job	5	12,522	62,610
AB-E-55	'7-1-11	Providing and fixing, testing and commissioning of addressable Wall sounder with flasher with full functionality switching programing capabilites system as per specification & recomendation of drawings / manufacturer with allied components complete in all respect as approved by the Engineer incharge.	Job	5	23,334	116,670
	7-3	**FIRE RESISTANT CABLE**				
AB-E-56	'7-3-01	Providing, fixing, Two core, 1.5mm, Fire resistant cable, minimum fire rating of 2 hour, laid with conduit (25mm dia}, complete in all respect, as approved by the Engineer in-charge.	P/Rft	3,500	137	477,926

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
	8-4	**IP CCTV SYSTEM**				
AB-E-57	8-4-04	Supply, installation, testing and commissioning of Bullet. IP camera having following specifications:- Image device: At least 1/3 inch, Resolution & frames/sec: At least 4 MP/25fps, Video Compression: H.265,H.264, MJPEG, Focal length: fixed of 2.8mm,4mm or 8mm. Min illumination: 0 lux(B/W), 0.15 lux (Colour), Infrared viewable length: Al least 30 m. Weather proof standard: IP 66 at least, Vandal proof standard: At least IK10, complete in all respect as approved by the Engineer Incharge	Job.	15	59,367	890,505
AB-E-58	8-4-02	Supply, installation, testing and commissioning of mini Dome IP camera having following specifications:- Image device: At least 1/3 inch, Resolution & frames/sec: At least 4 MP/25fps, Video·compression; H.265,H.264, MJPEG, Focal length: fixed of 2.8mm,4mm or 8mm. Min illumination: o lux(B/W), 0, 15 lux (Colour), Infrared viewable length: Al least 30 m, Weather proof standard: IP 66 at least, Vandal proof standard: Al least 1K10, complete in all respect as approved by the Engineer Incharge	Job.	2	60,577	121,154
	8-5	**CAT-6 CABLE**				
AB-E-59	8-5-01	Wiring of CCTV Camera with UTP Cat-6 in existing PVC Conduits/duct i/c conectors complete in all respect.	P/ Rft	2,000	74	148,133
	8-11	**FIBER OPTIC/MEDIA CONVERTER/ODF**				
AB-E-60	8-11-03	Providing, Supplying,installation, fitting, fixing and commissioning of 12 Core single mode Fiber Optics Cable in given existing PVC Conduit, Box Conduit,complete in all respect as approved by the Engineer Incharge.	P/ Rft	600	522	313,091
AB-E-60	8-11-01	Providing, Supplying,installation, fitting, fixing and commissioning of 4 Core single mode Fiber Optics Cable in given existing PVC Conduit, Box Conduit,complete in all respect as approved by the Engineer Incharge.	P/ Rft	600	535	320,772
		CIVIL WORKS				
	3-9	**EXCAVATION**				
AB-E-62	3-09-01	Excavation in soft soil including lift upto 5ft and filling excavated earth including breaking clods dressing, watering, consolidation and ramming in layers to full compaction i/c disposal of surplus excavated stuff as directed as required.	P/CFT	1,000	11	11,270

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
AB-E-63	3-09-03	Excavation in Hard soil including lift up to 5ft and filling excavated earth including ,breaking clods, dressing ,watering, consolidation and ramming: in layers to full compaction l/c disposal of surplus us excavated stuff as directed.	P/CFT	1,000	15.00	15,000
		CABLE PULLING PIT (5 No. 2'X2'X3') **EARTH WORK**				
AB-E-64		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:				
	103-1	Lift upto 5 feet	100CFT	137	1624.63	2,220
AB-E-65		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:				
	103-2	Lift upto 5 feet	100cft	55	1862.13	1,018
AB-E-66		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-5	Lift upto 5 feet	100cft	27	5547.38	1,516
AB-E-67		Excavation for foundation trenches and drains in soft or disintegrated rock by hammering, chiselling and Jumper work including, stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-7	Lift upto 5 feet	100cft	27	2328.63	636

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
AB-E-68		Excavation for foundation trenches and drains in hard rock by hammering chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-8	Lift upto 5 feet	100cft	27	4434.88	1,212
		RCC CHAMBER				
AB-E-69	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	100cft	16	32221.55	5,181
AB-E-70	114-2 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm^2) at 28 days with a mix not leaner than 1:2:4 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100cft	24	33562.40	7,929
AB-E-71	114-10 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight walls 5" (127 mm) to 6" (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	100cft	79	55457.69	43,673
AB-E-72	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100cft	24	45945.52	10,855

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
AB-E-73	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	286	266.70	76,200
		CARRIAGE				
AB-E-74	134-2	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:				
	i)	1/2 mile (0.80km) lead of part thereof.	100cft	85	332.98	284
	ii)	1 mile (1.6 km) lead.	100cft	43	383.79	164
	iii)	2 miles (3.2 km) lead.	100cft	85	483.37	412
					Sub-Total (Scheduled) =	**43,390,239**
		NON SCHEDULED ITEM				
		Supply, installation, testing and commissioning of the following items of work (unless specifically stated otherwise) including all material, labour, tools, plant, accessories, related civil works, etc., required for proper completion of each item as per specifications (Section-8001 "General Specifications for Electrical Works" shall be applicable to all BOQ items).				
		MAIN SWITCHBOARDS /SUB MAIN DISTRIBUTION BOARDS (Ref. Spec. Nos. 8001 , 8133)				
AB-E-75	NS-E-01	Following L.T. Switchboard and Submain Distribution Boards, (as per single line diagram shown on the drawing), including all control wiring, foundation, related civil works and all accessories, complete in all respects.				
	a)	LT PANEL	Job	1		
	b)	EMDB	Job	1		
	c)	PFIP	Job	1		
	d)	LDB-GF1, FF1	Job	2		
	e)	LDB-GF2, FF2	Job	2		

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
	f)	PDB-GF1,GF2	Job	2		
	g)	PDB-FF1, FF2	Job	2		
	h)	DB-ACGF1,DB-ACGF2	Job	2		
	i)	DB-ACFF1	Job	1		
	j)	DB-ACFF2	Job	1		
	k)	DB-CL	Job	1		
	l)	DB-LIFT	Job	1		
		LT CABLES **(Ref. Specification Section-8001, 8212)**				
AB-E-76	NS-E-02	10 sqmm, 4 core CU/PVC/PVC stranded copper conductor cable, 600/1000 V grade in already installed conduit/on cable tray .	Rft.	1400		
AB-E-77	NS-E-03	6 sqmm, 2-Core CU/PVC stranded copper conductor cable, 600/1000 V grade in all kinds of existing or given conduit / cable duct as required.	Rft	100		
		LED LIGHT FIXTURE **(Ref. Spec. Nos. 8001, 8150)** Supply, installation, testing & commissioning of the following types of light fixtures including LED Light with driver, internal wiring complete with all mounting accessories as per architectural arrangements/ requirements, dust & moisture protected and corrosion proof and suitable for this area as acceptably supplied and installed and as approved by the Engineer.				
AB-E-78	NS-E-04	Decorative type Wall Bracket Light with 2x10W LED Bulb	Each	25		
AB-E-79	NS-E-05	Surface mounted LED industrial type light fixture, min 3800 lumens IP65 (1200mm) with PC Cover and hanging arrangement.(for service areas)	Each	5		
AB-E-80	NS-E-06	Strip light with connectors & drivers	Rft	50		
AB-E-81	NS-E-07	Weather Proof Planter Spot light fixture with 9 Watt LED.	Each	6		
AB-E-82	NS-E-08	Weather Proof recessed type LED step light	Each	6		
AB-E-83	NS-E-09	12 W Weather Proof Bulkhead die cast aluminum body WALL mounted OUTDOOR LIGHT IP 55 or better	Each	50		
AB-E-84	NS-E-10	Hanging system for lights with frame	Each	340		

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SR NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		WIRING ACCESSORIES **(Ref. Specification Section-8001, 8220)**				
AB-E-85	NS-E-11	Simplex Universal Switch socket outlet with switch 13 A, 230V. Mounting Height as per site including appropriate size powder coated metallic back box.	No.	330		
		EARTHING **(Ref. Spec. Nos. 8001, 8240)**				
AB-E-86	NS-E-12	Earth Electrode for earthing shall comprise of 75 mm x 4877 mm x 6 mm thick copper plate with 4 Nos. 6 mm dia brass nuts, bolts and washers 70 sqmm HDHC Copper wire as earthing leads. A 100 mm dia Medium Duty GI pipe shall be used with 10 mm dia holes @500 mm c-c. The total length of this GI pipe should be 45 ft. A 150 mm dia 80 ft long hole should be drilled in ground by percussion method and above mentioned 100 mm dia medium duty GI pipe should be fixed in this hole simultaneously up to the depth of 60 ft from NSL. When the drilling up to 80 ft depth is complete, The above mentioned earth electrode shall be drop down to the bottom of the hole with the help of 2 Nos 70 sqmm earth leads. Once the plate is in place fill in the hole with moisture retaining bentonite slurry with tremie method up to the top. When the bentonite settle down cast a (1:4:8) concrete manhole 700 mm x 700 mm & 500 mm deep as shown in the drawing. Place a medium duty CI cover as shown in the drawing.	Job	4		
AB-E-87	NS-E-13	305 mm long, 50 mm wide and 6mm thick copper busbar as ECP (Earth Connecting Point) complete with insulators, washers, nuts, bolts mounting installation and operational accessories as per site requirements.	Each	4		
AB-E-88	NS-E-14	Earth electrode for lightning protection system comprise 1/2" dia, 10' long Copper deposited steel rod, including appropriate clamp for clamping of the down conductor. The copper deposited steel rod shall be hammered into the ground to the depth of twelve inches below the ground surface. The earth electrode includes excavation, backfilling, etc.	Job.	20		

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
		MISELLANEOUS ITEMS (Ref. Spec. Nos. 8001, 8290)				
		Following rating SP&N/TP&N load break switches AC-3 duty in weather proof enclosure of the following rating:				
AB-E-89	NS-E-15	32 Amp, SP&N (for geyser)	Each	5		
AB-E-90	NS-E-16	20 Amp, SP&N (for AC)	Each	40		
AB-E-91	NS-E-17	16 Amps, 400 Volts 5 Pole Industrial Socket	No.	10		
		Following sizes of perforated G.I. sheet cable trays with cover including joints, bend, mounting brackets hanger complete with all accessories.				
AB-E-92	NS-E-18	4" x 2"	Rft.	100		
AB-E-93	NS-E-19	6" x 4"	Rft.	500		
AB-E-94	NS-E-20	12" x 3"	Rft.	100		
AB-E-95	NS-E-21	24" x3"	Rft.	500		
AB-E-96	NS-E-22	24 inch wall bracket fan	No.	1		
		IP CCTV SYSTEM (Ref. Spec. Nos. 8001, 8335)				
AB-E-97	NS-E-23	Simplex Face plate with RJ-45 I/0 CAT-6 UTP telecommunication outlet including sheet steel back box shall make of 16 SWG shall be finished in powder coated paint. including all mounting accessories.	No.	18		
AB-E-98	NS-E-24	19" Rack mounted Front Cable Management with all installation accessories.	Job.	1		
AB-E-99	NS-E-25	Supply, Installation of UTP - Cat-6, Patch Cords Support 1.0G Giga Network at 250 Mhz machine made. Installed between patch panel & Network switch and face plate				
	i)	1.0 m Length	No.	18		
	ii)	3.0 m Length	No.	18		
AB-E-100	NS-E-26	Supply, Installation & Connecting up of UTP-Cat-6,steel Frame Patch Panel with 24 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		
AB-E-101	NS-E-27	Supply, Installation of wall mounted 12U (600 x 550mm) data cabinet imported, double section, including fans with lockable front glass door two side opening, 06 Way power distribution unit rack mounted IP 20.	No.	1		

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
AB-E-102	NS-E-28	Installation, Testing ,Commisioning of CCTV system.	Job	1		
		STRUCTURED CABLING NETWORK (TELEPHONE & NETWORKING) (Ref. Spec. Nos. 8001, 8312)				
AB-E-103	NS-E-29	Wiring from RJ45 outlet point to relevant Building / floor distributor with CAT-6 UTP cable in already laid concealed conduit / already installed cable tray or cable trunking including all accessories complete in all respect.	No.	200		
AB-E-104	NS-E-30	Simplex Face plate with RJ-45 I/0 CAT-6 UTP telecommunication outlet including sheet steel back box shall make of 16 SWG shall be finished in powder coated paint. including all mounting accessories.	No.	200		
AB-E-105	NS-E-31	19" Rack mounted Front Cable Management with all installation accessories.	No.	10		
AB-E-106	NS-E-32	Supply, Installation of UTP - Cat-6, Patch Cords Support 1.0G Giga Network at 250 Mhz machine made. Installed between patch panel & Network switch and face plate				
	i)	1.0 m Length	No.	200		
	ii)	3.0 m Length	No.	200		
AB-E-107	NS-E-33	Supply, Installation & Connecting up of UTP-Cat-6,steel Frame Patch Panel with 24 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.	12		
AB-E-108	NS-E-34	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		
AB-E-109	NS-E-35	Supply, Installation of wall mounted 12U (600 x 550mm) data cabinet imported, double section, including fans with lockable front glass door two side opening, 06 Way power distribution unit rack mounted IP 20.	No.	5		
AB-E-89	NS-E-35	Supply ,Installation of 42U 800X1000mm Imported,Perforated Cabinet with two vertically mounted PDU 32A,220V in Rear and 2 Vertical Cable Managers in Front ,Including Fan Units IP-20 Rated , Cold Rolled Steel Cabinet **(MAIN SERVER ROOM)**	Each.	2		

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
AB-E-111	NS-E-37	Floor Box for 4 numbers Power sockets and 2 numbers Data sockets as approved by the Engineer.	No.	5		
AB-E-112	NS-E-38	Installation, Testing, Commisioning of Telephone & Networking system.	Job	1		
		CONDUITS & PIPES (Ref. Spec. Sec. 8001 8230)				
AB-E-113	NS-E-39	Supply and Installation of 4" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	20		
AB-E-114	NS-E-40	Supply and Installation of 3" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	20		
AB-E-115	NS-E-41	Supply and Installation of 2" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	20		
		PUBLIC ADDRESS SYSTEM FOR LEC THEATRE (Ref. Specification Section-8001, 8341)				
AB-E-116	NS-E-42	50 watt wall mount speaker	No.	4		
AB-E-117	NS-E-43	15 watt wall mount speaker	No.	1		
AB-E-118	NS-E-44	Power amplifier 480 watt 8 CHANNEL	No.	1		
AB-E-119	NS-E-45	Supply and installation of HANDHELD MICROPHONE	No.	1		
AB-E-120	NS-E-46	Supply and installation of MICROPHONE with floor stand & adjustable boom.	No.	1		
AB-E-121	NS-E-47	Supply, installation, testing & commissioning of Goose Neck Microphone	No.	1.00		
AB-E-122	NS-E-48	Supply, installation, testing and commissioning of 2 core 2.5 Sqmm stranded copper conductor tin coated with drain PVC insulated wires 600/1000 V. grade, fire resistant, low smoke, zero halogen Cu conductor to be pulled in already installed 25mm dia. heavy duty PVC conduit recessed in wall, columns, slab, floor or above false ceiling with all necessary fixing accessories	RFT	500		
AB-E-123	NS-E-49	WALL MOUNT RACK & PDU	No.	1		
AB-E-124	NS-E-50	Installation, Testing, Commisioning of Telephone & Networking system.	Job	1		

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
		CABLE PULLING PIT (5 No. 2'X2'X3')				
AB-E-125	NS-E-51	RCC manhole cover 24" dia, 2.5" MS angle, RCC 1:2:4 etc, complete with frame; as shown in drawing.	Each	5		

TOTAL NON-SCHEDULE ITEMS = _____

TOTAL (SCHEDULE + NON-SCHEDULE ITEMS) = _____

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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CONSTRUCTION OF
NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS)
AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD
ACADEMIC BLOCK (ST)

BILL OF QUANTITIES

ELECTRICAL WORKS

SR NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		SCHEDULE ITEMS				
	6-1	**SPLIT TYPE AIR-CONDITIONER Local_Make**				
AB-E-01	6-1-06	Providing, installation, testing and commissioning of Split Type Wall Mounted Air Conditioner, DC Inverter, in the specified place. The job includes connection of copper piping of out door unit fitted on roof or angle iron frame, making inter connection of the unit with suitable sizes of wire also piping for condensed water etc as required approved make (Local Make)				
	b	1.5 Ton (18000 BTU)	Job	7	159,465	1,116,255
	c	2 Ton (24000 BTU)	Job	11	211,368	2,325,048
AB-E-02	6-3-04	Providing, installation, testing and commissioning of Floor Standing Air Conditioner, DC Inverter, in the specified place. The job includes connection of copper piping of out door unit fitted on roof or angle iron frame, making inter connection of the unit with suitable sizes of wire also piping for condensed water etc as required approved make				
	b	4 Ton (48000 BTU)	Job	2	585,775	1,171,550
	6-4	**Copper Pipe**				
AB-E-02	6-4-01	Providing, installation, testing and commissioning of Refrigerant Copper Pipe, 22 gauge with all type of fittings like, elbow, clamping, aero flex insulation, wrapping tape, etc complete in all respect as approved by the Engineer Incharge.				
	a	1/4"	Rft	900	463	416,700
	b	1/2"	Rft	500	764	382,000
					TOTAL (SCHEDULE ITEMS) =	**5,411,553**

PUBLIC PROCUREMENT REGULATORY AUTHORITY EPADS

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

ROADS, WALKWAYS & PAVED AREAS

BILL OF QUANTITIES

Item No.	Ref PWD 2022 Sch/ Non-Sch	Description	Unit	Quantity	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				
		A. Dismentaling				
RD-C-01	123-3	Dismantling stone masonry in lime or cement mortar in foundation, plinth and ground floor including stacking salvaged material (serviceable) and disposing surplus stuff as directed within three chains (91.5 m)	100 Cft	14,658	4,787.50	701,771
RD-C-02	123-9	Dismantling burnt brick masonry in lime or cement mortar foundation, basement, plinth and ground floor including stacking salvaged material (serviceable) and disposing of surplus material as directed within three chains (91.5 m)..	100 Cft	1,500	3,006.25	45,094
RD-C-03	123-11	Dismantling cement concrete block masonry work in lime or cement mortar in foundation, basement, plinth and ground floor including stacking salvaged material (serviceable) and disposing of surplus material as directed with in three chains (91.5 m).	100 Cft	10,994	3,006.25	330,501
RD-C-04	123-12	Dismantling hollow cement concrete block masonry in lime or cement mortar in foundation, basement, plinth and ground floor including stacking salvaged material (serviceable) and disposing..of surplus material as directed within three chains (91.5 m) .	100 Cft	10,994	3,303.13	363,140
RD-C-05	123-15	Dismantling R.C.C. including separating reinforcement from concrete in foundation, basement, plinth and ground floor including stacking at site and disposing of unserviceable material within three chains (91.5 m)	100 Cft	938	8,456.25	79,277
RD-C-06	123-16	Dismantling C.C. work cast in situ in foundation, basement, plinth and ground floor including disposing of the material as directed within three chains (91.5 m).	100 Cft	2,997	6,587.50	197,427
RD-C-07	123-58	Dismantling rolled steel sections in frames and trusses in ground floor and stacking as directed within three chains (91.5 m)	Cwt	25	2,426.88	60,672

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Item No.	Ref PWD 2022 Sch/ Non-Sch	Description	Unit	Quantity	Unit Rate (Rs.)	Total Amount (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		B. Earthwork				
RD-C-08	102-1	Clearing jungle (ordinary) by cutting, removing all shrubs, trees, upto 6 inches (152 mm) girth, etc. and taking out their entire roots and filling the hollows with earth complete with dressing, consolidating and watering the filling including stacking the serviceable materials and disposal of useless material as directed, lead to 10 chains (305 Rm), cost of earth included.	100 Sft	261,752	25.23	66,040
RD-C-09	102-3	Felling trees of any height, girth exceeding 6 inches to one foot (152 mm to 305 mm), cutting into portable pieces, taking out their entire roots and filling hollows with earth complete with dressing, consolidating and watering the filling including stacking the serviceable materials and disposal of useless materials as directed, lead upto 10 chains (305 Rm), cost of earth included.	Each	100	623.75	62,375
RD-C-10	102-4	Felling trees of any height, girth exceeding one foot (305 Rm), cutting into portable pieces, taking out their entire roots and filling the hollows with earth complete with dressing, consolidating and watering the filling including stacking the serviceable materials as directed, lead upto 10 chains (305 Rm), cost of earth included.	Foot Girth	175	853.85	149,424
RD-C-11	103-1	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:				
		Lift upto 5 feet	100 Cft	27,001.80	1,624.63	438,679
RD-C-12	103-5	Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulder by hammering ,chiselling and jumper work including stacking of serviceable and unserviceable material sparatly, lead upto one chain (30.5 R.m) and lift as follows:				
		Lift upto 5 feet	100 Cft	7,714.80	5,547.38	427,969
RD-C-13	103-7	Excavation for foundation trenches and drains in soft or disintegrated rock, by hammering ,chiselling and jumper work including stacking of serviceable and unserviceable material sparatly, lead upto one chain (30.5 R.m) and lift as follows:				
		Lift upto 5 feet	100 Cft	3,857.40	2,328.63	89,825
RD-C-14	127-165	Excavation or cutting un suitable common material by mechanical means and dispose of surplus excavated material up to 10 miles lead complete as per direction of Engineer incharge.	100 Cft	48,094	1,073.32	516,203

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Item No.	Ref PWD 2022 Sch/ Non-Sch	Description	Unit	Quantity	Unit Rate (Rs.)	Total Amount (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
RD-C-15	127-169	Excavation or cutting surplus common material by mechanical means and dispose of surplus excavated material up to 10 miles lead complete as per direction of Engineer incharge.	100 Cft	1,449,553	960.21	13,918,755
RD-C-16	127-170	Excavation or cutting surplus hard rock material by mechanical means and dispose of surplus excavated material up to 10 miles lead complete as per direction of Engineer incharge.	100 Cft	207,079	3,228.08	6,684,677
RD-C-17	127-171	Excavation or cutting surplus medium rock material by mechanical means and dispose of surplus excavated material up to 10 miles lead complete as per direction of Engineer incharge.	100 Cft	207,079	2,400.82	4,971,595
RD-C-18	127-172	Excavation or cutting surplus soft rock material by mechanical means and dispose of surplus excavated material up to 10 miles lead complete as per direction of Engineer incharge.	100 Cft	207,079	1,989.21	4,119,237
RD-C-19	127-173	Compaction of natural ground i/c levelling,dressing and watering complete as per direction of Engineer incharge.	100 Sft	109,300	263.16	287,634
RD-C-20	127-174	Granular back fill including watering and compacting complete as per Engineer incharge,	100 Cft	5,000	5,667.89	283,395
RD-C-21	127-175	Common back fill including watering and compacting complete as per Engineer incharge.	100 Cft	2,982	889.09	26,513
RD-C-22	127-176	Formation of Embankment from road way excavation in Common material ,including watering and compacting complete as per Engineer incharge.	100 Cft	303,617	1,158.89	3,518,591
RD-C-23	127-177	Formation of Embankment from road way excavation in hard rock material ,including watering and compacting complete as per Engineer incharge.	100 Cft	21,687	2,945.07	638,696
RD-C-24	127-178	Formation of Embankment from road way excavation in medium rock material ,including watering and compacting complete as per Engineer incharge.	100 Cft	21,687	3,020.60	655,076
RD-C-25	127-179	Formation of Embankment from road way excavation in soft rock material ,including watering and compacting complete as per Engineer incharge.	100 Cft	1,000	2,721.62	27,216
RD-C-26	127-180	Formation of Embankment from Borrow excavation in common material ,including watering and compacting complete as per Engineer incharge.	100 Cft	5,000	2,028.59	101,430
RD-C-27	127-181	Formation of Embankment from structural excavation in common material ,including watering and compacting complete as per Engineer incharge.	100 Cft	5,000	659.49	32,975
RD-C-28	127-182	Formation of Embankment from structural excavation in any type of material ,including watering and compacting complete as per Engineer incharge.	100 Cft	1,000	1,432.85	14,329

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Item No.	Ref PWD 2022 Sch/ Non-Sch	Description	Unit	Quantity	Unit Rate (Rs.)	Total Amount (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
RD-C-29	127-183	Subgrade prepration in earth cut ,including watering and compacting complete as per Engineer incharge.	100 Sft	79,707	736.33	586,907
RD-C-30	127-185	Improved subgrade (CBR>20),including watering and compacting complete as per Engineer incharge.	100 Cft	500	2,739.23	13,696
RD-C-31	127-191	Traffic road signs categary-3 (a) , including fixing in cement concrete 1:2:4 complete as per Engineer incharge.	Per Each	8	35,638.48	285,108
RD-C-32	127-192	Traffic road signs categary-3 (b) , including fixing in cement concrete 1:2:4 complete as per Engineer incharge.	Per Each	7	64,163.97	449,148
RD-C-33	127-193	Traffic road signs categary-3 (c) , including fixing in cement concrete 1:2:4 complete as per Engineer incharge.	Per Sft	144	2,588.38	372,727
RD-C-34	127-203	Pavement marking in reflective TP Paint for line of 15cm width,with road marking machine complete as per Engineer incharge.	Per Rft	10,489	52.82	554,029
RD-C-35	127-213	Refelectorised plastic pavement studs (raised profile type- single) fixed with epoxy adhesive complete as per direction of the Engineer incharge	Each	98	362.67	35,480
RD-C-36	127-215	Refelectorised plastic pavement studs (raised profile type- double) fixed with epoxy adhesive complete as per direction of the Engineer incharge	Each	748	450.17	336,940
		C. ROAD PAVEMENTS				
RD-C-37	127-29	Supplying and laying machine crushed 2-1/2" to 3/4" (64 mm to 19 mm) stone ballast of approved grade and quality in sub-base or base courses in required grade and camber and compacting to the required density by approved mechanical means (Vibratory Roller, Road Packer and Smooth Wheel Roller etc.) including watering with all lead and lift complete (actual compacted depth shall be considered for payment).	100 Cft	88,407	8,261.52	7,303,762
RD-C-38	127-31	Supplying and laying machine crushed 2" to 1/2" (51 mm to 13 mm) stone ballast of approved grade and quality in sub-base or base courses in required grade and camber and compacting to the required density by approved mechanical means (Vibratory Roller, Road Packer and Smooth Wheel Roller etc.) including watering with all lead and lift complete (actual compacted depth shall be considered for payment)	100 Cft	52,765	8,529.02	4,500,337
RD-C-39	127-55	Supplying, stacking and spreading murum of approved quality over stone metalling or brick ballast including watering, consolidation with power roller including all lead and lift.	100 Cft	56,469	8,169.30	4,613,106
RD-C-40	127-77	Providing and laying hot-mix bituminous concrete pavement laid with mechanical paver and mixed in central mixing plant in required thickness and density, rolled hot with different types of rollers complete as per specifications and job-mix formula and design: in single layer upto 1-1/2" (38 mm) thickness inculding priming coat @20 Lbs per %Sft complete.	Ton	1,164	12,858.73	14,967,562

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Item No.	Ref PWD 2022 Sch/ Non-Sch	Description	Unit	Quantity	Unit Rate (Rs.)	Total Amount (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
RD-C-41	127-79 + 127-81	Providing and laying 4" (102 mm) thick not leaner than 1:2:4 cement concrete (minimum works cube crushing strength of 3000 Lbs. PSI (211 Kg. per Sq.cm. at 28 days) in road, paths, crete-ways etc. using graded screened bajri in panels of approved size laid to required gradient and camber over any sub-grade including cost of necessary form work and its removal, compacting with vibrators (immersion or screen or both) belting the surface with canvas belt, roughening the surface after laying concrete with brush and curing etc. complete..	100 Sft	200	12,887.82	25,776
RD-C-42	127-94	Providing and laying 1:4:8 cement concrete in any thickness using 2" (51 mm) and down gauge stone ballast of approved grade and quality over prepared sub-grade or sand cushion in roads, paths, creteways laid to required gradient and camber including cost of necessary form work and its removal compacting with vibrators including curing etc. complete .	100 Cft	100	27,877.27	27,877
RD-C-43		**D. ANCILLARY / MISCELLANEOUS WORKS**				
RD-C-44	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregate) cement concrete using using 50 % crushed graded boulders 3/4 inch (19 mm) and down gauge and 50 % graded screened bajri 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet depth (1.52 m) and plinth up to 4 feet (1.2 m) height from ground level .	100 Cft	3,935	39,230.33	1,543,713
RD-C-45	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	100 Cft	14,886	32,221.55	4,796,500
RD-C-46	113-8	Providing and laying dry uncoursed rubble Pitching 6" to 12" (152mm to 305 mm) thick Complete.	100 Cft	200	15,906.25	31,813
RD-C-47	113-10 + 113-50	Providing and laying stone masonry random rubble second sort in cement mortar 1:4 in foundation, plinth and basement including scaffolding, curing etc. complete.	100 Cft	77,744	35,138.36	27,317,967
RD-C-48	117-177	Providing and laying in floor C.C. 1:2:4: tuff paver 2-1/2" thick of approved design and colour pattren laid on sand cushion filling of joint with sand and warring etc. complete as per direction of Engineer Incharge. (the cost of sand cushion is included) a) Average strength 7000 psi	Sft	38,307	135.13	5,176,425
RD-C-49	122-112	Raised or cut pointing on stone work with cement mortot 1:3 (one cement and three sand) in plinth and ground floor including ranking, out joints ,cutting,etc, complete.	100 Sft	13,796	3,105.39	428,420

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Item No.	Ref PWD 2022 Sch/ Non-Sch	Description	Unit	Quantity	Unit Rate (Rs.)	Total Amount (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
RD-C-50	126-6	Supplying and stacking approved garden soil (sweet earth) free from salts, pebbles and grass roots etc. including all leads and lifts.	100 Cft	74,518	3,456.25	2,575,528
RD-C-51	126-7	Spreading approved garden soil (sweet earth) in uniform thickness including mixing and breaking clods and dressing fine for grassing including disposal of rubbish within 3 chains (92 m) complete .	100 Cft	74,518	296.88	221,229
RD-C-52	126-11	Supplying live (Dacca) grass in slabs with earth intact including all lead and lifts.	Sft	99,357	34.38	3,415,894
RD-C-53	127-115	Providing and laying road kerb of precast cement concrete 1:2:4 (24" long 6" wide and 12" deep (610 mm long 152 mm wide and 305 mm deep) using screened graded bajri, from work and its removal compacting and curing laid in cement mortar 1:4 and cement plaster 1:4 neatly finished including cost of excavation and back filling of excavated stuff and its disposal within one chain lead as desired.	100 Rft	11,359	33,910.87	3,851,936
RD-C-54	127-156	Supplying and stacking with all lead and lift: coarse sand or fine aggregate of approved quality and grading..	100 Cft	10,000	4,002.00	400,200
RD-C-55	127-160 + 127-162	Supplying, stacking and filling with all lead and lift, pit sand (local) in trenches, with or without blinding with coarse sand or fine aggregate in different layers as per design and direction of the Engineer-in-Charge including watering, ramming etc., complete.	100 Cft	48,094	5,768.13	2,774,124
RD-C-56	127-216	Extra for additional lead from 11 miles to 200 miles on item No.21 to 23,26 to 35 and 55.	P.Mile	8,300,914	35.10	2,913,621
RD-C-57	134-2	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:				
	i)	1/2 mile (0.80km) lead of part thereof.	100 Cft	938	332.98	3,125
	ii)	1 mile (1.6 km) lead.	100 Cft	938	383.79	3,602
	iii)	2 miles (3.2 km) lead.	100 Cft	938	483.37	4,536
	iv)	3 miles (4.8 km) lead.	100 Cft	15,954	576.78	92,017
	v)	Extra per mile (1.6 km) above 3 miles to 6 miles (4.8 km to 9.6 km) of lead.	100 Cft	47,861	84.72	40,548
					TOTAL SCHEDULED ITEMS =	**128,472,163**
		NON-SCHEDULED ITEMS				
RD-C-58	NS-01	Applying two coat of paint on kerb stones as per specifications and quality as directed and approved by the engineer.	Sft	9,935		
					TOTAL NON-SCHEDULED ITEMS =	
					TOTAL (SCHEDULED+ NON SCHEDULE) =	

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ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

BOUNDARY WALL & R.C.C RETAINING WALL

BILL OF QUANTITIES

CIVIL WORKS

Item No.	Ref. PWD Schedule 2022/ N.S	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
(a)	(c)	(c)	(d)	(e)	(f)	(g)
		GENERAL NOTE. SCOPE : *(Applicable to all sections)* 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.				
		(A) BOUNDARY WALL				
		CIVIL WORKS **PART-I (SCHEDULE ITEMS)**				
BW-C-1	(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	94945	1862.13	1,767,999
BW-C-2	(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	%Cft	4536	24504.59	1,111,528
BW-C-3	(108-12)	Providing 4 coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	%Sft	207188	1010.75	2,094,153
BW-C-4	(112-25)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:6 in straight or curved walls 9 to 13-1/2 inches (229 mm to 343 mm) thick including scaffolding, raking, out joints and curing etc. complete in ground floor superstructure .	100Cft	16461.00	41260.97	6,791,968
BW-C-5	(114-1) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3000 lbs. per sq inch at 28 days with a mix not leaner than 1:2:4 in **column footing** of required shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100Cft	6185	38067.52	2,354,476

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Item No.	Ref. PWD Schedule 2022/ N.S	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
(a)	(c)	(c)	(d)	(e)	(f)	(g)
BW-C-6	(114-4) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3000 lbs. per sq inch at 28 days with a mix not leaner than 1:2:4 in **columns of square or rectangular shape** of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth .	100Cft	2229	41889.37	933,714
BW-C-7	(114-8) + (114-137)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3000 lbs. at 28 days with a mix not leaner than 1:2:4 in **plinth beams** of required shape and design including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, tn foundation basement and plinth	100Cft	3402	40334.02	1,372,163
BW-C-8	(114-24) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3000 lbs. per sq inch at 28 days with a mix not leaner than 1:2:4 **in columns of square or rectangular shape** of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in the ground floor.	100Cft	3686	52667.42	1,941,321
BW-C-9	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	33781	282.45	9,541,443
BW-C-10	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	12681	266.70	3,382,023
BW-C-11	(119-32)	Providing and fixing iron **grills** with required section of angle iron and MS square bar as per approved design including welding all sides of the section at the junction, and fixing with sunk iron screws, painting two coats of red oxide paint etc. complete as required in any floor in masonry or concrete work.	Kg.	59830	290.89	17,403,949
BW-C-12	(122-4)	1/2" (13 mm) thick cement plaster 1:4 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete .	%Sft	50545	4381.84	2,214,801

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Item No.	Ref. PWD Schedule 2022/ N.S	Description	Unit	Quantity	Unit Rate (Rs.)	Amount (Rs.)
(a)	(c)	(c)	(d)	(e)	(f)	(g)
BW-C-13	(122-159)	Painting iron work with synthetic enamel paint of approved make and shade two coats over and including the cost of one priming coat complete at any height in any floor .	%Sft	18771	6071.25	1,139,634
BW-C-14	(122-172)	Painting three coats with weather shield paint deluxe (ICI) make of approved shade on plaster surface (External) and including the cost of cleaning the surface, sand papering etc. complete at any height in any floor.	100Sft	50545	4408.75	2,228,403
				Total Scheduled Items (A)=		**54,277,576**
		(B) R.C.C RETAINING WALL				
BW-C-15	(114-2) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3000 lbs. per sq inch at 28 days with a mix not leaner than 1:2:4 **in raft or strip foundation** with columns and pillars of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100Cft	8580	38067.52	3,266,193
BW-C-16	(114-9) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3000 lbs. per sq inch at 28 days with a mix not leaner than 1:2:4 in **straight walls more than 6 inches (152mm) thick** including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth .	100Cft	17294	45525.19	7,873,126
BW-C-16	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	58726	282.45	16,587,159
BW-C-17	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	19585	266.70	5,223,320
				Total Scheduled Items (B) =		**32,949,798**
				TOTAL SCHEDULED ITEMS		**87,227,374**

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ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

MAIN GATE, GUARD ROOM AND METERING ROOM

BILL OF QUANTITIES

CIVIL WORKS

Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		GENERAL NOTE. SCOPE : *(Applicable to all sections)* 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. **CIVIL WORKS** **PART-I (SCHEDULE ITEMS)**				
QU-MG-C- 1	(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100Cft	3438	1862.13	64,020
QU-MG-C- 2	(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	100Cft	165	24504.59	40,433
QU-MG-C- 3	(108-12)	Providing one coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	100Sft	4736	1010.75	47,869
QU-MG-C- 4	(109-113) + (109-120)	Providing and laying 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge in steps including cost of form work and its removal etc. complete in ground floor.	100Cft	30	29075.48	8,723
QU-MG-C- 5	(112-25)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:6 in straight or curved walls **9 to 13-1/2 inches (229 mm to 343 mm) thick** including scaffolding, raking, out joints and curing etc. complete in ground floor superstructure .	%Cft	731	41260.97	301,618
QU-MG-C- 6	(114-2) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3000 lbs. per sq inch at 28 days with a mix not leaner than **1:1:5:3 in Raft or Strip** foundation with columns and pillars of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100Cft	810	36931.79	299,147
QU-MG-C- 7	(114-4) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **columns of square or rectangular shape** of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth .	100Cft	195	45648.76	89,015
QU-MG-C- 8	(114-8) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3750 lbs. at 28 days with a mix not leaner than 1:1-1/2:3 in **plinth beams** of required shape and design including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, tn foundation basement and plinth	100Cft	237	44093.41	104,501

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Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
QU-MG-C- 9 a)	(114-24) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in columns of square or rectangular shape** of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in the ground floor.	100Cft	281	56426.81	158,559
	(114-24) + (114-134) + (114-137) + (114-93)	First Floor	100Cft	191	58637.40	111,997
QU-MG-C- 10 a)	(114-32) + (114-134) + (114-137) + (114-92)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **straight walls 3" (102mm) thick and less than 5 inches (127 mm) thick** including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in Ist floor.	100Cft	52.00	78,000.32	40,560
QU-MG-C- 11 a)	(114-38) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **straight beams, lintels cantilever beams** of required shape or section including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement and ground floor.	100Cft	200	51051.03	102,102
	(114-38) + (114-134) + (114-137) + (114-93)	First Floor	100Cft	152	53261.62	80,958
QU-MG-C- 12 a)	(114-56) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 Ibs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **ordinary slab 5 inches to 6 inches** (152 mm) thick including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor.	100Cft	265	49314.91	130,685
	(114-56) + (114-134) + (114-137) + (114-93)	First Floor	100Cft	165	51525.50	85,017
QU-MG-C- 13 a)	(114-166)	Providing and laying hard grade ribbed deformed **(minimum yield point 60,000 psi)** reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	6000	282.45	1,694,700

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Item No.	Ref; PWD Schedule, 2022		Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)	(g)
	b)	(114-166) + (114-174)	First Floor	Kg	1800.00	286.89	516,402
QU-MG-C- 14	a)	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed **minimum yield stress of 40,000 psi** with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	2200	266.70	586,740
	b)	(114-167) + (114-174)	First Floor	Kg	1000.00	271.14	271,140
QU-MG-C- 15		(117-2)	Providing and laying 1:4:8 cement concrete bed under floor using graded stone ballast 1" and down gauge with leveling and ramming, ramming, watering and curing etc. complete in ground floor.	100Cft	175	22036.75	38,564
QU-MG-C- 16		(117-6)	Providing and laying floors of 2 inches (51 mm) thick 1:2:4 cement concrete using graded screened bajri 3/4 inch (19 mm) and down gauge in ground floor laid in panels including form work, consolidation, finishing, and curing etc. complete.	100Sft.	330.00	48884.00	161,317
QU-MG-C- 17		(117-13) + (117-18) + (114-136) + (114-145)	Providing and laying terrazzo floor 1-3/4 inches (44 mm) thick consisting of 3/4 inch (19 mm) thick topping 1:2 (1 white cement 2 approved marble chips No. 0 to 6) in ground floor over a base of 1:2:4 (one cement, two sand and four graded crushed) cement concrete 1 inch (25 mm) thick laid in panels or pattern including form work, curing, cutting, rubbing and polishing etc, complete...	%Sft	230	15918.02	36,611
QU-AC-C- 18		(117-117)	Proving and laying floor 1 inch (25 mm) thick of cement tiles 12" X 12" X 1" (1/2 inch toping 1/2 inch base) or 305 mm X 305 mm X 25 mm (13 mm topping 12 mm base) in grey cement with pigment of dark shade in ground floor over 1 inch (25 mm) lime mortar 1:2 (one lime two sand) including setting the tiles with grey cement slurry over lime mortar, jointing and washing the tiles with grey cement slurry including grinding, rubbing, polishing and curing etc. complete including the cost of mortar .	100Sft.	300.00	19654.80	58,964
QU-MG-C- 19		(118-90)	Providing & laying wall finish coat of any colour graffiate wall coating 2.5 mm to 3 mm thick straight and swirt for exterior surface at any hight and any floor.	%Sft.	1,695	6,085.94	103,157
QU-MG-C- 20		(119-32)	Providing and fixing iron **grills** with required section of angle iron and MS square bar as per approved design including welding all sides of the section at the junction, and fixing with sunk iron screws, painting two coats of red oxide paint etc. complete as required in any floor in masonry or concrete work.	Kg.	54	290.89	15,708
QU-AC-C- 21		(119-5)	Providing and fixing single leaf steel doors made to crittal or equivalent standard and of approved sections fully panelled with M. S. Sheet of 16 gauge painted with two coats of red oxide paint including using approved brass section oxidized fitting iron lugs, cutting holes and making good damages to walls etc. complete as required in any floor.	Sft.	22.00	933.84	20,544
QU-AC-C- 22		(119-6)	Providing and fixing double leaf steel doors made to crittal or equivalent standard and of approved sections ftilly panelled with M. S, Sheet of 16 gauge painted with coats of red oxide paint including using approved brass section oxidized fittings, iron lugs, including cutting. holes and making good damages to walls etc. complete as required in any floor.	Sft.	37.00	988.98	36,592

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Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
QU-MG-C- 23	(119-96)	Providing and fixing fully glazed Silver anodized or powder coated aluminium Sliding windows as per British standard manufactured by Lucky, Prime, Chawla, Krudson and Pakistan Cables. (fixing through their approved fabricators), Prime model box section 101 mm x 96 30mm and 2mm thick including the cost of aluminium netting ,fittings, with all accessories cutting hole etc. and making good damages to walls etc. complete · as required in any floor as per direction of engineer-in-charge, but excluding the cost of glass pans	Sft	67	1279.69	85,739
QU-MG-C- 24	(119-121)	Providing and fixing Tinted glass panes 5mm thick to M.S. Box pipe / Aluminium doors, windows and ventilators etc including the cost of labour but excluding the cost of M.S. square pipe beading, rubber packing and screw in any floor at any height.	Sft	67	371.82	24,912
QU-MG-C- 25 a)	(122-2)	1/4" thick cement plaster 1:4 on soffits of ceiling cantilever slabs sides and soffits of beams etc. in basement mezzanine and ground floor including making edges corners and curing etc. complete.	100Sft	230	3852.59	8,861
b)	(122-2) + (122-87)	First Floor	100Sft	331.00	307.50	1,018
QU-MG-C- 26 a)	(122-4)	1/2" (13 mm) thick cement plaster 1:4 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete .	100Sft	2530	4381.84	110,861
b)	(122-4) + (122-87)	First Floor	100Sft	1015	4689.34	47,597
QU-MG-C- 27	(122-162)	Painting with (ICI) Dulux Plastic emulsion paint VIP of approved shade two coats over and including the cost of one priming coat complete over plastered surface at any height in any floor.	100Sft	1115	6737.38	75,122
QU-MG-C- 28	(122-172)	Painting three coats with weather shield paint deluxe (ICI) make of approved shade on plaster surface (External) and including the cost of cleaning the surface, sand papering etc. complete at any height in any floor.	100Sft	566	4408.75	24,954
QU-MG-C- 29	(124-199)	Providing and carrying out Termite proofing in foundations, under floors and wood work surface with a solution using of control TC with water and spraying the solution of the area to be treated as completed as per direction of Engineer Incharge.	Sft.	627	13.13	8,233
QU-MG-C- 30	(127-32)	Supplying and laying hand broken 1-1/2" to 1/2" (38 mm to 13 mm) stone ballast of approved grade and quality in sub-base or base courses in required grade and camber and compacting to the required density by approved mechanical means (Vibratory Roller, Road Packer and Smooth Wheel Roller etc.) including watering with all lead and lift complete (actual compacted depth shall be considered for payment)	100Cft	175	8341.52	14,598
					Total (Schedule Items) =	**5,607,538**

Item No.	Ref; PWD Schedule, 2022	Description	Unit	QTY.	Unit Rate (Rs.)	Amount (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		PART-II (NON- SCHEDULE ITEMS)				
		Ref. Spec. No. 3000				
QU-MG-C- 31	N.S - 1	Providing and fixing in position 22 gauge expanded metal lath on areas as specified in joints etc. under plaster	Sft.	265		
QU-MG-C- 32	N.S - 2	Providing & fixing in position M.S pipe Gate as per drawings including cutting, welding, locking arrangement, rolling wheel, rail, red oxide primer paint to all exposed steel members and three coat of matt enamel paint complete in all respects.	Sft.	324		
					Total (Non-Schedule Items) =	
					TOTAL (SCHEDULE AND NON-SCHEDULE ITEMS) =	

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

MAIN GATE & GUARD ROOMS AND SECURITY SYSTEMS

ELECTRICAL WORKS

BILL OF QUANTITIES

Item No.	PWD Sch 2022/No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
a	b	c	d	e	f	g
		SCHEDULED ITEMS				
	2-78	**(Sunlight , Pierlite , Future Technology)**				
LIB-E-16	2-78-01 (b)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having warm/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (12) Watts.	Each	2	2,198.00	4,396
LIB-E-16	2-78-05 (c)	Providing, Installation, Testing &. Commissioning of 80 - 110Watts Flood Lights (IP66) including driver, having neutral white / cool white colour, 110 -120 lm/Watt efficiency, 0.9 or above power factor, 20000-25000 hours life. cycle, inciuding connection, complete in all respect as approved by the Engineer Incharge.	Each	1	23,724.00	23,724
	2-3	**Point wiring in recessed PVC conduit**				
LIB-E-01	2-3-01	Wiring for light or fan point with (3/.029") pvc insulated wire in 20 mm² (3/4") dia upvc conduit recessed in the wall, column , roof including 1 mm² single core pvc insulated wire as ECC as Required.	Point	3	2,836.00	8,508
	2-7	**Extension /Additional Point wiring**				
LIB-E-02	2-7-03	Extension /additional wiring for light fan call bell or light plug point controlled with same switch with (3/.029") pvc insulated wire in 20 mm (3/4") dia PVC conduit recessed in the wall , column or roof including 1mm² single core pvc insulated wire as ECC as required.	P/Point	6	1,179.00	7,074
	2-27	**2 Wire with ECC wire in existing conduits/cable duct**				
LIB-E-06	2-27-02	Supply & drawing of 2 x 2.5 mm² single core pvc insulated wire including 1 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	400	99.00	39,600
LIB-E-7	2-27-03	Supply & drawing of 2 x 4 mm² single core pvc insulated wire including 1.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	250	145.00	36,250
LIB-E-8	2-27-04	Supply & drawing of 2 x6 mm² single core pvc insulated wire including 2.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	100	209.00	20,900
	2-26	**Single pvc insulated wire and pvc ,pvc cable in existing conduits/ducts**				
LIB-E-03	2-26-05	Supply & drawing of 10 mm², single core, PVC insulated wire in all kinds of existing or given conduit/cable duct as required.	Rft	50	139	6,950

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Item No.	PWD Sch 2022/No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
a	b	c	d	e	f	g
LIB-E-04	2-26-20	Supply & drawing of 16 mm², single core, PVC insulated PVC sheathed wire in all kinds of existing or given conduit/cable duct as required.	Rft	50	219	10,950
	2-56	**2 CORE CABLE WITH ECC WIRE IN EXISTING PIPE OR CABLE DUCT**				
LIB-E-8	2-56-05	Providing & laying, 2 core, 10 mm², stranded copper conductor, PVC insulated & PVC sheathed cable 1/c 2.5 mm2 single core PVC insulated wire as ECG in all kinds of existinQ or Qiven conduit/cable duct as required.	Rft	50	328.00	16,400
	2-61	**uPVC conduit & DUCT**				
LIB-E-10	2-61-06	Supply and fixing 20mm (3/4") dia Upvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	400	49.00	19,600
LIB-E-11	2-61-07	Supply and fixing 25mm (1") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	250	55.00	13,750
LIB-E-11	2-61-10	Supply and fixing 50mm (2") dia uPVC conduit with all especial such as bends, sockets, junction etc recessed in the wall or floor as required.	P/Rft	50	177.00	8,850
MQ-E-15	306-23	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 2 inches (50 mm) dia pipe	P/Rft	50	435	21,736
MQ-E-15	306-24	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 3 inches (80 mm) dia pipe	P/Rft	50	503	25,174
MQ-E-15	306-25	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 4 inches (100mm) dia pipe..	P/Rft	50	600	30,001

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Item No.	PWD Sch 2022/No.	Description	Unit	Qty.	Rate (Rs.)	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 3/4 " 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 4 sqmm and One no. 2.5 sqmm PVC insulated 300/500 Volts grade stranded copper conductor cables in 3/4" 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 3/4" PVC conduit laid underfloor including PVC conduit, conduit accessories, etc.complete in all respects.				
	2-66	**SCHNEIDER /PHILIPS ACCESSORIES ON RECESSED METAL BOARD**				
LIB-E-12	2-66-01	Providing & fixing 10 Amps Polycarbonate flame retardant, S.P Switch with fancy required gang plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required. (Schneider/ Philips)	Each.	10	471.00	4,710
LIB-E-14	2-66-06	Providing & fixing 15 Amps Polycarbonate flame retardant 3-Pin switch socket unit with fancy gang plate fixed on die fabricated, powder coated metal board recessed in wall or column including connection as required. (Clipsal make)	Each	4	1,290.00	5,160
	2-80	**CEILING FANS**				
LIB-E-19	2-80-02	Providing & installing 120 Cm (48") sweep ceiling fan with blades, canopy, standard length of down rod including connection with 14.0076" flexible wire Complete as required. (without regulator) Pak, Royal, GFC,Younas, Millat.	Each	2	8,369.00	16,738

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Item No.	PWD Sch 2022/No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
a	b	c	d	e	f	g
	2-87	**FAN CLAMPS, DOWN ROD & MAKING HOLE.**				
LIB-E-20	2-87-01	Providing & installing of Ceiling fan down rod 3/4" dia heavy gauge GI pipe of require length, one end arrangement for fan insulator and other end duly threaded and hole for split pin etc to be hold all sweep ceiling fan as required.	P/Rft.	6	70.00	420
	3-04	**4 CORE LT UN ARMOURED CABLE IN EXISTING CONDUIT OR CABLE DUCT**				
LIB-E-22	3-4-01 (b)	Providing & laying 4 core, 25 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	100	1,223	122,300
		SECURITY SYSTEM				
	8-10	**Walk Through Gate & Handheld Metal Detector, Road Blocker and Barrier**				
LIB-E-20	8-10-01	Supply, installation, testing and commissioning of 33 zone Walk through Gate with pin point detection (TSA approved), , Power supply 100 to 240V AV, 50 Hz, along with the battery backup or approved by the Engineer lncharge as required as per list of approved manufacturers	P/Job	1	1,147,006.00	1,147,006
LIB-E-20	8-10-02	Supplying of 8 inch scan surface ISO certified handheld metal detector along with the battery approved by the Engineer lncharge as required as per list of approved manufacturers	P/Job	1	36,484.00	36,484
LIB-E-20	8-10-03	Supply, installation, testing and commissioning of hydraulic barrier (road blocker), 10-12 feet span with Siemens motor (7.5 HP or above), having following specifications: limit switch (humidity proof) solenoid valve for reliability & safety in operation, maximum running pressure 25 bar (approx), must interface with access control system, load bearing capacity of approx 40 metric ton, raising/ lowering time 6-8 seconds, operating temperature ranging from -20'C to 50'C, manual override (in case of power failure), constructed in heavy duty grade keeping in view the actual entrance size. The barrier includessubmersible pump for water drainage, complete with all related accessories, as approved by the engineer incharge.	P/Job	2	1,852,923.00	3,705,846
LIB-E-20	8-10-04	Supply of vehicle inspection mirror with flash light complete in all respect as approved by the Engineer lncharge.	P/Job	1	31,919.00	31,919

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Item No.	PWD Sch 2022/No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
a	b	c	d	e	f	g
	8-4	**IP CCTV CAMERAS**				
LIB-E-20	8-4-15	Supply, installation, testing and commissioning of PTZ Dome Camera i/c controller having following specifica:ions, 8MP14K with 200 mtr IR, 36x or higher zoom, Two 213" progressive scan CMOS, Min. Illumination Color: 0.0005 Lux @F1 .5, B/W: 0.0005Lux @F1 .5, 0 Lux with laser, Horizontal field of view: 56.1' to 2.0' (wide-tele), Vertical field of view: 33.4' to 1.1' (wide-tele), Diagonal field of view: 62.9' to 2.3' (wide-tele), (optical lens, wide-tele), Working Distance 10 mm to 1500 mm (wide-tele), Aperture Range F1.5 to F4.0, Focal Length 7.5 mm to 270 mm, 36x or higher Optical, Digital Zoom 16x or higher, Optical Defog, Rain Wiper, Preset/Pattern Scan/Patrol Scan/Auto Scan/Tilt Scan/Random Scan/Frame Scan/Panorama Scan, IR Distance 200m, Protection IP67.complete in all respect as approved. by the engineer.	P/Job	1	999,449.00	999,449
				TOTAL (SCHEDULE ITEMS) =		**6,363,894**

NON-SCHEDULED ITEMS

E. ELECTRICAL WORKS

Supply, installation, testing and commissioning of the following items of work (unless specifically stated otherwise) including all material, labour, tool, plant, accessories, related civil works etc required for proper completion of each item as per specifications (Section-8001 "General Specifications for Electrical Works" shall be applicable to all BOQ items). The contractor is bound to submit all relevent data, information, literature, drawings, submittals etc. as per specifications & recommended manufacturers list to The engineer for necessary approvals.

L.T. DISTRIBUTION BOARDS

Ref. Spec. Sec. 8133, 8240

WT-E-20	NS-01	Following LT Distribution Boards (as per single line diagrams shown on drawings), recessed mounted including all accessories, related civil works etc. complete in all respects:				
	a)	DB-GATE	Job.	1		
		LT CABLES **(Ref. Specification Section-8001, 8212)**				
LIB-E-51	NS-E-02	10 sqmm, 4 core CU/PVC/PVC stranded copper conductor cable, 600/1000 V grade in already installed conduit/on cable tray.	Rft.	50		

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Item No.	PWD Sch 2022/No.	Description	Unit	Qty.	Rate (Rs.)	Amount (Rs.)
a	b	c	d	e	f	g
		LED LIGHT FIXTURE **(Ref. Spec. Nos. 8001, 8150)** Supply, installation, testing & commissioning of the following types of light fixtures including LED Light with driver, internal wiring complete with all mounting accessories as per architectural arrangements/ requirements, dust & moisture protected and corrosion proof and suitable for this area as acceptably supplied and installed and as approved by the Engineer.				
LIB-E-76	NS-E-17	12 W Weather Proof Bulkhead die cast aluminum body WALL mounted OUTDOOR LIGHT IP 55 or better	Each	6		
		WIRING ACCESSORIES **(Ref. Specification Section-8001, 8220)**				
LIB-E-59	NS-E-10	Simplex Universal Switch socket outlet with switch 13 A - Simplex, 230V. Mounting Height as per site including appropriate size powder coated metallic back box.	No.	6		
		EARTHING **(Ref. Spec. Nos. 8001, 8240)**				
LIB-E-61	NS-E-12	Earth electrode for lightning protection system comprise 1/2" dia, 10' long Copper deposited steel rod, including appropriate clamp for clamping of the down conductor. The copper deposited steel rod shall be hammered into the ground to the depth of twelve inches below the ground surface. The earth electrode includes excavation, backfilling, etc.	Job.	1		
		STRUCTURED CABLING NETWORK (TELEPHONE & NETWORKING) **(Ref. Spec. Nos. 8001, 8312)**				
LIB-E-70	NS-E-21	Wiring from RJ45 outlet point to relevant Building / floor distributor with CAT-6 UTP cable in already laid concealed conduit / already installed cable tray or cable trunking including all accessories complete in all respect.	No.	2		
LIB-E-71	NS-E-22	Simplex Face plate with RJ-45 I/0 CAT-6 UTP telecommunication outlet including sheet steel back box shall make of 16 SWG shall be finished in powder coated paint. including all mounting accessories.	No.	2		
					NON-SCHEDULE ITEMS =	
					TOTAL (SCHEDULE ITEMS + NON-SCHEDULE ITEMS) =	

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EXTERNAL STORM WATER DRAINAGE WORKS

BILL OF QUANTITIES

ITEM No.	PAK PWD SCHEDULE 2022 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 drawings, specifications and as approved by the Engineer.					
		SCHEDULED ITEMS					
		EXTERNAL STORM DRAINAGE					
		EARTH WORK					
DR-01		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:					
	103-1	Lift upto 5 feet	100	Cft	45,334	1,624.63	736,510
DR-02		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:					
	103-2	Lift upto 5 feet	100	Cft	22,667	1,862.13	422,089
DR-03		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
	103-5	Lift upto 5 feet	100	Cft	11,334	5,547.38	628,712
DR-04		Excavation for foundation trenches and drains in soft or disintegrated rock by hammering, chiselling and Jumper work including, stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:					
	103-7	Lift upto 5 feet	100	Cft	17,000	2,328.63	395,873

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
DR-05		Excavation for foundation trenches and drains in hard rock by hammering chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-8	Lift upto 5 feet	100 Cft	17,000	4,434.88	753,941
DR-06	104-7	Supplying earth from approved site within the area acquired including digging or cutting, loading, unloading and filling in foundation trenches, plinth or under floor etc. including breaking clods, dressing watering and consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction complete within a lead of one chain (30.5 R.m) and lift of 5 feet (1.52 m) as directed by the Engineer-in-charge.	100 Cft	6,008	1,507.81	90,586
		RCC DRAIN				
DR-07	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	100 Cft	4,330	32,221.55	1,395,060
DR-08	106-12	Providing and laying in situ 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100 Cft	649	34,857.58	226,378
DR-09	106-15	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100 Cft	500	39,059.08	195,295

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT		QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)		(e)	(f)	(g)
DR-10	114-2 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm^2) at 28 days with a mix not leaner than 1:2:4 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100	Cft	7,777	33,562.40	2,610,089
DR-11	114-9 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight **walls more than 6 inches** (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	100	Cft	1,544	45,915.19	708,931
DR-12	114-10 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight **walls 5" (127 mm) to 6"** (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	100	Cft	6,744	55,457.69	3,739,859
DR-13	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary **slab 5 inches (127 mm) to 6 inches (152 mm)** thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100	Cft	6,744	45,945.52	3,098,394

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
DR-14	114-57 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary **slab more than 6 inches** (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100 Cft	1,033	44,075.39	455,299
DR-15	114-166	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	6410	282.45	1,810,415
DR-16	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	57687	266.70	15,385,161
DR-17	127-163	Providing and laying dry stone uncoarsed rubble pitching up to 12" (305 mm) thick in bottom and sides of channel or drain as per direction of the Engineer-in-Charge .	100 Cft	19,528	10,001.00	1,952,995
DR-18	127-164	Cement pointing to stone pitching in 1:2 cement mortar in channels or drain including curing etc. and raking out joint complete	100 Sft	19528.00	2307.19	450,548

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		CARRIAGE				
DR-19	134-2	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:				
	i)	1/2 mile (0.80km) lead of part thereof.	100 Cft	21,111	332.98	70,294
	ii)	1 mile (1.6 km) lead.	100 Cft	21,111	383.79	81,020
	iii)	2 miles (3.2 km) lead.	100 Cft	21,111	483.37	102,042
	iv)	3 miles (4.8 km) lead.	100 Cft	42,221	576.78	243,522
	v)	Extra per mile (1.6 km) above 3 miles to 6 miles (4.8 km to 9.6 km) of lead.	100 Cft	126,663	84.72	107,309
		RCC PIPES				
DR-20		Providing R.C.C. pipes and collars of class 'B' and fixing in trench including cutting, fitting and jointing with maxphalt composition and cement mortar (1:1) and back filling the excavated material in trench including testing with water to a pressure head of 50 feet (15.24m) and cartage within 10 miles (16.09 km), for the following pipes:				
	311-9	12 inches (765 mm) dia. pipe..	R.ft.	400	548.16	219,264
			TOTAL (SCHEDULED ITEMS) =			**35,879,586**

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INFRASTRUCTURE WORKS

WATER SUPPLY NETWORK

BILL OF QUANTITIES

ITEM No.	PAK PWD SCHEDULE 2022 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 drawings, specifications and as approved by the Engineer.				
		SCHEDULED ITEMS				
		EARTH WORK & PIPE TRENCHES				
WS-01	103-1	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	27,720	1,624.63	450,347
WS-02	103-2	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	7,920	1,862.13	147,481
WS-03	103-5	Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5R.m) and lift upto 5feet (1.52m)	100 Cft	3,960	5,547.38	219,676

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
WS-04	104-9	Supplying stacking and filling sand of approved quality from outside sources in foundation, trenches, plinth or under floor, etc. including dressing, watering and consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction and lift upto 5 feet (1 .52 m).	100 Cft	19,800	4,869.94	964,248
WS-05	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregates) cement concrete using 50% crushed graded bolders 3/4" (19mm) and down gauge and 50% graded screened bajri 3/4" (19mm) and down gauge with lawancepur sand in foundation, basement and plinth including formwork, compacting, curing and removal of formwork etc. complete foundation and basements upto 5 feet depth (1.52m) and plinth upto 4 feet(1.2m) height from ground level. (For concrete encasement and thrust blocks)	100Cft	1,320	39,230.33	517,840
		WATER SUPPLY PIPES AND FITTINGS				
WS-06		Providing and fixing polyethylene pipe (HDPE) (PN-16) with specials including cutting and fitting complete and cartage within 10 miles of following diameters:				
	306-37	25mm e/d	Rft	20	109.28	2,186
	306-38	32mm e/d	Rft	20	161.25	3,225
	306-39	40mm e/d	Rft	20	240.00	4,800
	306-40	50mm e/d	Rft	20	295.13	5,903
	306-41	75mm e/d	Rft	20	669.70	13,394
		VALVES				
WS-07		Providing and fixing cast iron sluice valves with flanged ends and two tail pieces to each valve complete with bolts and nuts, including the cost of insertion rubber washers (valves to stand test pressure head of 400 feet (122 m). (in chambers on water supply network)				
	310-1	3 inches (80 mm) dia..	Each	1	7,961.40	7,961
	310-2	4 inches (100 mm) dia..	Each	2	10,236.40	20,473
	310-3	6 inches (150 mm) dia..	Each	1	12,516.80	12,517
WS-08		Providing and fixing full way gun metal valves with wheels threaded or flanged ends with rubber washers, (standard pattern) of following diameters:				
	307-9	1 inch (25mm) dia	Each	1	4,012.90	4,013

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	307-10	1-1/4 inch (32mm) dia	Each	1	6,366.65	6,367
	307-11	1-1/2 inch (40mm) dia	Each	1	8,169.15	8,169
	307-12	2 inch (50mm) dia	Each	1	8,699.40	8,699
		VALVE CHAMBERS				
WS-09	103-1	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	370	1,624.63	6,011
WS-10	103-2	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	105	1,862.13	1,955
WS-11	103-5	Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5R.m) and lift upto 5feet (1.52m)	100 Cft	55	5,547.38	3,051
WS-12	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregates) cement concrete using 50% crushed graded bolders 3/4" (19mm) and down gauge and 50% graded screened bajri 3/4" (19mm) and down gauge with lawancepur sand in foundation, basement and plinth including formwork, compacting, curing and removal of formwork etc. complete foundation and basements upto 5 feet depth (1.52m) and plinth upto 4 feet(1.2m) height from ground level. (For concrete thrust blocks)	100Cft	5	39,230.33	1,962

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
WS-13	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100 Cft	32	32,221.00	10,311
WS-14	106-12	Providing and laying in situ 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100Cft	50	34,857.58	17,429
WS-15		Providing and laying first class solid burnt brick masonry set in cement mortar 1:4 in straight or curved walls 9" to 13-/2 inches (228 mm to 343 mm) thick including scaffolding, raking out Joints and curing etc. complete in foundation, basement and plinth .				
	112-2 +112-79	foundation and basement masonry upto 5 feet (1.52 Ru.m.) depth and plinth upto 4 feet (1.2 Ru.m.) height from ground level	100Cft	175	39,770.93	69,599
WS-16	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100Cft	30	45,945.52	13,784

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
WS-17	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	Kg	70	266.70	18,669
WS-18	122-3	1/2" (13 mm) thick cement plaster 1:3 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete.	100 Sq.ft.	490	4,707.17	23,065
WS-19	108-12	Providing a coat of bitumen emulsion at 10 Lbs per 100sft (0.49 kg/sm) on walls and floors in ground floor.	100 Sq.ft.	360	1,010.75	3,639
				Total (Scheduled) =		**2,566,773**

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	NON-SCHEDULED ITEMS					
		WATER SUPPLY PIPES AND FITTINGS (Ref. Specs: 5216)				
WS-20	NS-01	Providing and laying Poly Ethylene Pressure Pipe (PN-12.5 & HDPE-100) conforming to ISO 4427:1996, DIN 8074/8075 with Compression / Butt fusion fittings and specials (as required) in pipe trenches including flanges (BS-4504; PN-16) wherever required, flushing, cleaning and disinfecting as per specifications and as directed by the Engineer of following internal diameters.				
	(a)	63mm e/d	Rft	200		
	(b)	110mm e/d	Rft	2700		
	(c)	160mm e/d	Rft	50		
	(d)	200mm e/d	Rft	10		
		VALVES (Ref. Specs: 5216, 5220)				
WS-21	NS-02	C.I. gate valves conforming to BS-5163 (PN-16) including Adapters, flanges, nuts & bolts, transition pipe pieces with flanges, rubber seal, making required type of joints on both ends complete in all respect as shown on drawings or as directed by the Engineer of following diameters.				
	a)	8" dia	Each	1		
WS-22	NS-03	Provide and install double acting air relief valve (PN-16) of 2 inch (50mm) inner dia with integral isolating valve, in valve chamber, of approved manufacturers, including tees, Adapter, transition pipe pieces with flanges, making required type of joints on both ends as shown on drawing and as directed by the Engineer, complete in all respects.	Each	1		
		VALVE CHAMBER COVERS (Ref. Specs: 2100, 2200, 2300)				
WS-23	NS-04	RCC valve chamber cover 24" dia, 2.5" MS angle RCC1:2:4 etc complete with frame as per drawings.	Each	5		
					TOTAL (NON-SCHEDULED) =	
					TOTAL (SCHEDULED + NON SCHEDULED) =	

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ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

INFRASTRUCTURE WORKS

FIREFIGHTING NETWORK

BILL OF QUANTITIES

ITEM No.	PWD SCHEDULE 2022 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 drawings, specifications and as approved by the Engineer.				
		SCHEDULED ITEMS				
		EARTH WORK & PIPE TRENCHES				
WS-01	103-1	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	13,360	1,624.63	217,051
WS-02	103-2	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	3,820	1,862.13	71,133

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ITEM No.	PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
WS-03	103-5	Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5R.m) and lift upto 5feet (1.52m)	100 Cft	1,910	5,547.38	105,955
WS-04	104-9	Supplying stacking and filling sand of approved quality from outside sources in foundation, trenches, plinth or under floor, etc. including dressing, watering and consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction and lift upto 5 feet (1 .52 m).	100 Cft	9,550	4,869.94	465,079
WS-05	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregates) cement concrete using 50% crushed graded bolders 3/4" (19mm) and down gauge and 50% graded screened bajri 3/4" (19mm) and down gauge with lawancepur sand in foundation, basement and plinth including formwork, compacting, curing and removal of formwork etc. complete foundation and basements upto 5 feet depth (1.52m) and plinth upto 4 feet(1.2m) height from ground level. (For concrete encasement and thrust blocks)	100Cft	1,320	39,230.33	517,840
		VALVE CHAMBERS				
WS-09	103-1	Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	370	1,624.63	6,011

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ITEM No.	PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
WS-10	103-2	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	100 Cft	105	1,862.13	1,955
WS-11	103-5	Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5R.m) and lift upto 5feet (1.52m)	100 Cft	55	5,547.38	3,051
WS-12	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregates) cement concrete using 50% crushed graded bolders 3/4" (19mm) and down gauge and 50% graded screened bajri 3/4" (19mm) and down gauge with lawancepur sand in foundation, basement and plinth including formwork, compacting, curing and removal of formwork etc. complete foundation and basements upto 5 feet depth (1.52m) and plinth upto 4 feet(1.2m) height from ground level. (For concrete thrust blocks)	100Cft	5	39,230.33	1,962
WS-13	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100 Cft	32	32,221.00	10,311

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ITEM No.	PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
WS-14	106-12	Providing and laying in situ 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100Cft	50	34,857.58	17,429
WS-15		Providing and laying first class solid burnt brick masonry set in cement mortar 1:4 in straight or curved walls 9" to 13-/2 inches (228 mm to 343 mm) thick including scaffolding, raking out Joints and curing etc. complete in foundation, basement and plinth .				
	112-2 +112-79	foundation and basement masonry upto 5 feet (1.52 Ru.m.) depth and plinth upto 4 feet (1.2 Ru.m.) height from ground level	100Cft	180	39,770.93	71,588
WS-16	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 Ibs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100Cft	30	45,945.52	13,784

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ITEM No.	PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
WS-17	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	Kg	70	266.70	18,669
WS-18	122-3	1/2" (13 mm) thick cement plaster 1:3 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete.	100 Sq.ft.	490	4,707.17	23,065
WS-19	108-12	Providing a coat of bitumen emulsion at 10 Lbs per 100sft (0.49 kg/sm) on walls and floors in ground floor.	100 Sq.ft.	360	1,010.75	3,639
					Total (Scheduled Items) =	**1,548,521**

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ITEM No.	PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	NON-SCHEDULED ITEMS					
		WATER SUPPLY PIPES AND FITTINGS (Ref. Specs: 5216)				
WS-20	NS-01	Providing and laying Poly Ethylene Pressure Pipe (PN-16 & HDPE-100) conforming to ISO 4427:1996, DIN 8074/8075 with Compression / Butt fusion fittings and specials (as required) in pipe trenches including flanges (BS-4504; PN-16) wherever required, flushing, cleaning and disinfecting as per specifications and as directed by the Engineer of following internal diameters.				
	(a)	110mm e/d	Rft	20		
	(b)	160mm e/d	Rft	600		
	(c)	200mm e/d	Rft	850		
	(d)	250mm e/d	Rft	50		
WS-21	NS-02	MS pipes with flanges, specials and clamps etc, conforming to ASTM A53 Sch. 40, Grade-B, including fixing, cutting, welding, fixing & supports; and other fittings complete with and including the cost of breaking, through walls and slabs, making walls & slabs good thereafter, etc, anticorrosive treatment from inside & outside, after cleaning the pipe.				
	(a)	3" dia	Rft	20		
	(b)	4" dia	Rft	60		
	(c)	6" dia	Rft	50		
	(d)	8" dia	Rft	10		
		VALVES (Ref. Specs: 5216, 5220)				
WS-22	NS-03	C.I. gate valves conforming to BS-5163 (PN-16) including Adapters, flanges, nuts & bolts, transition pipe pieces with flanges, rubber seal, making required type of joints on both ends complete in all respect as shown on drawings or as directed by the Engineer of following diameters.				
	a)	3" dia	Each	1		
	b)	4" dia	Each	2		

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ITEM No.	PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	c)	6" dia	Each	1		
	d)	8" dia	Each	1		
WS-23	NS-04	Provide and install double acting air relief valve (PN-16) of 2 inch (50mm) inner dia with integral isolating valve, in valve chamber, of approved manufacturers, including tees, Adapter, transition pipe pieces with flanges, making required type of joints on both ends as shown on drawing and as directed by the Engineer, complete in all respects.	Each	1		
WS-24	NS-05	Fire piller Hydrant of 04"dia, 02 outlets of 2.5" & female 2.5" instantaneous coupling, from approved manufacturers including stand pipe, Adapter, transition pipe pieces with flanges, nuts & bolts, making required type of joints on both ends complete in all respects.	Each	2		
		VALVE CHAMBER COVERS (Ref. Specs: 2100, 2200, 2300)				
WS-25	NS-06	RCC valve chamber cover 24" dia, 2.5" MS angle RCC1:2:4 etc complete with frame as per drawings.	Each	5		
					TOTAL (NON-SCHEDULED) =	
					TOTAL (SCHEDULED + NON SCHEDULED) =	

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INFRASTRUCTURE WORKS

SANITARY SEWER NETWORK

BILL OF QUANTITIES

ITEM No.	PAK PWD SCHEDULE 2022 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 drawings, specifications and as approved by the Engineer.				
		SCHEDULED ITEMS				
		SECTION-A - EXTERNAL SEWERAGE NETWORK				
		EARTH WORK & PIPE TRENCHES				
SW-01		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:				
	103-1	Lift upto 5 feet	100Cft	22000	1,624.63	357,419
	103-1 + 103-28	Lift 5 to 8 feet	100Cft	9170	1,862.13	170,757
	103-1 + 103-28	Lift 8 to 11 feet	100Cft	3670	2,099.63	77,056
	103-1 + 103-28	Lift 11 to 14 feet	100Cft	1840	2,337.13	43,003

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
SW-02		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:				
	103-2	Lift upto 5 feet	100Cft	5870	1,862.13	109,307
	103-2 + 103-28	Lift 5 to 8 feet	100Cft	7450	2,099.63	156,422
	103-2 + 103-28	Lift 8 to 11 feet	100Cft	980	2,337.13	22,904
	103-2 + 103-28	Lift 11 to 14 feet	100Cft	490	2,574.63	12,616
SW-03		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-5	Lift upto 5 feet	100Cft	1470	5,547.38	81,546
	103-5 + 103-29	Lift 5 to 8 feet	100Cft	615	5,844.26	35,942
	103-5 + 103-29	Lift 8 to 11 feet	100Cft	245	6,141.14	15,046
	103-5 + 103-29	Lift 11 to 14 feet	100Cft	125	6,438.02	8,048
SW-04	104-9	Supplying stacking and filling sand of approved quality from outside sources in foundation, trenches, plinth or under floor, etc. including dressing, watering and consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction and lift upto 5 feet (1 .52 m).	100 Cft	20380	4,869.94	992,494
		CONCRETE				

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
SW-05	106-5 + 106-32 + 106-52	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregates) cement concrete using 50% crushed graded bolders 3/4" (19mm) and down gauge and 50% graded screened bajri 3/4" (19mm) and down gauge with lawancepur sand in foundation, basement and plinth including formwork, compacting, curing and removal of formwork etc. complete foundation and basements upto 5 feet depth (1.52m) and plinth upto 4 feet(1.2m) height from ground level. (For concrete encasement)	100Cft	1650	39,230.33	647,300
		RCC MANHOLES (3'x3')				
		EARTH WORK				
SW-06		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:				
	103-1	Lift upto 5 feet	100Cft	2650	1,624.63	43,053
	103-1 + 103-28	Lift 5 to 8 feet	100Cft	1100	1,862.13	20,483
	103-1 + 103-28	Lift 8 to 11 feet	100Cft	440	2,099.63	9,238
	103-1 + 103-28	Lift 11 to 14 feet	100Cft	220	2,337.13	5,142
SW-07		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:				
	103-2	Lift upto 5 feet	100Cft	700	1,862.13	13,035
	103-2 + 103-28	Lift 5 to 8 feet	100Cft	300	2,099.63	6,299

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	103-2 + 103-28	Lift 8 to 11 feet	100Cft	120	2,337.13	2,805
	103-2 + 103-28	Lift 11 to 14 feet	100Cft	60	2,574.63	1,545
SW-08		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-5	Lift upto 5 feet	100Cft	180	5,547.38	9,985
	103-5 + 103-29	Lift 5 to 8 feet	100Cft	75	5,844.26	4,383
	103-5 + 103-29	Lift 8 to 11 feet	100Cft	30	6,141.14	1,842
	103-5 + 103-29	Lift 11 to 14 feet	100Cft	15	6,438.02	966
WS-09	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	100Cft	205	32,221.55	66,054
WS-10	106-12	Providing and laying in situ 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100Cft	240	34,857.58	83,658
WS-11	106-15	Providing and laying in situ 1:2:4 (1 cement 2 sand and 4 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level .	100Cft	10	39,059.08	3,906

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
WS-12	114-2 + 114-136	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm^2) at 28 days with a mix not leaner than 1:2:4 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100Cft	320	33,203.65	106,252
WS-13	114-10 + 114-136	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight walls 5" (127 mm) to 6" (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	100Cft	1680	55,098.94	925,662
WS-14	114-56 + 114-136	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100Cft	240	45,586.77	109,408
WS-15	114-166	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	1020	282.45	288,099

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
WS-16	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	4065	266.70	1,084,136
WS-17	122-3	1/2" (13 mm) thick cement plaster 1:3 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete.	100 Sq.ft.	2400	4,707.17	112,972.08
WS-18	108-12	Providing a coat of bitumen emulsion at 10 Lbs per 100sft (0.49 kg/sm) on walls and floors in ground floor.	100 Sq.ft.	4480	1,010.75	45,281.60
				SUB-TOTAL (SCHEDULED) =		**5,674,065**

NON-SCHEDULED ITEMS
(Ref. Specs: 5100)

SEWER PIPES

SW-19	NS-01	uPVC non-pressure pipes for sanitary drainage conforming to BS-5481/BS-4660 (SN8) with rubber ring fittings and specials compatable with pipe material as per manufacturer's recommendations, complete in all respects, flushing cleaning and disinfecting as per specifications and as directed by the Engineer of following diameters.				
	(a)	06 inches (160mm)	R.ft.	50		
	(b)	08 inches (200mm)	R.ft.	460		
	(c)	10 inches (250mm)	R.ft.	1870		
	(c)	12 inches (315mm)	R.ft.	330		

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		BRICK MASONRY MANHOLES				
SW-20	NS-02	RCC manhole cover 24" dia, 2.5" MS angle, RCC 1:2:4 etc, complete with frame; as shown in drawing.	Each	40		
SW-21	NS-03	3/4inch diameter Galvanised MS ladder rungs for manholes; each rung of 18inch width, 6 inch projected outside the wall and 6 inch embeded in wall on both ends; including all necessary works for complete installation.	Each	200		
					SUB-TOTAL (NON-SCHEDULED) =	
					TOTAL (SCHEDULED + NON SCHEDULED) =	

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ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

INFRASTRUCTURE WORKS

TUBE WELL

BILL OF QUANTITIES

ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
		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				
		TUBEWELL				
TW-01	5-17-01	Conducting Electric Resistivity survey at different locations to configure the subsurface lithologies/possibilty of ground water suitable for drilling tube well.	Job	1	33,000	33,000
TW-02	5-17-04	Drilling of Trial Bore in shingle gravel and rock including sinking and with drawing of casing pipes 6"-10" dia				
	a	Ground level to 250 Rft-(8" dia Trial bore)	Rft	100	1,764	176,400
	b	Exceeding 250 Rft-(8" dia Trial bore)	Rft	100	901	90,100
TW-03	5-17-05	Conversion of Trial Bore in shingle gravel and rock including sinking and with drawing of casing pipes 15"-18" dia				
	a	Ground level to 250 Rft-(18" dia bore)	Rft	100	2,531	253,100
	b	Exceeding 250 Rft-(18" dia bore)	Rft	100	2,729	272,900
TW-04	5-17-06	Drilling of Trial Bore in all type of soil except shingle gravel and rock including sinking and with drawing of casing pipe complete as required: 6"-10" dia				
	a	Ground level to 250 Rft-(8" dia Trial bore)	Rft	150	1,388	208,200
	b	Exceeding 250 Rft-(8" dia Trial bore)	Rft	250	1,542	385,500
TW-05	5-17-07	Conversion of Trial Bore into successful bore in all type of soil except shingle gravel and rock including sinking and with drawing of casing pipe complete as required: **6"-10" dia**** ****15"-18" dia (TYPO ERROR CORRECTED)**				
	a	Ground level to 200 Rft-(18" dia bore)	Rft	100	1,718	171,800

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
	b	Exceeding 200 Rft-(18" dia bore)	Rft	300	1,938	581,400
TW-06	5-17-08	Providing and installing 10" dia uPVC blind pipe BSS class 'E' in tube well bore hole including sockets and solvent etc complete as required as approved by the Engineer incharge as required.	Rft	400	3,118	1,247,200
TW-07	5-17-10	Providing and installing 10" dia uPVC strainer BSS class 'E" in tube well bore hole including sockets and solvent etc complete as required as approved by the Engineer incharge as required.	Rft	200	3,118	623,600
TW-08	5-17-12	Providing and installing PVC Bail/ end plug in tube well bore hole 2 ft long and 10" dia class "E" complete as required.	No.	1	2,805	2,805
TW-09	5-17-14	Shrouding with graded PEA gravel into the space between bore hole and blind pipe/strainer.	Cft	650	150	97,500
TW-10	5-17-15	Electric/video logging of successful bore hole for proper placement of strainer/blind pipe etc complete as required.	Job	1	33,000	33,000
TW-11	5-17-17	Testing develop and sterlize of tube well through compressor upto 1.5 cusecs discharge in accordance with approved procedure upto duration of 72 hours as required by the Engineer	Job	1	34,320	34,320
				TOTAL (SCHEDULED ITEMS) =		**4,210,825**

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

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ITEM No.	PAK PWD SCHEDULE 2022 REF No./NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
		NON-SCHEDULED ITEMS (Ref. Spec. 5240, 5600)				
		TUBEWELL				
TW-12	NS-01	Mobilization and de-mobilization of drilling rig and related equipments at drilling site.	Job	1		
TW-13	NS-02	Collection of lithological samples at every 5 feet interval or change of lithology whichever is less.	Job	1		
TW-14	NS-03	Yield test by air compressor.	Job	1		
TW-15	NS-04	Furnishing sample of water from bore hole and getting water quality test report from approved Laboratory.	Job	1		
TW-16	NS-05	Supply and install Centralizers as per specifications.	No	10		
TW-17	NS-06	Provision and fixing 2 Nos. dia 2" PVC gravel feed pipe including sanitary seal to min. 20 ft. depth from top level of tubewell, complete in all respects.	Job	1		
		PUMPING MACHINERY				
TW-18	NS-07	Submersible deep well pump with motor, including control panel (location as per plan), appropriate power cable from panel to motor, valves, GI (ASTM A53 Sch-40) Riser pipe upto ground of required dia. & standard specifications and all other installation accessories as required/ recommended by the pump manufacturer for complete installation and operation, of following **tentative** requirements: Discharge = 4000-5000 gph; Head=600-700 feet & Setting Depth=350-400 feet	Job	1		
					SUB TOTAL (NON-SCHEDULED) =	
					TOTAL (SCHEDULED + NON SCHEDULED) =	

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ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

ELEVATED WATER TANK

CIVIL WORKS
BILL OF QUANTITIES

ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		GENERAL NOTE. SCOPE : *(Applicable to all sections)* 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.				
		PART-I (SCHEDULE ITEMS)				
C - 1	(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	9021	1862.13	167,983
	(103-28)	5'-00" to 8'-00" Depth	%Cft	5413	2099.63	113,653
	(103-28)	8'-00" to 11'-00" Depth	%Cft	5413	2337.13	126,509
	(103-28)	11'-00" to 14'-00" Depth	%Cft	2255	2574.63	58,058
C - 2	(104-1)	Filling excavated earth available at site in foundation, plinth or under floor, etc. including breaking clods, dressing, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction complete within a lead of one chain (30.5 R.m) and lift of 5 feet (1.52m).	%Cft	500	735.19	3,676
C - 3	(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	%Cft	597	24504.59	146,292
C - 4	(108-12)	Providing 4 coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	%Sft	11872	1010.75	119,996
C - 5	(114-2) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in raft or strip foundation with columns and pillars, of any shape** including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	%Cft	3360	36931.79	1,240,908
C - 6	(114-4) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in columns of square or rectangular shape** of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, **in foundation basement and plinth .**	%Cft	333	45648.76	152,010

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ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
C - 7	(114-8) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **plinth beams** of required shape and design including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, tn foundation basement and plinth	%Cft	249	44093.41	109,793
C - 8	(114-107) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3750 lbs per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **slanting or vertical columns and braces** of over head water tank, bins, bunkers, intze tank and silos up to a height of 30 feet (9 m) above ground including form works and its removal compacting and curing etc. complete but excluding the cost of reinforcement.	%Cft	1551	73004.01	1,132,292
	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 40 feet	%Cft	517	76971.61	397,943
	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 50 feet	%Cft	515	80939.21	416,837
	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 60 feet	%Cft	502	84906.81	426,232
	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 70 feet	%Cft	506	88874.41	449,705
	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 80 feet	%Cft	468	92842.01	434,501
	(114-107) + (114-134) + (114-137) + (114-127*2)	Up to a height of 90 feet	%Cft	322	96809.61	311,727

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ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
C - 9	(114-112) + (114-134) + (114-137) + (114-127*12)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in straight walls in over head water tank bins,** bunkers, intze tank and silos up to a height of 90 feet above ground including form works and its removal compacting and curing etc. complete but excluding the cost of reinforcement.	%Cft	1244	89848.31	1,117,713
C - 10	(114-114) + (114-134) + (114-137) + (114-127*12)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **square of rectangular bottom slab** of over head water tank up to a height of 90 feet above ground including form works and its removal, compacting and curing etc. complete but excluding the cost of reinforcement .	%Cft	492	86852.62	427,315
C - 11	(114-118) + (114-134) + (114-137) + (114-127*12)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in roof slab of over head water** tank up to a height of 90 feet above ground including form works and its removal, compacting and curing etc. complete but excluding the cost of reinforcement .	%Cft	328	81245.02	266,484
C - 12	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	14794	282.45	4,178,565
	(114-166) + (114-174)	First Floor	Kg	3005	286.89	862,104
	(114-166) + (114-174) + (114-175)	Second Floor	Kg	3037	291.33	884,769
	(114-166) + (114-174) + (114-175)	Third Floor	Kg	3005	295.77	888,789
	(114-166) + (114-174) + (114-175)	Fourth Floor	Kg	3005	300.21	902,131
	(114-166) + (114-174) + (114-175)	Fifth Floor	Kg	2834	304.65	863,378
	(114-166) + (114-174) + (114-175)	Sixth Floor	Kg	4880	309.09	1,508,359

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ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	(114-166) + (114-174) + (114-175)	Seventh Floor	Kg	7111	313.53	2,229,512
C - 13	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	2607	266.7	695,287
	(114-167) + (114-174)	First Floor	Kg	1286	271.14	348,686
	(114-167) + (114-174) + (114-175)	Second Floor	Kg	1302	275.58	358,805
	(114-167) + (114-174) + (114-175)	Third Floor	Kg	1286	280.02	360,106
	(114-167) + (114-174) + (114-175)	Fourth Floor	Kg	1286	284.46	365,816
	(114-167) + (114-174) + (114-175)	Fifth Floor	Kg	1220	288.9	352,458
	(114-167) + (114-174) + (114-175)	Sixth Floor	Kg	1422	293.34	417,129
	(114-167) + (114-174) + (114-175)	Seventh Floor	Kg	962	297.78	286,464
C - 14	(117-6) + (114-136) + (117-26)	Providing, and laying **floors of 2 inches** (76 mm) thick 1:2:4(1 cement 2 sand and 4 coarse aggregate) cement concrete using graded crushed boulders 3/4 inches (19 mm) and down gauge in Third floor laid in panels including form work, consolidation, finishing, curing etc. complete..	%Sft	504	8487.27	42,776
C - 15	(124-97)	Providing and fixing PVC ribbed water stops 9" (229 mm) wide in vertical or horizontal expansion joints including cutting or jointing etc., complete in all floors.	Rft	109	448.81	48,920
C - 16	(119-42) + (119-57) + (119-58)*6	Providing and fixing M. S. tees, angles and flats including welding all the sides of the section at the junction, gusset plates, bolts, nuts etc. complete with hoisting and erecting in position in steel trusses, frames, towers and stair etc. of any design upto seventh floor.	Kg	1950	423.46	825,747
C - 17	(124-199)	Providing and carrying out Termite proofing in foundations, under floors and wood work surface with a solution using of control TC with water and spraying the solution of the area to be treated as completed as per direction of Engineer Incharge.	Sft.	4267	13.13	56,026

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ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
C - 18	(127-33)	Supplying and laying machine crushed 1-1/2" to 1/2" (38 mm to 13 mm) stone ballast of approved grade and quality in sub-base or base courses in required grade and camber and compacting to the required density by approved mechanical means (Vibratory Roller, Road Packer and Smooth Wheel Roller etc.) including watering with all lead and lift complete (actual compacted depth shall be considered for payment)	%Cft	166	8654.02	14,366
C - 19	(134-2)	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:				
		1 miles (1.6 km) lead.	%Cft	4405	383.79	16,906
					Total (Schedule Items) =	**24,126,726**
		PART-II (NON- SCHEDULE ITEMS)				
		WATER PROOFING & EXPANSION JOINT FILLING				
		Ref. Spec. No. 6411				
C - 20	N.S-01	Applying 2-Coats of Sikalstic 560 chemical of SIKA or approved equivalent at green areas complete in all respects	Sft	1763		
					Total (Non-Schedule Items) =	
					TOTAL (SCHEDULE AND NON-SCHEDULE ITEMS) =	

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INFRASTRUCTURE WORKS

ELEVATED WATER TANK (30,000 Gallons) - PLUMBING WORKS

BILL OF QUANTITIES

ITEM NO.	PAK PWD 2022 REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
		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 drawings, specifications and as approved by the Engineer.				
		SCHEDULED ITEMS				
		VALVES				
ET-P-01		Providing and fixing cast iron sluice valves with flanged ends and two tail pieces to each valve complete with bolts and nuts, including the cost of insertion rubber washers (valves to stand test pressure head of 400 feet (122 m). (in chambers on water supply network)				
	310-3	6 inches (150 mm) dia..	Each	2	12,516.80	25,034
		CAST IRON COVERS				
ET-P-02	315-28	Providing & fixing C.I Cover & Frame 30" dia (765 mm) weight 3 cwt (152.41 Kg.)	Each	2	43,965.00	87,930
					TOTAL (SCHEDULED ITEMS) =	**112,964**

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ITEM NO.	PAK PWD 2022 REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
		NON-SCHEDULED ITEMS				
		WATER SUPPLY PIPES AND FITTINGS				
ET-P-03	NS-01	Galvanized Iron (GI) pipes for potable or firefighting water supply conforming to ASTM-A53 Sch. 40, Grade-B with specials/flanges hangers and clamps etc, including fixing, cutting, welding, fixing & support systems; giving anti corrosive treatment and other fittings complete with and including the cost of breaking, through walls and slabs, making walls & slabs good thereafter, etc, painting with two coats of approved enamel paint after cleaning the pipe.				
	(a)	04 inches	Rft	150		
	(b)	06 inches	Rft	300		
		MISCELLANEOUS				
ET-P-04	NS-02	Providing and fixing level indicator complete on Elevated water tank as per drawing and directed by the Engineer incharge.	Job	1		
ET-P-05	NS-03	Dia 4" u-turned G.I. vent pipes, pudddle plate, with insect proof mesh at open end etc., complete in all respects.	Job	2		
ET-P-06	NS-04	Galvanised MS ladder rungs 3/4" dia inside and outside water tanks; Each rung of 18" width, 6" projected outside the wall and 6" embeded in RCC on both ends; including all necessary works for complete installation	Each	20		
					TOTAL (NON-SCHEDULED) =	
					TOTAL (SCHEDULED + NON SCHEDULED) =	

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EXTERNAL DEVELOPMENT WORKS

ELEVATED WATER TANK

BILL OF QUANTITIES

ELECTRICAL WORKS

ITEM NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		SCHEDULED ITEMS				
	3-9	**EXCAVATION**				
LIB-E-40	3-09-01	Excavation in soft soil including lift upto 5ft and filling excavated earth including breaking clods dressing, watering, consolidation and ramming in layers to full compaction i/c disposal of surplus excavated stuff as directed as required.	P/CFT	700	11	7,889
LIB-E-41	3-09-03	Excavation in Hard soil including lift up to 5ft and filling excavated earth including ,breaking clods, dressing ,watering, consolidation and ramming: in layers to full compaction l/c disposal of surplus us excavated stuff as directed.	P/CFT	700	15.00	10,500
		CABLE PULLING PIT (1 No. 2'X2'X3')				
		EARTH WORK				
PR-E-41		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:				
	103-1	Lift upto 5 feet	100CFT	165	1,624.63	2,681
PR-E-41		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:				
	103-2	Lift upto 5 feet	100cft	11	1,862.13	204
PR-E-41		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-5	Lift upto 5 feet	100cft	5	5,547.38	303
PR-E-41		Excavation for foundation trenches and drains in soft or disintegrated rock by hammering, chiselling and Jumper work including, stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-7	Lift upto 5 feet	100cft	5	2,328.63	127

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ELECTRICAL WORKS

ITEM NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
PR-E-41		Excavation for foundation trenches and drains in hard rock by hammering chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-8	Lift upto 5 feet	100cft	5	4,434.88	242
		RCC CHAMBER				
PR-E-41	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	100cft	3	32,221.55	1,036
PR-E-41	114-2 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm^2) at 28 days with a mix not leaner than 1:2:4 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100cft	5	33,562.40	1,586
PR-E-41	114-10 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight walls 5" (127 mm) to 6" (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	100cft	16	55,457.69	8,735
PR-E-41	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100cft	5	45,945.52	2,171
PR-E-41	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	57	266.70	15,240

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ELECTRICAL WORKS

ITEM NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		CARRIAGE				
PR-E-41	134-2	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:				
	i)	1/2 mile (0.80km) lead of part thereof.	100cft	17	332.98	57
	ii)	1 mile (1.6 km) lead.	100cft	9	383.79	33
	iii)	2 miles (3.2 km) lead.	100cft	17	483.37	82
		LT CABLES				
	2-26	**Single pvc insulated wire and pvc ,pvc cable in existing conduits/ducts**				
PR-E-22	2-26-05	Supply & drawing of 10 mm², single core, PVC insulated wire in all kinds of existing or given conduit/cable duct as required.	Rft	200	139.00	27,800
		CONDUITS & PIPES				
PR-E-17	306-23	Providing and Fixing un Polyvinyl chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 2 inches (50 mm) dia pipe	P/Rft	200	434.72	86,944
		WIRING IN CONCEALED CONDUITS				
	2-3	**Point wiring in recessed PVC conduit**				
PR-E-03	2-3-01	Wiring for light or fan point with (3/.029") pvc insulated wire in 20 mm² (3/4") dia upvc conduit recessed in the wall, column, roof including 1 mm² single core pvc insulated wire as ECC as Required.	Point	20	2,836.00	56,720
	2-27	**2 Wire with ECC wire in existing conduits/cable duct**				
PR-E-05	2-27-02	Supply & drawing of 2 x 2.5 mm² single core pvc insulated wire including 1 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	200	99.00	19,800
	2-61	**UPVC CONDUIT & DUCT**				
PR-E-14	2-61-06	Supply and fixing 20mm (3/4") dia Upvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	150	49.00	7,350
PR-E-15	2-61-07	Supply and fixing 25mm (1") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	100	55.00	5,500

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ELECTRICAL WORKS

ITEM NO.	PWD Sch 2022/No.	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, fan box etc) complete in all respects.				
	b	Wiring from switch to light or fan point 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, 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, fan box etc) complete in all respects.				
		LIGHTNING PROTECTION SYSTEM				
	3-08	**EARTHING AND LIGHTNING ARRESTOR**				
LIB-E-25	3-8-04	Providing and fixing 1" diameter 3ft long lighting copper rod with five spikes and balls on its head as required.	Job	2	26,301.00	52,602
LIB-E-26	3-8-05	Providing and fixing 1-1/2" x 1/8" Thick copper strip with suitable saddle at 12" intervals complete as required.	P/Rft	400	268.00	107,200
				TOTAL (SCHEDULE ITEMS)		**414,802**
		NON-SCHEDULED ITEMS				
		LT DISTRIBUTION BOARD **(Ref. Spec. 8001 , 8133)**				
ED-9-E-25	NS-E-01	LT 415 V AC shall be made from 16 SWG sheet steel . This shall be designed, fabricated and manufactured as a free standing floor type. 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, TPN and E copper busbars, accessories etc. The DB should be provided with the armored glands. The bus-bars shall be insulated in RED, YELLOW, BLUE and BLACK insulations. The insulation shall be heat shrinkable type or as directed by the Engineer.				
		DB-EWT	Job	1		

ELECTRICAL WORKS

ITEM NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		LT CABLES **(Ref. Specification Section-8001, 8212)**				
PR-E-51	NS-E-02	10 sqmm, 4 core CU/PVC/PVC stranded copper conductor cable, 600/1000 V grade in already installed conduit/on cable tray**.**	Rft.	200		
		WIRING ACCESSORIES **(Ref. Specification Section-8001, 8220)**				
PR-E-59	NS-E-10	Simplex Universal Switch socket outlet with switch 13 A - Simplex, 230V. Mounting Height as per site including appropriate size powder coated metallic back box.	No.	2		
		LIGHT FIXTURES **(Ref. Spec. 8001, 8150, 8262)** 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 reponsible for compatibility of recessed mounted light fixtures with gypsum / aluminium / dampa etc., false ceiling types in coordination with architectural design.)				
ED-9-E-26	ED-9-E-NS-02	Providing & fixing Air Craft Warning Light with daylight switch battery & Solar Panel for charging the battery complete in all respects	No.	1		
ED-9-E-15	ED-9-E-NS-02	Supply and erection of fancy wall type bracket with brass holder & fancy shade : Single **(Elevated Water Tank)**	Each	10		
ED-9-E-16	ED-9-E-NS-02	Supply and Erection of AC ENERGY EFFICIENT LED LIGHT BULBS (10 W)	No.	10		
		EARTHING SYSTEM **(Ref. Specification Section-8001, 8240)**				
ED-9-E-16	NS-E-10	Earth Electrode for earthing shall comprise of 75 mm x 4877 mm x 6 mm thick copper plate with 4 Nos. 6 mm dia brass nuts, bolts and washers 70 sqmm HDHC Copper wire as earthing leads. A 100 mm dia Medium Duty GI pipe shall be used with 10 mm dia holes @500 mm c-c. The total length of this GI pipe should be 45 ft. A 150 mm dia 80 ft long hole should be drilled in ground by percussion method and above mentioned 100 mm dia medium duty GI pipe should be fixed in this hole simultaneously up to the depth of 60 ft from NSL. When the drilling up to 80 ft depth is complete, The above mentioned earth electrode shall be drop down to the bottom of the hole with the help of 2 Nos 70 sqmm earth leads. Once the plate is in place fill in the hole with moisture retaining bentonite slurry with tremie method up to the top. When the bentonite settle down cast a (1:4:8) concrete manhole 700 mm x 700 mm & 500 mm deep as shown in the drawing. Place a medium duty CI cover as shown in the drawing.	Job	1		

ELECTRICAL WORKS

ITEM NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
LIB-E-60	NS-E-11	305 mm long, 50 mm wide and 6mm thick copper busbar as ECP (Earth Connecting Point) complete with insulators, washers, nuts, bolts mounting installation and operational accessories as per site requirements.	Each	2		
LIB-E-61	NS-E-12	Earth electrode for lightning protection system comprise 1/2" dia, 10' long Copper deposited steel rod, including appropriate clamp for clamping of the down conductor. The copper deposited steel rod shall be hammered into the ground to the depth of twelve inches below the ground surface. The earth electrode includes excavation, backfilling, etc.	Job.	2		
		CABLE PULLING PIT (1 No. 2'X2'X3')				
LIB-E-78	NS-E-29	RCC manhole cover 24" dia, 2.5" MS angle, RCC 1:2:4 etc, complete with frame; as shown in drawing.	Each	1		
					TOTAL NON-SCHEDULE ITEMS =	
					TOTAL (SCHEDULE +NON-SCHEDULE ITEMS) =	

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

UNDER GROUND WATER TANK

BILL OF QUANTITIES

ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		GENERAL NOTE. SCOPE : *(Applicable to all sections)* 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.				
		PART-I (SCHEDULE ITEMS)				
C - 1	(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	12361	1862.13	230,178
	(103-28)	5'-00" to 8'-00" Depth	%Cft	7417	2099.63	155,730
	(103-28)	8'-00" to 11'-00" Depth	%Cft	7417	2337.13	173,345
	(103-28)	11'-00" to 14'-00" Depth	%Cft	7417	2574.63	190,960
	(103-28)	14'-00" to 17'-00" Depth	%Cft	7417	2812.13	208,576
	(103-28)	17-00" to 20'-00" Depth	%Cft	7417	3049.63	226,191
	(103-28)	20-00" to 23'-00" Depth	%Cft	3577	3287.13	117,581
C - 2	(104-1)	Filling excavated earth available at site in foundation, plinth or under floor, etc. including breaking clods, dressing, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction complete within a lead of one chain (30.5 R.m) and lift of 5 feet (1.52m).	%Cft	2272	735.19	16,704
C - 3	(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	%Cft	1000	24504.59	245,046
C - 4	(109-113) + (109-120)	Providing and laying 1:3:6 (1 cement 3 sand and 6 coarse aggregate) cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge in steps including cost of form work and its removal etc. complete in ground floor.	100Cft	38	29075.48	11,049
C - 5	(108-12)	Providing 4 coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	%Sft	1191	1010.75	12,038
6	(112-03) +(112-79)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:4 in straight or curved wall 4-1/2 inches (114 mm) or less thickness including scaffolding, raking out joints and curing etc, complete in foundation, basement and plinth (foundation and basement masonry upto 5 (1.52 Ru.m.) feet depth and plinth upto 4 feet (1.2 Ru.m.) height from ground level) .	%Cft	382	43334.68	165,538
	(112-03) + (112-79) + (112-20)	5'-00" to 10'-00" Depth	%Cft	382	44616.13	170,434

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ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
	(112-03) + (112-79) + (112-20)*2	10'-00" to 15'-00" Depth	%Cft	382	45897.58	175,329
C - 7	(112-25)	Providing and laying first class solid burnt brick masonry set in cement mortar 1:6 in straight or curved walls 9 to 13-1/2 inches (229 mm to 343 mm) thick including scaffolding, raking, out joints and curing etc. complete in ground floor superstructure .	100Cft	886	41260.97	365,572
C - 8	(114-4) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **columns of square or rectangular shape** of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth .	100Cft	181	45648.76	82,624
C - 9	(114-32) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using screened graded bajri 3/4 inch (19 mm) and down gauge having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **straight walls**, vertical fins etc.3 inches (70mm) thick and less than 5 inches (127mm) thick including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in ground floor.	100Cft	85	75,188.86	63,911
C - 10	(114-38) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **straight beams, lintels cantilever beams** of required shape or section including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement and ground floor.	100Cft	186	51051.03	94,955
C - 11	(114-99) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in foundation or bottom slab of rectangular underground tank** including form works and its removal, levelling, compacting and curing etc. complete but excluding the cost of reinforcement	%Cft	3531	35159.55	1,241,484
C - 12	(114-101) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in in walls of rectangular underground water tank or septic tank** including form works and its removal, compacting and curing etc. complete, but excluding the cost of reinforcement.	%Cft	4458	58261.17	2,597,283
C - 13	(114-104) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **top slab of rectangular underground** water tank or septic tank its removal, compacting and curing ate. complete but excluding the cost of reinforcement	%Cft	1407	50480.37	710,259

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ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
14	(114-50) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **straight stairs and landing** of required section including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor.	100Cft	113	61558.17	69,561
C - 15	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	29165	282.45	8,237,654
C - 16	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	1523	266.7	406,184
C - 17	(117-6) + (114-136)	Providing, and laying **floors of 2 inches** (51 mm) thick 1:2:4(1 cement 2 sand and 4 coarse aggregate) cement concrete using graded crushed boulders 3/4 inches (19 mm) and down gauge in ground floor laid in panels including form work, consolidation, finishing, curing etc. complete..	%Sft	656	7392.27	48,493
C - 18	(117-6) + (114-136) + (117-26)	Providing, and laying floors of 2 inches (51 mm) thick 1:2:4 (1 cement 2 sand and 4 coarse aggregate) cement concrete using graded crushed boulders 3/4 inches (19 mm) and down gauge in basement and mezzanine floor laid in panels including form work, consolidation, finishing, curing etc. complete (**RoofScreed)**.	%Sft	724	8128.52	58,850
C - 19	(117-10)	Providing and laying **terrazzo floor 1-1/4 inches** (32 mm) thick consisting of 1/4 inch (6.4 mm) thicktopping 1:2 (one grey cement 2 approved marble chip No. 0 to 2) in ground floor over base of 1:2:4 (one cement 2 sand and 4 screened graded bajri) cement concrete 1 inch (25 m) thick laid in panels or pattern including form work, curing cutting, rubbing and polishing etc. complete..	%Sft	1313	8953.27	117,556
C - 20	(118-1)	Providing and laying **dado and skirting** with 3/4 inch (19 mm) thick cement plaster 1:3 in ground floor including finishing smooth with a floating coat of neat cement, rounding corners and curing etc. complete.	%Sft	1764	7274.72	128,326
C - 21	118-2	Providing and laying dado and skirting with 1/2 inch (13 mm) thick cement plaster 1:3 in ground floor including finishing smooth with a floating coat of neat cement, rounding corners and curing etc. complete..	%Sft.	69	6170.64	4,258
C - 22	(119-6)	Providing and fixing double leaf steel doors made to crittal or equivalent standard and of approved sections fully panelled with M. S. Sheet of 16 gauge painted with two coats of red oxide paint including using approved brass section oxidized fitting iron lugs, cutting holes and making good damages to walls etc. complete as required in any floor.	Sft.	44	988.98	43,515
C - 23	(119-32)	Providing and fixing iron grills with required section of angle iron and MS square bar as per approved design including welding all sides of the section at the junction, and fixing with sunk iron screws, painting two coats of red oxide paint etc. complete as required in any floor in masonry or concrete work.	Kg.	110	290.89	31,998

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ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
C - 24	(119-48	Providing & fixing partly fixed and partly hung steel Windows and ventilators made of M.S. pipe (18 guage) of approved section comprising of frame L-Section l-l/2" x l-l/2" shutter frame of T Section 2" x 1" and vertical partition of T-Section 2" x l-l/2" and l/2" x l/2" M.S. pipe beading for fixing glass panes, clamping the screws at 4 inches center to center, rubber packing for glazing, painted two coats with red oxide paint including using iron lugs, cutting holes and making good damages to walls etc. complete as required in any floor but excluding the cost of glass panes.	Sft	101	1747.83	176,531
C - 25	(122-2)	1/4" thick cement plaster 1:4 on soffits of ceiling cantilever slabs sides and soffits of beams etc. in basement mezzanine and ground floor including making edges corners and curing etc. complete.	100Sft	656	3852.59	25,273
C - 26	(122-4)	1/2" (13 mm) thick cement plaster 1:4 on walls and columns etc. in basement, plinth, mezzanine and ground floor including making edges, corners, and curing etc., complete .	100Sft	5078	4381.84	222,510
C - 27	(122-151)	Distempering with vinyle distemper (ICI) Dulux Paintex of approved make and shade in two coats over and including the cost of one priming coat of lime wash including sand papering, dusting, and filling the holes, cracks and inequalities, if any, at any height in any floor.	%Sft	656	3401.25	22,312
C - 28	(122-162)	Painting with (ICI) Dulux Plastic emulsion paint VIP of approved shade two coats over and including the cost of one priming coat complete over plastered surface at any height in any floor.	100Sft	1006	6737.38	67,778
C - 29	(122-172)	Painting three coats with weather shield paint deluxe (ICI) make of approved shade on plaster surface (External) and including the cost of cleaning the surface, sand papering etc. complete at any height in any floor.	%Sft	572	4408.75	25,218
C - 30	(124-97)	Providing and fixing PVC ribbed water stops 9" (229 mm) wide in vertical or horizontal expansion joints including cutting or jointing etc., complete in all floors.	Rft	223	448.81	100,085
C - 31	(124-170)	Providing and laying 3/8"(9mm) thick Marble patties (Panel strips) upto 1" depth in floor and dado of any description in all floors.	Rft.	210	17.38	3,650
C - 32	(124-199)	Providing and carrying out Termite proofing in foundations, under floors and wood work surface with a solution using of control TC with water and spraying the solution of the area to be treated as completed as per direction of Engineer Incharge.	Sft.	7172	13.13	94,168
C - 33	(119-33)	Providing and fixing stair railing 3 feet height of MS square pipe 1-1/ 2" x1-1/ 2" of 16 SWG vertical on alternate step and M.S. square pipe 3/4"x3/4" 16 SWG 2 Nos horizontal pipe and 2-1/2" x2-1/2" ,16 SWG MS square pipe as top rail as per design including cuttingmaking holes fixing with sunk iron screws, painting two coats of red oxide paint etc. complete as required in any floor.	Rft	53.00	893.60	47,361
C - 34	(134-2)	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:				
		1 miles (1.6 km) lead.	%Cft	22721	383.79	87,201
					Total (Schedule Items) =	**17,273,267**

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ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		PART-II (NON- SCHEDULE ITEMS)				
C - 35		**BRICK MASONRY**				
	N.S - 1	Extra payment for Face work (half brick thick) using first class sorted/fair bricks at any floor complete in all respects.	Cft.	401.00		
		WATER PROOFING & EXPANSION JOINT FILLING				
C - 36	N.S -2	Providing and fixing two layer of 2mm thick torch applied Bitumenous Membrane on earth-faced RCC basement walls over primed surfaces coated as per manufacturer's recommended primer, complete in all respect.	Sft	5,924		
C - 37	N.S- 3	Applying 2-Coats of Sikalstic 560 chemical of SIKA or approved equivalent at green areas complete in all respects	Sft	3087		
					Total (Non-Schedule Items) =	
					TOTAL (Schedule + Non-Schedule Items) =	

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

INFRASTRUCTURE WORKS

UNDERGROUND WATER TANK (60,000 Gallons) - PLUMBING WORKS

BILL OF QUANTITIES

ITEM NO.	PAK PWD 2022 REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
		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 drawings, specifications and as approved by the Engineer.				
		SCHEDULED ITEMS				
		WATER SUPPLY PIPES AND FITTINGS				
		Providing G.I. pipes, specials and clamps etc., including fixing cutting and fitting complete with and including the cost of breaking through walls and roof, making good etc., painting 2 coats after cleaning the pipe etc.; with white zinc paint with pigment to match the colour of the building and testing with water to a pressure head of 200 feet (61 M) and cartages within 10 miles (16.09 km.) (ILLM)				
UT-P-01	305-5	1-1/2 inches (40 mm) dia pipe (ILLM).	Rft	50	534.17	26,709
UT-P-02	305-7	03 inches (80 mm) dia pipe (ILLM).	Rft	50	1,142.06	57,103
UT-P-03	305-8	04 inches (100 mm) dia pipe (ILLM).	Rft	50	1,787.59	89,380
		VALVES				
		Providing and fixing cast iron sluice valves with' flanged ends and two tail pieces to each valve complete with bolts and nuts, including the cost of insertion rubber washers (valves to stand test pressure head of 400 feet (122 m). 3 inches (80 mm) dia..				
UT-P-04	310-01	03 inches (80 mm) dia..	Each	2	7,961.40	15,923
UT-P-05	310-02	04 inches (100 mm) dia.	Each	2	10,236.40	20,473
UT-P-06	310-03	06 inches (150 mm) dia.	Each	2	12,516.80	25,034
		CAST IRON COVERS				
UT-P-07	315-28	Providing & fixing C.I Cover & Frame 30" dia (765 mm) weight 3 cwt (152.41 Kg.)	Each	5	43,965.00	219,825
					TOTAL (SCHEDULED) =	**454,445**

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ITEM NO.	PAK PWD 2022 REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)

NON-SCHEDULED ITEMS

PUMPING MACHINERY
(Ref. Specs: 5240)

UT-P-08	NS-01	Automatically operated skid mounted Horizontal centrifugal pump set (in pump room with UGWT) for lifting water from Underground water tank to Elevated water tank, comprising two (02) number pumps with electric motors (one working second standby),Each of Head=200feet and discharge=150gpm, including all accessories, level switches to be installed in Elevated & under ground water tank for automatic operation of pumps at set levels, dry running protection, combined motor control unit & automatic duty cycle relay, pressure guages, foot check valve, Gate and swing check valves, flexible joints, Y-strainers, all PN-16 pressure rating,manual tools, spare parts etc, complete in all respects as shown in drawings and as directed by the Engineer,	Job	1		
UT-P-09	NS-02	FM approved/UL listed, Skid Mounted Firefighting pumping unit (NFPA compliance) consisting 01 Nos. Horizontal Centrifugal Pump (Electric driven) of Q=750gpm & H=09Bars, 01 No. Horizontal centrifugal Pump (Diesel engine driven) of Q=750gpm & H=09Bars, 01 No. jockey pump vertical centrifugal of Q=50gpm & H=10 Bars with electric motor,pressure tank, including FFPU motor control unit with VFD for electric driven pump, diesel day tank, all accessories, manual, tools, spare parts, gate valves, check valves, automatic recirculation valve on return line, pressure switches, pressure gauges, Stainless steel flexible joints, strainers, anti vortex plate at suction ends etc, unit complete in all respects as shown in drawings and as directed by the Engineer.	Job	1		
UT-P-10	NS-03	Automatically operated submersible storm disposal pump & motor including all accessories, gate and check valve, level switches ,manual tools spare parts,Control panel complete in all respectsas per drawings and specs of approved make, Each of the 30gpm capacity and 30feet pumping head.	Job	1		

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ITEM NO.	PAK PWD 2022 REF.No.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)		(b)	(c)	(d)	(e)	(f)
		WATER SUPPLY/ FIREFIGHTING PIPES AND FITTINGS (Ref. Specs: 5216)				
UT-P-11	NS-04	Galvanized Iron (GI) pipes for potable water supply conforming to ASTM-A53 Sch. 40, Grade-B with specials/flanges hangers and clamps etc, including fixing, cutting, welding, fixing & support systems; giving anti corrosive treatment and other fittings complete with and including the cost of breaking, through walls and slabs, making walls & slabs good thereafter, etc, painting with two coats of approved enamel paint after cleaning the pipe.				
	(a)	06 inches	Rft	10		
	(b)	04 inches	Rft	100		
	(c)	03 inches	Rft	100		
UT-P-12	NS-05	Mild Steel (MS) pipes for firefighting water supply conforming to ASTM-A53 Sch. 40, Grade-B with specials/flanges hangers and clamps etc, including fixing, cutting, welding, fixing & support systems; giving anti corrosive treatment and other fittings complete with and including the cost of breaking, through walls and slabs, making walls & slabs good thereafter, etc, painting with two coats of approved enamel paint after cleaning the pipe.				
	(a)	3" dia	Rft	10		
	(b)	4" dia	Rft	50		
	(c)	6" dia	Rft	100		
	(d)	8" dia	Rft	50		
		VALVES (Ref. Specs: 5216, 5220)				
UT-P-13	NS-06	C.I. gate valves conforming to BS-5163 (PN-16) including Adapters, flanges, nuts & bolts, transition pipe pieces with flanges, rubber seal, making required type of joints on both ends complete in all respect as shown on drawings or as directed by the Engineer of following diameters.				
	a)	3" dia	Each	2		
	b)	4" dia	Each	2		
	c)	6" dia	Each	6		
	d)	8" dia	Each	1		
UT-P-14	NS-07	Float valve, of approved make, including jointing arrangement of pipes on both ends of valves; nuts, bolts etc. complete in all respects as per specifications, to be installed in overhead water tank, of 03 inches diameter.	Each	1		

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(a)		(b)	(c)	(d)	(e)	(f)
		MISCELLANEOUS				
UT-P-15	NS-08	Dia 4" u-turned G.I. vent pipes, pudddle plate, with insect proof mesh at open end etc., complete in all respects.	Job	4		
UT-P-16	NS-09	Galvanised MS ladder rungs 3/4" dia inside and outside water tanks; Each rung of 18" width, 6" projected outside the wall and 6" embeded in RCC on both ends; including all necessary works for complete installation	Each	60		
					TOTAL (NON-SCHEDULED) =	
					TOTAL (SCHEDULED + NON SCHEDULED) =	

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

EXTERNAL DEVELOPMENT WORKS

UNDERGROUND WATER TANK AND PUMP ROOM

BILL OF QUANTITIES

ELECTRICAL WORKS

ITEM NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		SCHEDULED ITEMS				
	2-80	**CEILING FANS**				
PR-E-01	2·80·03	Providing & installing 140 Cm (56") sweep ceiling fan with blades, canopy, standard length of down, rod including connection with 14.0076" flexible wire complete as required. (without regulator) Pak, Rovat FC,Younas, Millat	Each	2	9,349	18,698
	2-87	**FAN CLAMPS, DOWN ROD & MAKING HOLE.**				
PR-E-02	2-87-01	Providing & installing of Ceiling fan down rod 3/4" dia heavy gauge GI pipe of require length, one end arrangement for fan insulator and other end duly threaded and hole for split pin etc to be hold all sweep ceiling fan as required.	P/Rft.	2	70	140
	2-3	**Point wiring in recessed PVC conduit**				
PR-E-03	2-3-01	Wiring for light or fan point with (3/.029") pvc insulated wire in 20 mm² (3/4") dia upvc conduit recessed in the wall, column , roof including 1 mm² single core pvc insulated wire as ECC as Required.	Point	10	2,836	28,360
	2-7	**Extension /Additional Point wiring**				
PR-E-04	2-7-03	Extension /additional wiring for light fan call bell or light plug point controlled with same switch with (3/.029") pvc insulated wire in 20 mm (3/4") dia PVC conduit recessed in the wall , column or roof including 1mm² single core pvc insulated wire as ECC as required.	P/Point	5	1,179	5,895
	2-27	**2 Wire with ECC wire in existing conduits/cable duct**				
PR-E-05	2-27-02	Supply & drawing of 2 x 2.5 mm² single core pvc insulated wire including 1 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	200	99	19,800
PR-E-06	2-27-03	Supply & drawing of 2 x 4 mm² single core pvc insulated wire including 1.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required. (DB to first Socket 13A/15A , Socket to Socket).	Rft	210	145	30,450
PR-E-07	2-27-04	Supply & drawing of 2 x 6 mm² single core pvc insulated wire including 2.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required.	Rft	200	209	41,800

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ELECTRICAL WORKS

ITEM NO.	PWD Sch 2022/No.	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, fan box etc) complete in all respects.				
	b	Wiring from switch to light or fan point 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, 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, 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 solid or stranded copper conductor cables in concealed 1" PVC conduit laid underfloor including PVC conduit, conduit accessories, etc.complete in all respects.				
	f	Wiring of circuit from distribution board to 15A, 230 Volts, 3 Pin switched socket outlet with 2 Nos. one core 4 Sqmm and One no. 2.5 sq mm PVC insulated 300/500 Volts grade solid or stranded copper conductor cables in concealed 1" PVC conduit laid underfloor including PVC conduit, conduit accessories, etc. complete in all respects.				
	g	Wiring from 15 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 solid or stranded copper conductor cables in concealed 1" PVC conduit laid underfloor including PVC conduit, conduit accessories, etc.complete in all respects.				
		LIGHT FIXTURES				
	2-78	**(Sunlight , Pierlite , Future Technology)**				
PR-E-08	2-78-01 (a)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having warm/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (7-10) Watts	Each	10	1,824	18,240

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ELECTRICAL WORKS

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
PR-E-09	2-78-03 (c)	Providing, Installation, Testing & Commissioning of 4 Feet 36 Watts LED Tube/ Batten Lights including driver, having warm / neutral white / cool white colour, 80-90 lm/watts efficiency, 0.9 or above power factor, 10000-15000 hours life cycle, including connection, complete in all respect as approved by the Engineer Incharge	Each	6	3,854	23,124
		WIRING ACCESSORIES				
	2-66	**SCHNEIDER /PHILIPS ACCESSORIES ON RECESSED METAL BOARD**				
PR-E-10	2-66-01	Providing & fixing 10 Amps Polycarbonate flame retardant, S.P Switch with fancy required gang plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required. (Schneider/ Philips)	Each.	10	471	4,710
PR-E-11	2-66-11	Providing & fixing Polycarbonate flame retardant, Fan Dimmer with plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required. (Schneider / Philips)	Each	2	1,197	2,394
PR-E-12	2-66-06	Providing & fixing 15 Amps Polycarbonate flame retardant 3-Pin switch socket unit with fancy gang plate fixed on die fabricated, powder coated metal board recessed in wall or column including connection as required. (Clipsal make)	Each	5	1,290	6,450
	2-61	**UPVC CONDUIT & DUCT**				
PR-E-13	2-61-05	Supply and fixing 50mm (2") dia Upvc conduit with all especial such as bends, sockets, junction etc Fitted on surface as required.	P/Rft	100	231	23,100
PR-E-14	2-61-06	Supply and fixing 20mm (3/4") dia Upvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	200	49	9,800
PR-E-15	2-61-07	Supply and fixing 25mm (1") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required.	P/Rft	200	55	11,000
PR-E-16	2-61-10	Supply and fixing 50mm (2") dia uPVC conduit with all especial such as bends, sockets, junction etc recessed in the wall or floor as required.	P/Rft	100	177	17,700
PR-E-17	306-23	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 2 inches (50 mm) dia pipe	P/Rft	100	435	43,472
PR-E-18	306-24	Providing and Fixing un Polyviny chloride (PVC) D class and specials etc.including cutting and fitting complete with and including the cost of cutting trench up to 1-1/2 feet deep refilling,watering remaining,and disposal of surplus earth wirth one chain and after cleaning the pipe and cartage with 10miles (16.09 km.)(working pressure12 kg/cm2) 3 inches (80 mm) dia pipe	P/Rft	150	503	75,521

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ELECTRICAL WORKS

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
	3-04	**4 CORE LT UN ARMOURED CABLE IN EXISTING CONDUIT OR CABLE DUCT**				
PR-E-19	3-4-01 (a)	Providing & laying 4 core, 16 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	100	804	80,400
PR-E-20	3-4-01 (f)	Providing & laying 4 core, 95 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	200	4,443	888,600
	2-37	**4 Wire with ECC wire in Recessed uPVC conduit**				
PR-E-21	2-37-04	Wiring for sub-main with 4 x 6 mm², PVC insulated wire 300/00 volts grade, single core, stranded copper conductor wire in 25 mm (1") dia uPVC conduit recessed in the wall, column and roof etc including 2.5 mm² PVC insulated wire single core wire as ECC as required (for Floor Standing AC).	Rft	50	518	25,900
	2-26	**Single pvc insulated wire and pvc ,pvc cable in existing conduits/ducts**				
PR-E-22	2-26-05	Supply & drawing of 10 mm², single core, PVC insulated wire in all kinds of existing or given conduit/cable duct as required.	Rft	100	139	13,900
	3-9	**EXCAVATION**				
LIB-E-40	3-09-01	Excavation in soft soil including lift upto 5ft and filling excavated earth including breaking clods dressing, watering, consolidation and ramming in layers to full compaction i/c disposal of surplus excavated stuff as directed as required.	P/CFT	1,200	11	13,524
LIB-E-41	3-09-03	Excavation in Hard soil including lift up to 5ft and filling excavated earth including ,breaking clods, dressing ,watering, consolidation and ramming: in layers to full compaction l/c disposal of surplus us excavated stuff as directed.	P/CFT	1,200	15.00	18,000
		<u>CABLE PULLING PIT (3 No. 2'X2'X3')</u> **EARTH WORK**				
PR-E-41		Excavation for foundation trenches and drains in all kinds of soil (except gravelly and murum soil, wet silt, clay or mud conglomeration of gravel and boulders, soft, sandy or disintegrated sandy and hard rock) and back filling the excavated material in foundation, plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed, lead upto one chain (30.5 R.m) and lift as follows:				
	103-1	Lift upto 5 feet	100CFT	495	1624.63	8,042
PR-E-41		Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift as follows:				

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ELECTRICAL WORKS

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
	103-2	Lift upto 5 feet	100cft	33	1862.13	611
PR-E-41		Excavation for foundation trenches and drains in strata of conglomeration of gravel and boulders by hammering, chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-5	Lift upto 5 feet	100cft	16	5547.38	910
PR-E-41		Excavation for foundation trenches and drains in soft or disintegrated rock by hammering, chiselling and Jumper work including, stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-7	Lift upto 5 feet	100cft	16	2328.63	382
PR-E-41		Excavation for foundation trenches and drains in hard rock by hammering chiselling and jumper work including stacking of serviceable and unserviceable materials separately, lead upto one chain (30.5 R.m) and lift as follows:				
	103-8	Lift upto 5 feet	100cft	16	4434.88	727
		RCC CHAMBER				
PR-E-41	106-11	Providing and laying in situ 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge in foundation, basement and plinth including form work, compacting, curing and removal of form work etc. complete, foundation and basement up to 5 feet (1.52 m) depth and plinth up to 4 feet (1.2 m) height from ground level.	100cft	10	32221.55	3,108
PR-E-41	114-2 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm^2) at 28 days with a mix not leaner than 1:2:4 in raft or strip foundation with columns and pillars, of any shape including form work and its removal, compacting, leveling and curing etc. complete but excluding the cost of reinforcement, in foundation basement and plinth	100cft	14	33562.40	4,757
PR-E-41	114-10 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in straight walls 5" (127 mm) to 6" (152 mm) thick including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth	100cft	47	55457.69	26,204
PR-E-41	114-56 + 114-136 + 114-145	Providing and laying reinforced cement concrete using crushed graded boulders 3/4 inch (19 mm) and down gauge with lawrencepur sand having a minimum works cube crushing strength of 3000 lbs. per sq inch (20.69 N/mm2) at 28 days with a mix not leaner than 1:2:4 in ordinary slab 5 inches (127 mm) to 6 inches (152 mm) thick Including form work and its removal compacting and curing etc. complete but excluding the cost of reinforcement, in basement plinth and ground floor	100cft	14	45945.52	6,513

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ELECTRICAL WORKS

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
PR-E-41	114-167	Providing and laying ribbed deformed (minimum yield point 40,000 psi) reinforcement bars with and including the cost of straightening, cutting, bending, binding, wastage and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wires, cost of chairs and wires etc. in all kinds of RCC works in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension.	kg	171	266.70	45,720
		CARRIAGE				
PR-E-41	134-2	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:				
	i)	1/2 mile (0.80km) lead of part thereof.	100cft	51	332.98	170
	ii)	1 mile (1.6 km) lead.	100cft	26	383.79	98
	iii)	2 miles (3.2 km) lead.	100cft	51	483.37	247
					TOTAL (SCHEDULE ITEMS)	**1,518,468**

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

ELECTRICAL WORKS

ITEM NO.	PWD Sch 2022/No.	DESCRIPTION	UNIT	QTY	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		NON SCHEDULE ITEMS				
		LT DISTRIBUTION BOARD **(Ref. Spec. 8001 , 8133)**				
PR-E-36	NS-E-01	LT 415 V AC weather proof (DB), shall be made from 14 SWG sheet steel. This shall be designed, fabricated and manufactured as a free standing floor type. 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, TPN and E copper busbars, accessories etc. The DB should be provided with the armored glands. The bus-bars shall be insulated in RED, YELLOW, BLUE and BLACK insulations. The insulation shall be heat shrinkable type or as directed by the Engineer.				
	a)	**DB-PR**	Job	1		
		LED LIGHT FIXTURE **(Ref. Spec. Nos. 8001, 8150)** Supply, installation, testing & commissioning of the following types of light fixtures including LED Light with driver, internal wiring complete with all mounting accessories as per architectural arrangements/ requirements, dust & moisture protected and corrosion proof and suitable for this area as acceptably supplied and installed and as approved by the Engineer.				
PR-E-76	NS-E-17	12 W Weather Proof Bulkhead die cast aluminum body WALL mounted OUTDOOR LIGHT IP 55 or better	Each	2		
		LT CABLES **(Ref. Specification Section-8001, 8212)**				
PR-E-51	NS-E-02	10 sqmm, 4 core CU/PVC/PVC stranded copper conductor cable, 600/1000 V grade in already installed conduit/on cable tray.	Rft.	100		
		WIRING ACCESSORIES **(Ref. Specification Section-8001, 8220)**				
PR-E-59	NS-E-10	Simplex Universal Switch socket outlet with switch 13 A - Simplex, 230V. Mounting Height as per site including appropriate size powder coated metallic back box.	No.	10		
		Following rating SP&N/TP&N load break switches AC-3 duty in weather proof enclosure of the following rating:				
PR-E-96	NS-E-37	32 Amp, SP&N	Each	1		
PR-E-97	NS-E-38	20 Amp, SP&N	Each	1		
PR-E-98	NS-E-39	16 Amps, 400 Volts 5 Pole Industrial Socket	No.	1		

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ELECTRICAL WORKS

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(a)	(b)	(c)	(d)	(e)	(f)	(g)
		EARTHING **(Ref. Spec. Nos. 8001, 8240)**				
PR-E-98	NS-E-10	Earth Electrode for earthing shall comprise of 75 mm x 4877 mm x 6 mm thick copper plate with 4 Nos. 6 mm dia brass nuts, bolts and washers 70 sqmm HDHC Copper wire as earthing leads. A 100 mm dia Medium Duty GI pipe shall be used with 10 mm dia holes @500 mm c-c. The total length of this GI pipe should be 45 ft. A 150 mm dia 80 ft long hole should be drilled in ground by percussion method and above mentioned 100 mm dia medium duty GI pipe should be fixed in this hole simultaneously up to the depth of 60 ft from NSL. When the drilling up to 80 ft depth is complete, The above mentioned earth electrode shall be drop down to the bottom of the hole with the help of 2 Nos 70 sqmm earth leads. Once the plate is in place fill in the hole with moisture retaining bentonite slurry with tremie method up to the top. When the bentonite settle down cast a (1:4:8) concrete manhole 700 mm x 700 mm & 500 mm deep as shown in the drawing. Place a medium duty CI cover as shown in the drawing.	Job	1		
PR-E-60	NS-E-11	305 mm long, 50 mm wide and 6mm thick copper busbar as ECP (Earth Connecting Point) complete with insulators, washers, nuts, bolts mounting installation and operational accessories as per site requirements.	Each	1		
PR-E-61	NS-E-12	Earth electrode for lightning protection system comprise 1/2" dia, 10' long Copper deposited steel rod, including appropriate clamp for clamping of the down conductor. The copper deposited steel rod shall be hammered into the ground to the depth of twelve inches below the ground surface. The earth electrode includes excavation, backfilling, etc.	Job.	1		
		CABLE PULLING PIT (1 No. 2'X2'X3')				
LIB-E-78	NS-E-29	RCC manhole cover 24" dia, 2.5" MS angle, RCC 1:2:4 etc, complete with frame; as shown in drawing.	Each	3		
					NON-SCHEDULE ITEMS =	
					TOTAL (SCHEDULE ITEMS +NON-SCHEDULE ITEMS) =	

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

SEPTIC TANK

CIVIL WORKS
BILL OF QUANTITIES

ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		GENERAL NOTE. SCOPE : *(Applicable to all sections)* 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.				
		PART-I (SCHEDULE ITEMS)				
C - 1	(103-2)	Excavation for foundation trenches and drains in gravelly soil and back filling the excavated material in foundation trenches plinth or under floor including breaking clods, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction, dressing and disposal of surplus excavated stuff as directed lead upto one chain (30.5 R.m) and lift upto 5 feet (1.52 m).	%Cft	2900	1862.13	54,002
	+ (103-2) + (103-28)	5'-00" to 8'-00" Depth	%Cft	1739	2099.63	36,513
	+ (103-2) + (103-28)*2	8'-00" to 11'-00" Depth	%Cft	1739	2337.13	40,643
	+ (103-2) + (103-28)*3	11'-00" to 14'-00" Depth	%Cft	1739	2574.63	44,773
C - 2	(104-1)	Filling excavated earth available at site in foundation, plinth or under floor, etc. including breaking clods, dressing, watering, consolidation by ramming in layers not exceeding 9 inches (229 mm) in depth to full compaction complete within a lead of one chain (30.5 R.m) and lift of 5 feet (1.52m).	%Cft	5580	735.19	41,024
C - 3	(105-14) + (105-27)	Providing and laying 1:4:8 (1 cement 4 sand and 8 coarse aggregate) cement concrete using crushed graded boulders 1 inch (25 mm) and down gauge in foundation including leveling, compacting and curing etc.complete.	%Cft	138	24504.59	33,816
C - 4	(108-12)	Providing one coat of bitumen emulsion at 10 Lbs. per % sft. (0.49 Kg/sm) on walls and floor in ground floor.	100Sft	2722	1010.75	27,513
C - 5	(114-4) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **columns of square or rectangular shape** of regular section including form work and its removal, compacting and curing etc. but excluding the cost of reinforcement, in foundation basement and plinth .	100Cft	144.00	45648.76	65,734
C - 6	(114-38) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **straight beams, lintels cantilever beams** of required shape or section including form work and its removal, compacting and curing etc. complete but excluding the cost of reinforcement, in basement and ground floor.	100Cft	28.00	51051.03	14,294

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ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
C - 7	(114-99) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in foundation or bottom slab of rectangular underground tank** including form works and its removal, levelling, compacting and curing etc. complete but excluding the cost of reinforcement	%Cft	1056	35159.55	371,285
C - 8	(114-101) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 **in in walls of rectangular underground water tank or septic tank** including form works and its removal, compacting and curing etc. complete, but excluding the cost of reinforcement.	%Cft	1008	58261.17	587,273
C - 9	(114-104) + (114-134) + (114-137)	Providing and laying reinforced cement concrete using crush graded boulders 3/4 inch (19 mm) and down gauge, sand having a minimum works cube crushing strength of 3750 lbs. per sq inch at 28 days with a mix not leaner than 1:1-1/2:3 in **top slab of rectangular underground** water tank or septic tank its removal, compacting and curing ate. complete but excluding the cost of reinforcement	%Cft	257	50480.37	129,735
C - 10	(114-166)	Providing and laying hard grade ribbed deformed (minimum yield point 60,000 psi) reinforcement bars with & including the cost of straightening, cutting, bending, binding, wastage, and such overlaps as are not shown in the drawings, placing in position on cement concrete 1:2:4 precast or m.s. chairs, tying with binding wire, cost of chairs and wires etc. in all kinds of RCC work in foundation, basement, plinth and ground floor of building including septic tanks and under ground tanks and in projections for future extension .	Kg	9500	282.45	2,683,275
C - 11	(114-167)	Providing and laying ribbed deformed steel reinforcement bars with guaranteed minimum yield stress of 40,000 psi with and including the cost of straightening, cutting, bending, binding, wastage, complete in all kinds of RCC work .	Kg	750	266.7	200,025
C - 12	(117-12)	Providing and laying **terrazzo floor 1-1/2 inches** (38 mm) thick consisting of 1/2 inch (13 mm) thicktopping 1:2 (one grey cement 2 approved marble chip No. 0 to 2) in ground floor over base of 1:2:4 (one cement 2 sand and 4 screened graded bajri) cement concrete 1 inch (25 m) thick laid in panels or pattern including form work, curing cutting, rubbing and polishing etc. complete..	%Sft	284	11007.52	31,261
C - 13	(118-4) + (118-5)	Providing and laying dado and skirting etc. 1 inch (25 mm) thick consisting of 1/2 inch (13 mm) thick topping 1 :2 (one grey cement 2 marble chips 0 to 4 No.) in ground floor over 1 /2 inch (13 mm) thick cement mortar base 1 :4 with grinding, rubbing, polishing and curing etc. complete.	%Sft	1197	16588.59	198,565
C - 14	(124-97)	Providing and fixing PVC ribbed water stops 9" (229 mm) wide in vertical or horizontal expansion joints including cutting or jointing etc., complete in all floors.	Rft	119	448.81	53,408
C - 15	(124-171)	Providing and laying 1/2"(13mm) thick Marble patties (Panel strips) upto 1-1/2" (38mm)depth in floor and dado of any description in all floors.	Rft.	197	20.19	3,977

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ITEM NO.	PWD SCH.2022/N.S REF NO.	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
C - 16	(124-199)	Providing and carrying out Termite proofing in foundations, under floors and wood work surface with a solution using of control TC with water and spraying the solution of the area to be treated as completed as per direction of Engineer Incharge.	Sft.	1412	13.13	18,540
C - 17	(134-2 M002)	Cartage of sand, bajri, lime, surkhi, murum, manure, earth, building rubbish including loading, unloading and stacking etc. at site:				
		1 miles (1.6 km) lead.	%Cft	2536	383.79	9,733
					Total (Schedule Items) =	**4,645,388**
					TOTAL SCHEDULE ITEMS (Rs.) =	**4,645,388**

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

ESTABLISHMENT OF NATIONAL INSTITUTE OF INTELLIGENCE AND SECURITY STUDIES (NIISS) AT QUAID-I-AZAM UNIVERSITY (QAU), ISLAMABAD

INFRASTRUCTURE WORKS

EXTERNAL ELECTRICAL WORKS

BILL OF QUANTITIES

ITEM No.	PAK PWD SCHEDULE 2022 REF No. /NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		SCHEDULE ITEMS				
	2-4	**Point wiring in recessed PVC conduit**				
EDW-E-01	2-3-01	Wiring for light or fan point with (3/.029") pvc insulated wire in 20 mm² (3/4") dia upvc conduit recessed in the wall , column , roof including 1 mm² single core pvc insulated wire as ECC as Required.	Point	60	2,836.00	170,160
	2-7	**Extension /Additional Point wiring**				
EDW-E-02	2-7-03	Extension /additional wiring for light fan call bell or light plug point controlled with same switch with (3/.029") pvc insulated wire in 20 mm (3/4") dia PVC conduit recessed in the wall , column or roof including 1mm² single core pvc insulated wire as ECC as required	P/Point	30	1,179.00	35,370
	2-33	**2 Wire with ECC wire in existing conduits/cable duct**				
EDW-E-03	2-27-02	Supply & drawing of 2 x2.5 mm² single core pvc insulated wire including 1 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required	Rft	4,000	99.00	396,000
EDW-E-04	2-27-03	Supply & drawing of 2 x4 mm² single core pvc insulated wire including 1.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required	Rft	2,500	145.00	362,500
EDW-E-05	2-33-04	Supply & drawing of 2 x6 mm² single core pvc insulated wire including 2.5 mm² pvc insulated wire single core wire as ECC in all kind of existing or given conduits /cable duct as required	Rft	2,500	209.00	522,500
	2-61	**PVC CONDUIT & DUCT**				
EDW-E-06	2-61-05	Supply and fixing 50mm (2") dia pvc conduit with all especial such as bends, sockets, junction etc Fitted on surface as required	P/Rft	2,500	231.00	577,500
EDW-E-07	2-61-08	Supply and fixing 30mm (1-1/4") dia pvc conduit with all especial such as bends, sockets, junction etc recessed in the wall or column as required	P/Rft	2,500	78.00	195,000
	2-66	**CLIPSAL ACCESSORIES ON RESSED METAL BOARD**				
EDW-E-08	2-66-11	Providing & fixing Polycarbonate flame retardant, 400 watts fan dimmer with plate fixed on die fabricated, powder coated, metal board recessed in the wall or column including connection as required.	Each	4	1,197.00	4,788

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ITEM No.	PAK PWD SCHEDULE 2022 REF No. /NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		ELECTRIC FANS				
	2-80	**Ceiling Fan**				
EDW-E-09	2-80-03	Providing & installing 140 Cm (56") sweep ceiling fan with blades, canopy, standard length of down rod including connection with 14.0076" flexable wire complete as required. (without regulator) Millat/Pak/Asia/Younas/ Climax/Royal.	Each	4	9,349.00	37,396
	2-107	**Wall Bracket Fan**				
EDW-E-10	2-81-01	Providing & installing 35 Cm (14") sweep Plastic body Louvre wall bracket fan complete with blades, regulator & moveing grill with motor, fitted on wall or column with GI clip including connection with 14.0076" flexible wire complete as required. Millat / Pak / Asia / Younas / Climax / Royal.	Each	4	4,100.00	16,400
	2-113	**Fan Clamps**				
EDW-E-11	2-87-06	Providing & fixing 3"x4"x5" size (14 SWG) thick recessed type fan clamp box with 1/2" dia MS bar fan clamp fixed in roof at casting time as required.	Each.	4	1,376.00	5,504
	2-85	**Double Action Plastic BodyExhaust Fans**				
EDW-E-12	2-85-02	Providing & installing 25 Cm (10") sweep Plastic body Louvre wall bracket fan complete with blades, regulator & moveing grill with motor, fitted on wall or column with GI clip including connection with 14.0076" flexible wire complete as required. Millat / Pak / Asia / Younas / Climax / Royal.	Each	2	4,249.00	8,498
	2-26	**Single pvc insulated wire and pvc ,pvc cable in existing conduits/ducts**				
EDW-E-13	2-26-06	Supply & drawing of 16 mm², single core, PVC insulated wire in all kinds of existing or given conduit/cable duct as required.	Rft	500	209.00	104,500
	3-08	**EARTHING AND LIGHTNING ARRESTOR**				
EDW-E-14	3-8-01	Providing and fixing Earthing set with 2'x2'x1/8" copper plate Burried in the ground at the depth of 12 feet or less if water comes out from the ground level (with salt and charcoal or earthing chemical powder) etc making the pit 12 feet deep by excavation of all type of soil (except soft or hard rock)i/c fixing of 8 SWG copper wire in 1/2" GI conduit complete in all respect as required.	Job	6	54,979.00	329,874
	3-12	**OCB & VCB**				
EDW-E-15	3-'12-01	Providing , fixing testing and commissioning of HT 11 KV 630 A VCB Transformer Protection Panel as per Wapda specifications complete in all respect as approved by the Engineer incharge	Each	1	2,605,240.0	2,605,240
EDW-E-16	3-'12-02	Providing , fixing testing and commissioning of HT 11 KV 630 A VCB Wapda Industrial / Metering Panel as per Wapda specifications complete in all respect as approved by the Engineer incharge	Each	1	2,671,240.0	2,671,240

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ITEM No.	PAK PWD SCHEDULE 2022 REF No. /NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		2-78 (Sunlight , Piere Light , Future Technology)				
EDW-E-17	2-78-01(c)	Supply installation testing & commisioning of recessed / surface mounted Ceiling light/down light including driver having war/ netural white / cool white colour 80-90 lm/ watt effeciency .9 or above power factor , 20000-25000 hours life cycle including connection complete in all respect as approved by the Engineer incharge. (18-20) Watts	Each	20	2,886.00	57,720
		CIVIL WORKS				
	3-9	**EXCAVATION**				
EDW-E-18	3-09-01	Excavation in soft soil including lift upto 5ft and filling excavated earth including breaking clods dressing, watering, consolidation and ramming in layers to full compaction i/c disposal of surplus excavated stuff as directed as required.	P/CFT	6,000	11.0	66,000
EDW-E-19	3-09-03	Excavation in Hard soil including lift up to 5ft and filling excavated earth including ,breaking clods, dressing ,watering, consolidation and ramming: in layers to full compaction l/c disposal of surplus us excavated stuff as directed.	P/CFT	6,000	15.0	90,000
	3-4	**4 CORE LT UN ARMOURED CABLE IN EXISTING CONDUIT OR CABLE DUCT**				
EDW-E-20	3-4-03	Providing & laying 4 core, 35 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	500	1,668.0	834,000
EDW-E-21	3-4-01(a)	Providing & laying 4 core, 16 mm², PVC insulated & PVC sheathed, 600/1000 volts grade with stranded copper conductor , un armoured, L.T cable in existing all kind of conduit or cable duct as per Pak. P.W.D specification as required.	P/Rft	1,000	804.00	804,000
		Indoor/ pole Mounted Transformer				
EDW-E-22	3-11-04 (h)	Providing fixing and commisioning in door / pole mounted step down 11000/400 volts three phase 50 hz , transformer as per electricity code complete in all respect as required (630 KVA)	Each	1	3,913,228.0	3,913,228
EDW-E-23	3-11-04 (f)	Providing fixing and commisioning in door / pole mounted step down 11000/400 volts three phase 50 hz , transformer as per electricity code complete in all respect as required (200 KVA)	Each	1	1,778,849.0	1,778,849
					Total (Scheduled Items) =	**15,586,267**

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ITEM No.	PAK PWD SCHEDULE 2022 REF No. /NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		NON SCHEDULE ITEMS				
		E. ELECTRICAL WORKS				
		Supply, installation, testing and commissioning of the following items of work (unless specifically stated otherwise) including all material, labour, tools, plant, accessories, related civil works, etc., required for proper completion of each item as per specifications (Section-8001 "General Specifications for Electrical Works" shall be applicable to all BOQ items).				
EDW-E-26	NS-01	Supply and Installation of 6" dia Asbestos pipe for HT CABLE , complete in all respect.as Per IESCO Standards.	RFT	300		
		CABLE PULLING PIT (6'X6'X7')				
EDW-E-27	NS-02	Cable pulling pit (6' X 6' X 7') made of RCC(1:2:4) and RCC cover with MS angle frame for easy pulling of cables including all accessories located as per drawings.	No	2		
EDW-E-28	NS-03	Sealing of conduits after cable pulling with jute & Plaster of Paris as per Engineer's Instructions.	No.	6		
		STRUCTURED CABLING NETWORK(TELEPHONE & NETWORKING) (EXTERNAL)				
EDW-E-29	NS-04	Supply and Installation of 2" dia PVC Class 'D' pipe for STRUCTURED CABLING NETWORK (TELEPHONE & NETWORKING) complete in all respect.	Rft	2,000		
EDW-E-30	NS-05	100 pair telephone junction box (TJB) (IP-65) rated.	No.	10		
EDW-E-31	NS-06	(2 X 25)50 pair Cat-5 UTP cable for voice back bone only in already installed trunking / conduit.	Rft.	2,000		
EDW-E-32	NS-07	12 core, 9/125 um, OM3 10G supported optical fibre single mode (SM) back bone cable in already installed conduit / trunking.	Rft.	2,000		
EDW-E-33	NS-08	Cable pulling pit (2' X 2' X 3') made of RCC(1:2:4) and RCC cover with MS angle frame for easy pulling of cables including all accessories located as per drawings.	No	20		
		HT & LT CABLES & SYSTEMS				
		HT 11 KV CABLE				
EDW-E-34	NS-09	Supply & Installation of 1 core, 240 mm^2 8.7/15 kV Aluminum conductors, XLPE cable laid in already installed uPVC conduits in already excavated cable trenches as per requirements of the MV distribution system as per WAPDA standards.	Rft	600		

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ITEM No.	PAK PWD SCHEDULE 2022 REF No. /NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
EDW-E-35	NS-10	Supply & Installation of 15kV termination kits suitable for following size 1 core, 240 mm^2 8.7/15 kV Aluminum conductors, XLPE including all accessories, complete in all respects for Transformers	No	6		
EDW-E-36	NS-11	Supply & erection of MS angle lattice structure pole 36' long 14" sq at base & 8" sq at top for elect distribution along with drop out cutouts , PG Connector (T-220) , PG Connector (T-150) , PG Connector (T-110) , dead end clamp , 11 KV Pin Insulator , 11 KV pin for Steel-x-arm , Steel-X-Arm with braces , Steel-x-Arm / D-Fitting , 11 KV Disc Insulator , Spool Insulator , eye nut , Stay set Complete , Stay Wire , Earth Rod , Earthing wire GSL 6 mm , D-Bracket along with cotter pin , 11 KV pin for Steel-x-arm , double Arming Bolt Complete In all respect as Approved By the Engineer as Per IESCO Standards	Job	30		
EDW-E-37	NS-12	Supply & stringing of ACSR Osprey Conductor as Per IESCO Standards	Rft	7,000		
EDW-E-38	NS-13	Supply & erection of double pole platform for transformers as Per IESCO Standards	Each	5		
EDW-E-39	NS-14	Supply & stringing of AAC Wasp Conductor (7/0.173") as Per IESCO Standards	Rft	500		
EDW-E-40	NS-15	Supply & stringing of ACSR Rabbit Conductor (7/0.132") as Per IESCO Standards	Rft	500		
		L.T SWITCHBOARDS / **SUB MAIN DISTRIBUTION BOARDS** Ref. Spec. Sec. 8133, 8212, 8240 Following L.T. Switchboard and Submain Distribution Boards, (as per single line diagram shown on the drawing), including all control wiring, foundation, related civil works and all accessories, complete in all respects.				
EDW-E-41	NS-16	DB-EXT-01	Job	1		
		EXTERNAL POLES & LIGHTS Following Epoxy Painted, Hot Dipped Galvanized steel lighting columns, including pole cap, base plate, shim plates, clamps, cable connection box with one mcb for each light fixtures and all other accessories, RCC foundation and all related civil works, numbering, etc. complete in all respects.				
EDW-E-42	NS-17	9 M high column with Single arms.	Nos.	43		
EDW-E-43	NS-18	Rod Type Earth comprising of 12.7mm dia, 3m long Copper deposited steel rod, including appropriate clamp for clamping of the down conductor. The copper deposited steel rod shall be hammered into the ground to the depth of 300mm below the ground surface. The earth electrode includes excavation, backfilling, etc.	Job	43		

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ITEM No.	PAK PWD SCHEDULE 2022 REF No. /NS	DESCRIPTION	UNIT	QTY.	UNIT RATE (Rs.)	TOTAL AMOUNT (Rs.)
(a)	(b)	(c)	(d)	(e)	(f)	(g)
		Supply, installation, testing & commissioning of the following types of LED light fixtures including, internal wiring(light to cable termination box) including cable termination box with circuit breaker complete with all mounting accessories as per architectural arrangements/ requirements, dust & moisture protected and corrosion proof and suitable for this area as acceptably supplied and installed as per sample per specifications approved by the Engineer.				
EDW-E-44	NS-19	1m high Decorative led Bollard type light with foundation.	No.	20		
EDW-E-45	NS-20	Decorative gate light fixture	No.	4		
EDW-E-46	NS-21	Decorative Planter Light	No.	20		
EDW-E-47	NS-22	90 Watt DC street Light along with 300 watt solar panel , controller , dry Type Battary for the 12 hour Back up , Mounting Accessories(for solar Panel and Battary) with 5 year replacebale Warranty) complete in all Respect.	No.	46		
		WIRING ACCESSORIES				
EDW-E-48	NS-23	13 Amps Multi switch socket outlet including sheet steel back box shall make of 16 SWG shall be finished in powder coated paint.	No.	20.00		
EDW-E-49	NS-24	15 Amps, 3 pin round switch socket outlet including sheet steel back box shall make of 16 SWG shall be finished in powder coated paint.	No.	5.00		
EDW-E-50	NS-25	20 Amps, 250 Volts double pole switch & neonincluding sheet steel back box shall make of 16 SWG shall be finished in powder coated paint.	No.	5.00		
		CONDUITS & PIPES (Ref. Spec. Sec. 8001 8230)				
EDW-E-51	NS-26	Supply and Installation of 4" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	500.00		
EDW-E-52	NS-27	Supply and Installation of 3" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	1500.00		
EDW-E-53	NS-28	Supply and Installation of 2" dia PVC Class 'D' pipe for Power cables undeground and sealing the space around pipe.	Rft	1500.00		
					Total (Non-Scheduled Items) =	
					TOTAL (SCHEDULE + NON-SCHEDULE ITEMS) =	

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Past Experience / Contracts

Contracts over *[insert amount]* during the last three years:				
Procuring Agency	Value	Year	Goods/Services Supplied	Country of Destination

PUBLIC PROCUREMENT REGULATORY AUTHORITY (PPRA) EPADS

Historical Contract Non-Performance, and Pending Litigation and Litigation History

[The following table shall be filled in for the Applicant and for each member of a Joint Venture]

Applicant's Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Member Name: *[insert full name]*
IFP No. and title: *[insert IFP number and title]*
Page *[insert page number]* of *[insert total number]* pages

☐ Not debarred due to deviation from commitment of Bid Securing Declaration-☐ Not debarred due to non-performance			
Year	**Non-performed portion of contract**	**Contract Identification**	**Total Contract Amount (current value, currency, exchange rate and PKR equivalent)**
[insert year]	*[insert amount and percentage]*	Contract Identification: *[indicate complete contract name/ number, and any other identification]* Name of Procuring Agency: *[insert full name]* Address of Procuring Agency: *[insert street/city/country]* Reason(s) for nonperformance: *[indicate main reason(s)]*	*[insert amount]*
Pending Litigation, in accordance with Section III, Qualification Criteria and Requirements			
☐ Pending litigation in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.3 as indicated below.			

Year of dispute	**Amount in dispute (currency)**	**Contract Identification**	**Total Contract Amount (currency), ~~US$~~ PKR Equivalent (exchange rate)**

[insert year]	*[insert amount]*	Contract Identification: [indicate complete contract name, number, and any other identification] Name of Procuring Agency: *[insert full name]* Address of Procuring Agency: *[insert street/city/country]* Matter in dispute: *[indicate main issues in dispute]* Party who initiated the dispute: *[indicate "Procuring Agency" or "Supplier"]* Status of dispute: *[Indicate if it is being treated by the Adjudicator, under Arbitration or being dealt with by the Judiciary]*	*[insert amount]*
☐ No consistent history of court/arbitral award decisions in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.4. ☐ Consistent history of court/arbitral award decisions in accordance with Section III, Qualification Criteria and Requirements, Sub-Factor 2.4 as indicated below.			
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 Procuring Agency: *[insert full name]* Address of Procuring Agency: *[insert street/city/country]* Matter in dispute: *[indicate main issues in dispute]* Party who initiated the dispute: *[indicate "Procuring Agency" or "Supplier"]* Court/ arbitral award decision: *[Indicate if the award decision was against the Applicant or any member of a joint venture.]y]*	*[insert amount]*

Current Contract Commitments / Works in Progress

Bidders and each member to a JV should provide information on their current commitments on all contracts that have been awarded, or for which a letter of intent or acceptance has been received, or for contracts approaching completion, but for which an unqualified, full completion certificate has yet to be issued.

Current Contract Commitments					
No.	Name of Contract	**Employer's Contact Address, Tel, Fax**	**Value of Outstanding Work [Current Eq. PKR]**	**Estimated Completion Date**	**Average Monthly Invoicing Over Last Six Months [Eq. PKR/month)]**
1					
2					
3					
4					
5					

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Financial Situation and Performance

[The following table shall be filled in for the Applicant and for each member of a Joint Venture]

Applicant's Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Member Name: *[insert full name]*
IFP No. and title: *[insert IFP number and title]*
Page *[insert page number]* of *[insert total number]* pages

1. Financial data

Type of Financial information in (currency)	**Historic information for previous _[insert number] years, [insert in words] (amount in currency, currency, exchange rate*, PKR equivalent)**				
	Year 1	Year 2	Year 3		
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 ITA 14 for the exchange rate

3. Financial documents

The Applicant and in case of JV, members of JV shall provide copies of financial statements for *[number]* years pursuant Section III, Qualifications Criteria and Requirements. The financial statements shall:

(a) reflect the financial situation of the Applicant or in case of JV member, and not an affiliated entity (such as parent company or group member).

(b) be independently audited or certified in accordance with local legislation.

(c) be complete, including all notes to the financial statements.

(d) correspond to accounting periods already completed and audited.

☐ Attached are copies of financial statements[1] for the *[number]* years required above; and complying with the requirements.

[1] If the most recent set of financial statements is for a period earlier than 12 months from the date of Application, the reason for this should be justified.

Average Annual Turnover (Annual Sales Value)

[The following table shall be filled in for the Applicant and for each member of a Joint Venture]

Applicant's Name: *[insert full name]*
Date: *[insert day, month, year]*
Joint Venture Member Name: *[insert full name]*
IFP No. and title: *[insert IFP number and title]*
Page *[insert page number]* of *[insert total number]* pages

Annual Turnover Data			
Year	**Amount** **Currency**	**Exchange rate*** **(If applicable)**	**PKR equivalent**
[indicate calendar year]	*[insert amount and indicate currency]*		
		Average Annual Turnover **	

* Refer ITA for date and source of exchange rate.

** Total PKR equivalent for all years divided by the total number of years. See Section III, Qualification Criteria and Requirements, ITA.

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